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SECURITY AND UNCERTAINTY IN CONTEMPORARY DELAYED-RETURN CULTURES

Coping With the Blockage of Personal Goals

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In the course of a normal day, people may perform a variety of behaviors designed to produce desired outcomes. Consider the simple act of sending a text message. You may want to invite a friend to lunch. So you type the invitation into your phone, send it off to your friend, and then wait. The response may come back in a few seconds, but it may not come back for minutes, hours, or longer. And during the delay, you may find yourself experiencing uncertainty. Did I send the message to the right number? Did my friend read it? Did she understand the message? Is she mad at me? If she does respond, will it be too late to go to lunch?

In this example, the delay between our behavior and the desired outcome may be relatively short and the implications of that delay may be relatively inconsequential. In other cases, though, just the opposite may be true. Have you saved enough for your retirement? Are you doing the right things for your long-term health? Did you frame your research the right way so that your manuscript will be accepted for publication? In cases like these, people may experience a long delay between their behavior and their desired outcome, and the consequences of a failed outcome may be extremely unpleasant. It is not surprising, therefore, that people experience a great deal of aversive uncertainty under such conditions and take steps to cope with that uncertainty.

In the present chapter, we address uncertainty and the mechanisms people use to cope with it or compensate for it. The chapter originates from research by the three authors, each of whom has explored aspects of uncertainty in his independent line of research. Thus, this chapter aims to combine insights about delayed-return cultures (e.g., Martin, 1999; Martin & Shirk, 2006), the management of personal uncertainty (e.g., Van den Bos, 2001, 2009; Van den Bos & Lind, 2002, 2009), and reactive approach motivation (e.g., McGregor, Nash, Mann, & Phills, 2010; McGregor, Prentice, & Nash, 2009).

Figure 2.1 illustrates our line of reasoning about vigilant meaning making, compensatory processes, worldview defense, and goal-regulatory processes following experiences of personal uncertainty. The figure describes what happens when personal uncertainty is or is not encountered during approach-motivated goal pursuit. The tentative process model shown in Figure 2.1 exemplifies what we are trying to do in this chapter, namely to suggest an integrative view of various theories related to worldview defense and compensatory behaviors. Central in our line of reasoning is the notion of anxiety-provoking experiences of personal uncertainty. These experiences
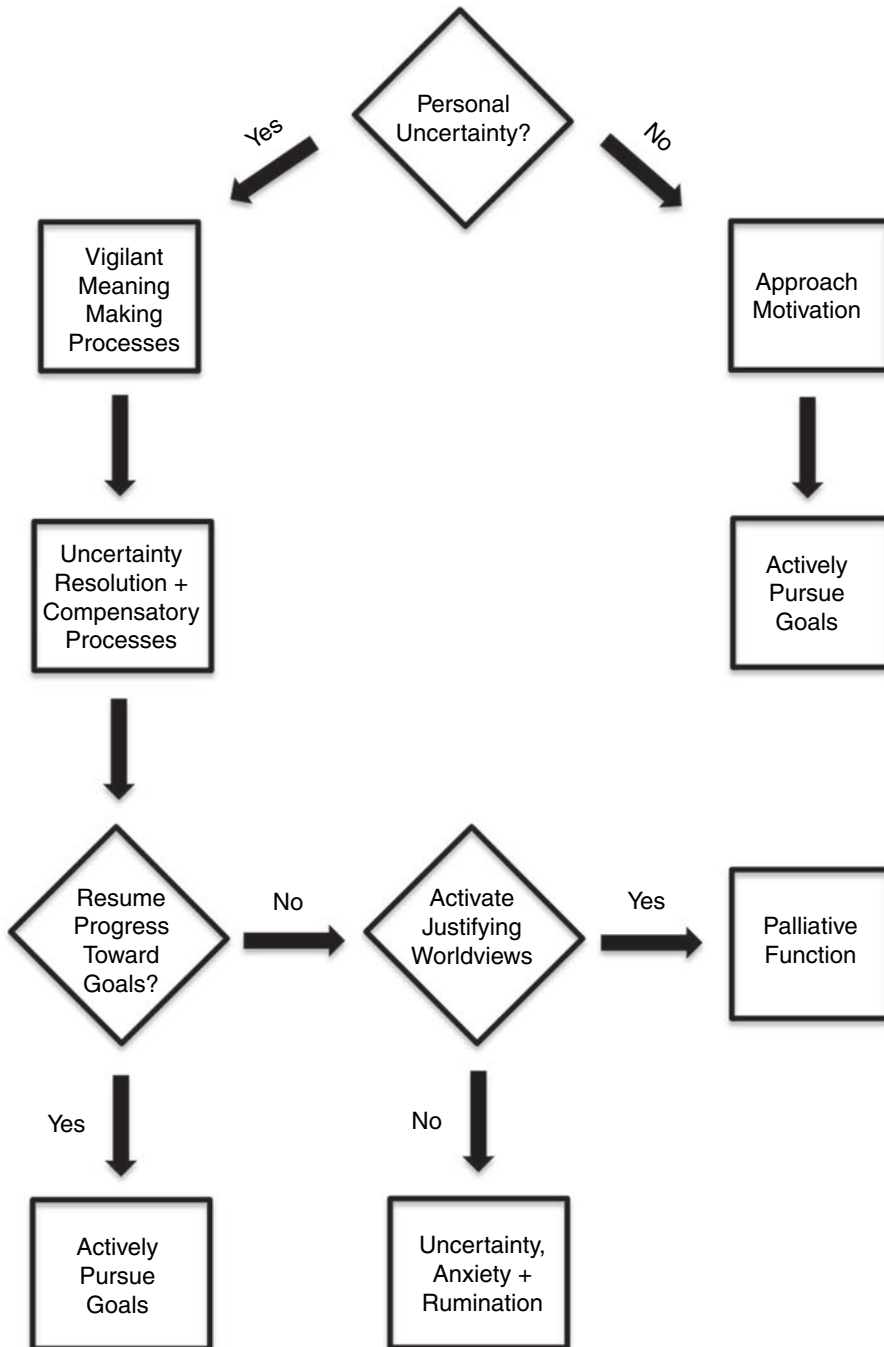
Figure 2.1. Tentative model of vigilant meaning making, compensatory processes, worldview defense, and goal-regulatory processes when personal uncertainty is or is not encountered during approach–motivated goal pursuit.

threaten people's need for personal security and hence activate neural mechanisms that can be associated with the human alarm system (Eisenberger, Lieberman, & Williams, 2003; Van den Bos et al., 2008). We further note that basic goal-regulation processes in delayed-return contexts play a central role in people's reactions to these experiences.

Specifically, our chapter reviews evidence that after uncertainty and other self-threats people react with vigilant self-focus and anxiety until they are able to resume progress toward their goals or engage the approach motivation system in another way (McGregor, 2006). We further note that in delayed-return cultures (Martin, 1999), approach motivation may be restored through confident personal belief, cultural worldviews, self-esteem, and zealous convictions (McGregor, 2006; McGregor & Marigold, 2003). Thus, when daily goals for competence, autonomy, related-ness, cognitive consistency, control, or even survival feel compromised, people may adhere more strongly to their worldviews, religions, and ideals and respond very positively toward feedback that bolsters their self-esteem and feelings of self-worth (McGregor, Zanna, Holmes, & Spencer, 2001; see also McGregor, Nash, & Prentice, 2011). We suggest, therefore, that people compensate for anxious uncertainty and motivational conflict with adherence to cultural worldviews, bol-stered self-esteem, and idealized extremes of confidence in the self or a social identity. As such, cultural worldviews, religions, ideals, and self-esteem can be thought of as a motivational palliative for alleviating preoccupation with threatening information (McGregor, 2004). Thus, people may display heightened intergroup bias and worldview defense when they have experienced a threat to their important self-goals or experience a delay between their effort and their outcomes (Mar-tin, 1999). Indeed, several studies now have shown stronger adherence to cultural worldviews following blockage of personal goals (McGregor, Prentice, & Nash, 2009; McGregor et al., 2001) as well as a stronger need to believe in a just world in delayed-return contexts (Bal & Van den Bos, 2012) and greater need for meaning in life among people with a delayed-return orientation (Martin, Sanders, Kulkarni, Anderson, & Heppner, 2014).

The outline of the chapter is such that we first clarify our key terms and specify our basic assumptions. This section will include how we conceive of the relationship between uncertainty and security. Then we discuss research supporting our general ideas. These ideas focus on uncertainty as a cultural phenomenon that triggers predictable psychological processes. Specifically, we review evidence for effects of uncertainty being especially prominent in contemporary delayed-return cultures. Furthermore, we discuss the resulting psychological and neuro-physiological processes uncertainty triggers when people's goals are blocked. The core of what we are focusing on in this chapter are psychological processes pertaining to vigilant meaning making, compensatory processes, worldview defense, and goal-regulatory processes following experiences of personal uncertainty. Importantly, these psychological processes are assumed to operate in cultural contexts in which people are receiving information about their progress toward goals in delayed ways. Taken together, the chapter aims to build a case for how security and uncertainty work in con-temporary delayed-return cultures and what role coping with the blockage of personal goals has in this process.

Basic Concepts and Assumptions

Types of Uncertainty

It is important to distinguish between different types of uncertainty. Here we distinguish between informational and personal uncertainty (Van den Bos, 2009; Van den Bos, Martin, & Stapel, 2010). Informational uncertainty involves having less information than one ideally would like to have in order to be confident in rendering a given social judgment (Kahneman, Slovic, & Tversky, 1982). It is the type of uncertainty to which psychologists often refer when they talk about uncertainty,

especially in the decision-making literature (e.g., Kahneman et al., 1982). In contrast to this "informational" definition of uncertainty, building on the *Handbook of the Uncertain Self* (Arkin, Oleson, & Carroll, 2009), we define personal or self-uncertainty as a subjective sense of doubt or instability in personal goals, self-views, worldviews, or the interrelation between the three. Personal uncertainty involves feelings consciously or unconsciously experienced as well as other subjective reactions people experience as a result of being uncertain about themselves. We argue that experiencing personal uncertainty is generally aversive or uncomfortable.

Personal uncertainty entails both stable individual differences, such as differences in emotional uncertainty (Greco & Roger, 2001), and fluctuations in the situational salience of uncertainties (Van den Bos, 2001). Personal uncertainty can be aroused by contextual factors that undermine certainty about important cognitions, perceptions, feelings, behaviors, goals, or self-views. The difference between informational and personal uncertainty is related to the distinction between epistemic and affective dimensions of uncertainty. That is, *knowing* that you are uncertain about something is different from *feeling* uncertain (Hogg, 2007). In contrast with informational uncertainty, people often find experiencing personal uncertainty an alarming event that does not allow for contemplation and introspection but that instead requires people to respond rather quickly to what is going on (Van den Bos, 2009; Van den Bos et al., 2008).

We note that sometimes informational and personal uncertainty can be aroused simultaneously. For example, when ambiguous standards of performance have been set, presumably both informational uncertainty ("What are the standards of performance?") and personal uncertainty ("Will I be evaluated positively following my performance?") can be activated. This noted, quite often clear distinctions between informational and personal uncertainty can be drawn, and the two uncertainty types often yield quite distinct effects on what people do and how they react to situations at hand (for reviews, see, e.g., Van den Bos, 2009; Van den Bos & Lind, 2002, 2009). In general, informational uncertainty heightens cold-cognitive processes that involve paying closer attention to the facts at hand and processing information with more attention to details (Weary & Jacobson, 1997). In contrast, personal uncertainty often heightens hot-motivational defenses for anxiety relief (Nash, Prentice, Hirsh, McGregor, & Inzlicht, 2011).

"Insecurity," in our view, is an even more emotionally loaded term than "personal uncertainty." It has more of a chronic and pervasive connotation and may be related more strongly and more closely to people's feelings of value. A person who is uncertain in a given situation might not know what will happen or might not know what to do; a person who is insecure might wonder whether they could ever understand what will happen or whether they have the skills or personality to enact the behaviors needed (Murray, Holmes, & Collins, 2006). In a new social context, most people would feel uncertain about what to do, but whereas secure people would assume they could learn what was needed and then be fine, insecure people would be less sure about their ability to cope. We see insecurity, therefore, as a chronic and pervasive sense of personal uncertainty (see Sverke & Hellgren, 2002) and security as the capacity for resilient confidence in the face of life's personal uncertainties.

Language and Uncertainty

Given the fine distinctions between various concepts related to personal uncertainty, it is important to be careful when conducting research on these topics. Different terms may convey different meanings and may yield different psychological states in different cultures. Reminding people of their personal uncertainties, for example, has strong and reliable effects on research participants in the Netherlands (e.g., Van den Bos, 2001; Van den Bos, Euwema, Poortvliet, & Maas, 2007; Van den Bos, Poortvliet, Maas, Miedema, & Van den Ham, 2005; Van den Bos, Van Ameijde, & Van Gorp, 2006), Turkey (Yavuz & Van den Bos, 2009; Yavuz Güzel, Van den Bos, & Şahin, 2013), and

Germany (Reinhard, Van den Bos, & Müller, 2013) but seems to fare less well in English-speaking countries (e.g., Landau et al., 2004; Routledge, Arndt, & Goldenberg, 2004). Perhaps this has something to do with the fact that in the English language writing about your "uncertainties" is not as emotionally involving as it is in the Dutch, Turkish, or German languages and evokes reference to merely informational uncertainty.

We are noting this issue explicitly here because in our view modern social psychology tends to focus on revealing general rules that work across cultures and in different languages. It seems time to complement or replace this quest for the discovery of general laws of social behavior with thorough and very careful attention to the specifics of actual stimuli in the environment, including how these stimuli are processed by participants who use different languages (Martin & Van den Bos, 2014; McGregor, Prentice, et al., 2009; Van den Bos et al., 2012; Van den Bos & Lind, 2013). This issue also comprises how research participants respond to stimulus materials presented to them in different languages used in different psychology labs across the world (see also Keysar, Hayakawa, & An, 2012). Careful conceptual grounding and empirical pretesting of stimulus materials may do wonders in this respect and may yield a more reliable science. Furthermore, if such studies revealed different responses in different labs or in different countries, this should be treated as potentially exciting information. After all, such discrepant findings should lead one to start exploring the conditions under which stronger versus weaker effects of the stimulus materials are to be expected. Revealing and studying such conditions is something social psychology excels in, so failures to replicate some findings in some labs should be treated as valuable information and impetus to more fine-grained work on the various conditions under which humans show the behavioral reactions and other responses that we study as a discipline. There is every reason to expect in further research that there will be failures to replicate across cultures, and we view these as truly interesting opportunities to uncover additional moderating variables and hence deepened social psychological insight.

In fact, findings by McGregor, Prentice, et al. (2009) suggest that in order to be threatening among North American samples, English translations of the Van den Bos et al. (2005) personal uncertainty manipulation must reflect a gritty aspect of insecurity, consistent with the original Dutch uncertainty manipulation. In particular, McGregor et al. suggest that using the word "insecurity" may convey more clearly to English-speaking participants the emotionally jarring meaning of personal uncertainty as this is conveyed in the Dutch word "onzekerheid," the Turkish word "belirsizlik," or the German word "Unsicherheit." Perhaps this suggests that when running experiments with English-speaking participants the personal uncertainty questions used in earlier studies should be replaced by questions about participants' personal insecurities, for example, asking participants to respond to questions such as (1) "Please briefly describe the emotions that the thought of you being insecure about yourself arouses in you," and (2) "Please write down, as specifically as you can, what you think physically will happen to you as you feel insecure about yourself."

Indeed, McGregor, Prentice, et al. (2009) found that in their Canadian lab with English-speaking participants "insecurity salience" caused as much or more worldview defense than "mortality salience" (cf. the findings obtained in Dutch and Turkish labs; Loseman, Miedema, Van den Bos, & Vermunt, 2009; Van den Bos et al., 2005; Yavuz & Van den Bos, 2009), whereas "uncertainty salience" was a weaker antecedent of worldview defense (cf. the findings obtained in terror management labs in the US; e.g., Landau et al., 2004; Routledge et al., 2004). Perhaps even more importantly for the current purposes, when "uncertainty salience" was linked to important personal goals, then it functioned like insecurity salience and caused the same amount of worldview defense as insecurity salience or mortality salience (McGregor, Prentice, et al., 2009). These findings fit with our suggestion that the English word "uncertainty" can be interpreted as personal uncertainty but can also be interpreted more trivially as informational uncertainty. The Dutch, Turkish, and German concepts of "onzekerheid," "belirsizlik," and "Unsicherheit," respectively, perhaps come closer to

the English word for "insecurity." Furthermore, in English, the word "insecurity" less ambiguously implies personal uncertainty about important goals (e.g., about love or success). This brings us to the issue of how we conceive of the relationship between personal uncertainty and human goals.

Culture and Delayed-Response Compensation

Culture and Immediacy

Why do people have so much difficulty with personal uncertainty in contemporary life? The answer may be partially cultural (Martin, 1999; Martin, Kulkarni, Anderson, & Sanders, in press; Martin et al., 2014; Martin & Shirk, 2006). Anthropologists have found it useful to arrange cultures along a continuum ranging from those with immediate-return systems to those with delayed-return systems (Cummings, 2013; Marlowe, 2002; Woodburn, 2007).

In immediate-return societies, people practice high levels of sharing, work actively to reduce resource inequalities among their members, and have few formal, binding interpersonal commitments. It is not surprising, therefore, that members of these societies experience a great deal of autonomy. They also experience relatively immediate feedback with regard to their actions (hunt or gather food and then eat within a few hours).

In delayed-return societies, on the other hand, people are more likely to exert immediate effort for a delayed uncertain payoff (e.g., work for a monthly paycheck), place a higher value on competition, and display a greater tolerance of resource inequalities. Because delayed-return systems are more complex, they demand large-scale cooperation. This means people have to play out certain roles (boss, worker, consumer) and sacrifice some of their autonomy to keep the system functioning. To help them with this, people have formalized their roles through long-term binding interpersonal commitments (e.g., roles, laws, and contracts along with socially sanctioned consequences for failing to abide by them).

How is the distinction between immediate-return and delayed-return systems relevant to our discussion of uncertainty and compensation? Research has shown that, along a number of dimensions, living in immediate-return ways can foster optimal functioning. For example, people feel better when they receive performance feedback that is clear and immediate rather than uncertain and delayed (Csikszentmihalyi, 1990). Clear, immediate feedback also helps people perform better and be more effective at self-control (Frey & Preston, 1980). People also experience greater well-being and happiness with other immediate-return behavior, including sharing (Aknin et al., 2013), high levels of autonomy (Ryan & Deci, 2000), resource equality (Wilkinson, 1999), and immersion in nature (Kaplan & Berman, 2010). These findings suggest that behaving in ways that reflect an immediate-return system can contribute to people's well-being.

The problem is that the modern, complex societies in which most people live today reflect delayed-return systems. Although these systems have their strengths, facilitating clear, immediate feedback, high levels of autonomy, sharing, resource equality, and immersion in nature are not among them. So, at least along these dimensions, people living in delayed-return systems may not be functioning optimally. As a result, they may compensate (Martin, 1999; Martin et al., 2014, in press; Martin & Shirk, 2006).

Worldview Defense in Delayed-Return Cultures

Currently, most people live in delayed-return cultures (Woodburn, 2007). In these cultures there is often a delay between the effort people exert and the feedback they receive regarding the outcome of their efforts (Martin, 1999; Woodburn, 1982). As a result, people may experience long stretches of uncertainty between their efforts and their payoff, and they may find at the end of

this time that their efforts did not pay off (Martin & Shirk, 2006). A good example is attaining a Ph.D. (Martin, 1999; Van den Bos et al., 2010). To obtain a Ph.D., people have to undergo years of schooling, during which time they exert immediate effort for an outcome that is both delayed and uncertain. They also find themselves during this time immersed in a series of long-term binding commitments, most notably with their advisors, and they must undergo a series of critical evaluations (e.g., classes, proposal meetings) by relative strangers. Failure to perform up to standards during these evaluations can lead to exclusion from the group and failure to reach the ultimate goal of being granted the Ph.D. The primary consequence of obtaining a favorable evaluation, on the other hand, is the opportunity to move on to new uncertainties, evaluations, and delayed feedback. "Will I get a job?" "Will it be in a place that I like?" "Will I be able to attain tenure?" "Will my students evaluate me favorably?" "Will my data come out?" "Will my manuscripts be accepted for publication?" In short, pursuit of an academic lifestyle, like most pursuits in a delayed-return system, requires people to cope with long-term binding commitments, repeated evaluations of their worth by relative strangers, and immediate effort for delayed and uncertain outcomes.

Because the large majority of people nowadays are living in delayed-return cultures, people may frequently experience periods of uncertainty between their efforts and the payoff. They may find at the end of these periods that their efforts did not pay off, and, by that time, it may be too late for them to switch to alternate strategies to attain their goals. People have developed cultural mechanisms to cope with these uncertainties instigated by the delayed return. These mechanisms include formal contracts and agents to enforce them (Cohen, 1985) and justifying stories such as just-world beliefs (Martin, 1999). For example, people may work for a month before being paid for their work. As they work week after week, how can they be sure they will be paid at the end of the month? And what if they are not paid? How will they survive? These concerns can be reduced if the workers signed a legally binding contract. Then they can be confident that, one way or another, they will be compensated for their efforts. Thus, delayed-return societies develop cultural compensatory mechanisms that allow the members of those societies to believe that their efforts will pay off in the long run.

People may also turn to ideals and ideologies for worldview security. These idealistic commitments function as abstract goals that people can turn to for secure relief from anxiety when their concrete goals are overwhelmingly uncertain. These abstract goals focus on meanings, that is, the abstract ideals, values, and justifications that serve as guides for action. In fact, meaning arises from clarity about values, ideals, and abstract identifications (McGregor & Little, 1998). Several experiments have demonstrated that people yearn for and seek meaning when their personal goals are uncertain. In one study, mortality salience and personal uncertainty aroused by confronting participants with temporal discontinuities in their identity caused a surge in meaning seeking as compared to a neutral control condition (McGregor et al., 2001, Study 4; see also Landau, Greenberg, Sullivan, Routledge, & Arndt, 2009; Vess, Routledge, Landau, & Arndt, 2009). In another study, personal uncertainty about personal goals caused meaning seeking, but more conclusive personal problems did not (McGregor, Prentice, et al., 2009, Study 2).

Some evidence that people experiencing a delayed return are more in need of compensation (and perhaps are more inclined toward meaning seeking) was obtained by Martin et al. (2014). They presented participants with 14 sentences and asked them to sort the sentences into seven pairs. For some participants, the sentences reflected features of immediate-return cultures (e.g., "A cooperative society brings out the best in people," "Inequality can hurt people at the bottom," "It is good to be able to depend on others when times are tough"). For others, the sentences reflected features of delayed-return cultures (e.g., "A competitive society brings out the best in people," "Inequality can motivate people at the bottom to try harder," "It is best not to depend on others when times are tough"). Then participants rated the extent to which they had found

meaning in their life and the extent to which they were searching for meaning in their life. After this, they rated their satisfaction with life.

There is generally a positive correlation between meaning in life and life satisfaction (Steger & Kashdan, 2007). Martin et al. (2014) hypothesized, however, that this correlation would be stronger among people who need to justify why they are exerting effort for a delayed, uncertain payoff. Thus, the correlation between meaning in life and happiness would be higher for people primed with a delayed-return orientation. The results supported these predictions. There was a stronger correlation between having found meaning and experiencing life satisfaction among participants who had been primed with aspects of delayed-return cultures compared to those who had been primed with aspects of immediate-return cultures. The results suggest more generally that modern, complex, delayed-return cultures are associated with stories designed to justify people's immediate efforts for delayed, uncertain payoffs. The results also fit a perspective of meaning constituting an essential feature of contemporary life, where goals are often embedded in systems and processes that are largely beyond personal control (see also Jonas et al., 2014). One way they can do this is by developing and defending justifying ideologies such as just-world beliefs.

Justice and Worldviews

Common elements of meaning that people often turn to for relief in uncertain circumstances are cultural codes of conduct, morality, and fairness, as exemplified by legal or marriage contracts or by general cultural norms such as the Protestant work ethic or the belief that the world is a just place where bad things happen only to bad people. With regard to the belief in a just world, theorizing and research suggest that the need to believe in a just world develops when children begin to understand the benefits of forgoing their immediate gratifications for more desirable, long-term outcomes. Evidence for delayed-return aspects of the just-world hypothesis comes from research by Hafer (2000). She had participants describe either their long-term plans or the university courses they were currently taking. Then she had them watch an interview in which a student described how she had contracted a sexually transmitted disease. Some participants heard that the student contracted the disease by accident (innocent victim), whereas others heard that she contracted the disease through her own negligence (blameworthy victim). Hafer found that participants who believed in a just world and who had focused on their long-term goals were more likely than those who focused on their courses to blame the innocent victim.

According to Hafer (2000), when participants thought about their future goals, they needed assurance that their efforts would pay off. They sought this assurance by defending their just-world beliefs (e.g., do the right thing and you will get the outcome you deserve). The existence of an innocent victim, however, suggested that the world was not just. After all, the victim did everything right but still got an outcome she did not deserve. So, if participants were to maintain their just-world beliefs (which they had to do to justify exerting immediate effort for a delayed, uncertain payoff), they needed to see the innocent victim as blameworthy. They did. In short, having participants focus on the future (a delayed-return behavior) led them to activate and defend their justifying ideology.

Related to this, Bal and Van den Bos (2012) noted that people in modern, delayed-return cultures are often encouraged to focus on the future and strive for long-term goals. This future orientation is associated with intolerance of personal uncertainty, as people usually cannot be certain that their efforts will pay off. To be able to tolerate personal uncertainty, people adhere strongly to the belief in a just world, paradoxically resulting in harsher reactions toward innocent victims. Supporting this line of reasoning, Bal and Van den Bos reveal that a future orientation leads to more negative evaluations of innocent victims and enhances intolerance of personal uncertainty; they also show that experiencing personal uncertainty leads to more negative evaluations

of innocent victims. These findings suggest that while a future orientation enables people to strive for long-term goals, it also leads them to be harsher toward innocent victims. An underlying mechanism causing these reactions is intolerance of personal uncertainty, associated with a future orientation.

Personal uncertainty in delayed-return cultures can also be managed by impressions of how fairly one has been treated by important people in one's culture or subculture (Van den Bos & Lind, 2002). After all, one possibility for coping with personal uncertainty can be social integration (Hogg, 2007). Therefore, when one is focused on social integration it is important to evaluate the quality of the relationship with the group (or groups) to which one belongs. A good proxy for relationship quality can be fairness information. That is, being treated in a fair manner communicates that one is valued and respected by one's group, whereas being treated in an unfair manner signals that this is not the case. Thus, unfair treatment violates people's cultural worldviews, whereas fair treatment bolsters people's cultural worldviews (see Van den Bos & Lind, 2009; Van den Bos et al., 2005). As a result, under heightened levels of personal uncertainty (such as when personal uncertainties have been made salient, when people are strongly uncertain about themselves, or when they find personal uncertainty an especially emotionally upsetting experience) people become especially averse to unfair treatment and will react in particularly positive terms toward fair treatment (Van den Bos, 2009).

Goal Regulation and Neuro-Psychological Processes

Motivation to Attain Goals

An important assumption driving the approach we are taking in this chapter is that people are goal-directed beings for whom dynamics of goal progress drive motivational states (Gray & McNaughton, 2000; Martin & Tesser, 1989, 1996). Recent social-affective neuroscience work is beginning to delineate the basic neural processes related to goal regulation that govern worldview and meaning defenses in the face of personal uncertainty when direct resolution of the uncertainty is unavailable (Jonas et al., 2014).[1]

The anxiety arising from this personally uncertain state of alarm (Van den Bos, 2007) motivates people to do whatever is necessary to deactivate this state. If the uncertainty can be easily resolved, then people will take steps to resolve it pragmatically. Successfully doing so returns the person to a state of mind in which they can pursue goals vigorously, without being slowed down by anxious inhibition. In cases where the uncertainty cannot be resolved, however, as in delayed-return cultures, where most goals are steeped in chronic uncertainty, people turn to various palliative defenses to downregulate the anxious anxiety and inhibited processes they are experiencing (Jonas et al., 2014). They may do this by calling to mind ideals about values, fairness, morality, and worldviews. These idealistic and ideological commitments serve as abstract goals and provide relief from anxious distress without requiring expenditure of physical effort through engagement of concrete goals. Thus, the key premise here is that abstract ideals are essentially high-level goals or self-guides that operate according to similar motivational and neural processes as concrete goals (Carver & Scheier, 1998; Higgins, 1996; McGregor, 2006).

Although experiencing uncertainty may sometimes instigate contemplation or introspection (e.g., Sorrentino & Roney, 1986; Weary & Jacobson, 1997) and occasionally may even be sought out (Wilson, Centerbar, Kermer, & Gilbert, 2005), we argue that these reactions are more frequently found following informational uncertainty than following personal uncertainty. Whereas people may be able to tolerate informational uncertainties, such as what will be happening at an upcoming exciting pop concert (Hogg, 2007), we argue that uncertainty about oneself (i.e., personal uncertainty) may strongly motivate people to try to get rid of the feeling. In fact, it is our

assumption (Van den Bos et al., 2008) that personal uncertainty activates parts of the human brain that Eisenberger et al. (2003) have labeled the "human alarm system." The alarm system, beginning with a signal from the Anterior Cingulate Cortex upon detection of motivationally important uncertainties, conflicts, and discrepancies (Proulx, Inzlicht, & Harmon-Jones, 2012), causes a cascade of anxiety-related processes that culminate in full activation of the Behavioral Inhibition System (Corr, 2002, 2004; Gray & McNaughton, 2000; Nash, Inzlicht, & McGregor, 2012).

We further argue that when people's goals are likely to be blocked, this signals that their personal contract with their delayed-return culture may be in danger. The resulting activation of the alarm system may trigger hot-cognitive reactions because it is a warning sign that our current or past efforts may not pay off in the future. We hypothesize that people are so cued to these signals that they tend to respond to the experience of personal uncertainty in rather spontaneous ways. Thus, the idea is that experiencing feelings of uncertainty leads people to start processing information they subsequently receive in experiential-intuitive ways, making them react in strong positive affective terms to people and events that bolster their cultural worldviews and in strong negative affective terms to things, persons, or experiences that violate these worldviews. Therefore, affective responses tend to be sensitive measures of people's responses to reminders of personal uncertainty (Van den Bos et al., 2005; Yavuz & Van den Bos, 2009). Related to this, individual differences in emotional uncertainty tend to predict people's responses to worldview-violating others better than individual differences in cognitive uncertainty (Van den Bos, 2007).

Ideals as Goals

As reviewed in Jonas et al. (2014), when people are faced with anxious uncertainties they spontaneously turn to their ideals, ideologies, meanings, and worldviews with heightened tenacity and vigor, and doing so activates approach-motivated states. For example, uncertainties about personal, academic, or romantic goals cause people to become more zealous about their moral opinions (e.g., McGregor et al., 2001; Proulx & Heine, 2008), religious convictions (e.g., McGregor et al., 2010), meanings in life (e.g., McGregor et al., 2001), in-group and worldview loyalties (Hogg, 2007; McGregor, Nail, Marigold, & Kang, 2005; Van den Bos et al., 2005), and conservative ideologies (Jost, Glaser, Kruglanski, & Sulloway, 2003). The same uncertainty-related threats also cause people to become more idealistic in their personal goals in life and heighten approach motivation (McGregor, Nash, & Inzlicht, 2009; McGregor et al., 2010). Idealism mediates the extent to which the goals become more approach motivated (McGregor, Gailliot, Vasquez, & Nash, 2007; McGregor et al., 2010).

Evidence that these reactions function to relieve anxiety comes from experiments in which ideals, worldviews, and meanings are experimentally manipulated. McGregor et al. (2001) showed that writing about how personal goals promote core values and identifications relieves anxious uncertainty and prevents subsequent defensive reactions to personal uncertainty. Writing about opinions and value convictions similarly makes participants' personal dilemmas feel less important and makes them easier to forget (McGregor, 2006; McGregor & Marigold, 2003). Similarly, describing important identifications with meaningful in-groups relieves distress and worldview defense reactions to uncertain personal dilemmas (McGregor, Haji, & Kang, 2008; McGregor et al., 2005). Moreover, religious and political convictions are associated with decreased reactivity in the brain region that responds to conflict and uncertainty, the Anterior Cingulate Cortex (Amodio, Jost, Master, & Yee, 2007; Inzlicht, McGregor, Hirsh, & Nash, 2009). Importantly, the Anterior Cingulate Cortex is part of the cortical alarm bell that Van den Bos and colleagues (2008) have linked to the experience of personal uncertainty. Relatedly, the experience of fairness serves a palliative function for those who are undergoing uncertainty-provoking events in real life, such as employees whose organization is going through a major reorganization process with potential layoffs (Van den

Bos, Heuven, Burger, & Fernández Van Veldhuizen, 2006). In short, there is experimental, neural, and real-world evidence supporting the conclusion that people turn to reactive convictions and worldview defenses to activate approach-motivated states for relief from personal uncertainty.

Conclusions

Uncertainty Management as Reactive Approach Motivation in Delayed-Return Cultures

What we have reviewed in this chapter leads to the conclusion that enhancing investment in their worldview can help people cope with uncertainty. It helps turn an avoidance motivation into an approach motivation, and it feels good. When people experience uncertainty, they activate their Behavioral Inhibition System (Gray, 1982; see also Lind & Van den Bos, 2013; Van den Bos, 2013). Activation of this system prepares people for the possibility of fight or flight (McGregor et al., 2010), and it helps people detect alternative routes to pursue their goal. Once people adopt an alternative path to their goal, they reduce the uncomfortable symptoms of anxious uncertainty. The resumed approach motivation confers a single-minded commitment to the goal. Goal-irrelevant stimuli fade from salience. Such single-minded states are adaptive to the extent that they can facilitate undistracted goal pursuit or provide relief from anxiety. They may make people egocentric, however, as goal-extraneous information fades and one's own impulses and perspectives predominate (McGregor et al., 2010).

Tenacious pursuit seems to have a direct effect on feeling good. Neural markers of approach motivation are associated with well-being and reduced threat reactivity (McGregor et al., 2010). Indeed, Nash et al. (2012) showed that approach-motivation-related (left-frontal) patterns of electroencephalographic activation are significantly correlated with less anxious reactivity in the Anterior Cingulate Cortex (which registers conflict and uncertainty) after Stroop-task errors, which supports the joint subsystem hypothesis (Corr, 2002) that approach motivation relieves Behavioral Inhibition System activity.

Why should ideological convictions insulate people from distress about related or unrelated personal uncertainty? Active approach can confer a (typically) adaptive tunnel vision that constrains attention to incentives relevant to a focal goal (McGregor et al., 2010). Indeed, approach-related brain activity (left frontal) is correlated with muted activity in the Anterior Cingulate Cortex (Nash et al., 2012). Ideals essentially function as abstract goals that guide more concrete subordinate goals (McGregor, Nash, et al., 2009). Accordingly, focusing on worldview ideals can provide a clear, transcendent goal to approach eagerly when goals are conflicted or uncertain. Ideological conviction can thereby activate an eager, approach-motivated state and insulate people from anxiety. Indeed, meaning in life, ideals, and value salience are correlated with left-frontal neural activity characteristic of approach motivation (McGregor, Nash, et al., 2009).

Past research has indeed found that when people are faced with anxiety-inducing threats to important goals (which we see as an important cause of personal uncertainty), idealism mediates and moderates the tendency toward reactive approach motivation (McGregor, Nash, et al., 2010). Specifically, such threats to important goals caused elevated self-approach scores in an Implicit Association Test (IAT) and left-hemispheric dominance indicated by the line bisection task, especially when ideals were primed and when idealistic goals were salient, hence yielding evidence of reactive approach motivation using implicit social cognition measures and behavioral neuroscience measures.

Dispositional evidence is also consistent with the reactive approach motivation view of compensatory conviction and worldview defense. Self-esteem and other dispositions related to approach motivation, including Behavioral Activation System Drive and Regulatory Promotion Focus, have consistently been associated with the most extreme worldview defense reactions to

threats related to personal uncertainty (see McGregor & Marigold, 2003; McGregor et al., 2005). High self-esteem also predicts elevations in left-frontal neural activity characteristic of approach motivation after an academic uncertainty threat (McGregor, Nash, et al., 2009).

The goal-regulation assumptions guiding the reactive approach motivation hypothesis are further supported by evidence indicating that the same uncertainty threats that cause worldview defense also cause participants to eagerly engage in more idealistic and approach-motivated personal projects in their everyday lives (McGregor et al., 2007; McGregor et al., 2001; Nash et al., 2011). Moreover, reactive approach motivation for personal projects is heightened when personal uncertainty threats are preceded by implicitly primed personal goals in the same domain as the threats (Nash et al., 2014). Thus, there is considerable support for the notion that in our delayed-response cultures, goal-regulation processes trigger and drive reactive approach motivation in the face of experiences of personal uncertainty. We hope that the current chapter has helped to delineate our perspective on how people respond to issues pertaining to security and uncertainty in contemporary delayed-return cultures and how they cope with the blockage of personal goals in these cultures.

Notes

1   These processes involve two basic motivational systems, the Behavioral Inhibition System and the Behavioral Activation System (see, e.g., Corr, 2002, 2004; Nash, Inzlicht, & McGregor, 2012). That is, when outcomes of important goals are uncertain, frustrated, or impeded, the Behavioral Inhibition System initiates a period of inhibited and anxious vigilance (Gray & McNaughton, 2000). Behavioral Inhibition System activation occurs when one remains oriented toward the approach of important goals but simultaneously experiences punishment cues, evidence of frustrative nonreward, uncertainty, or threatening novelty in making progress toward the attainment of these goals (Gray & McNaughton, 2000). It is essentially an uncertain tension between simultaneous motivation to approach and avoid: an approach–avoidance conflict (Lewin, 1935). Thus, anxiety essentially arises from uncertain predicaments (Gray & McNaughton, 2000; Peterson, 1999)—from cues signaling possible (but not certain) impedance of an active, approach-motivated goal. This core tenet of the neuropsychology of anxiety highlights a pivotal distinction between anxiety and other negative but nonconflicted states, such as panic. In contrast to uncertainty-rooted anxiety, which arises from simultaneously active approach and avoidance impulses, panic arises from clear and often unambiguous avoidance motivation. From this perspective, it is clear why delayed-return cultures pose such a problem for the human motivational system. Important goals cannot be abandoned, and so people stay committed to them even when progress is uncertain. This chronic coactivation of approach (important goal) and avoidance (possible impedance) motives is the precise state that activates the Behavioral Inhibition System and that is characterized by an electroencephalographic, error-related negativity signal arising from the Anterior Cingulate Cortex (Proulx, Inzlicht, & Harmon-Jones, 2012; for specific links to insecurity, see Nash et al., 2014; for links to the human alarm system, see Eisenberger et al., 2003; Van den Bos et al., 2008).
2   This article has been cleared of fraud in an official investigation of the Stapel case.

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