

THEORETICAL NOTE

A Dual-Process Model of Defense Against Conscious and Unconscious Death-Related Thoughts: An Extension of Terror Management Theory

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Distinct defensive processes are activated by conscious and nonconscious but accessible thoughts of death. Proximal defenses, which entail suppressing death-related thoughts or pushing the problem of death into the distant future by denying one's vulnerability, are rational, threat-focused, and activated when thoughts of death are in current focal attention. Distal terror management defenses, which entail maintaining self-esteem and faith in one's cultural worldview, function to control the potential for anxiety that results from knowing that death is inevitable. These defenses are experiential, are not related to the problem of death in any semantic or logical way, and are increasingly activated as the accessibility of death-related thoughts increases, up to the point at which such thoughts enter consciousness and proximal threat-focused defenses are initiated. Experimental evidence for this analysis is presented.

Although few psychologists argue that people are always aware of the forces that lead them to behave the way they do, the claim that much behavior is ultimately rooted in needs far removed from the topography of the behavior in question is considerably more controversial. However, recent research conducted to test hypotheses derived from terror management theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986; S. Solomon, Greenberg, & Pyszczynski, 1991a) has demonstrated that concerns about human mortality affect a broad range of socially significant behaviors that are unrelated to the problem of death in any superficial, semantic, or logical way, including interpersonal evaluations, judgments of moral transgressors, stereotyping, in-group bias, aggression, social consensus estimates, and conformity to personal and cultural standards (for a review, see Greenberg, Solomon, & Pyszczynski, 1997). These studies support the basic TMT proposition that

people are motivated to maintain positive self-images and faith in their cultural worldviews, at least in part, because of the protection from deeply rooted anxiety that these psychological entities provide.

The present article presents an extension of TMT, which we refer to as the dual-process theory of proximal and distal defense, which specifies distinct defensive systems that deal with conscious and unconscious aspects of the problem of death. Whereas conscious thoughts of death are defended against with proximal defenses, which entail either active suppression of such thoughts or cognitive distortions that push the problem of death into the distant future in a seemingly rational manner, highly accessible unconscious thoughts of death are defended against with distal defenses, which, on the surface, bear no rational or logical relationship to the problem of death but defend against death by enabling the individual to construe himself or herself as a valuable participant in a meaningful universe.

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Responsibility for this article is shared equally among the authors.

Work on this article was supported by Grants SBR-9601474 and SBR-9731626 from the National Science Foundation, by the Alexander von Humboldt Foundation, and by Skidmore College.

We thank Jamie Arndt and Shannon McCoy for their helpful contributions.

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Terror Management Theory and Research

TMT posits that a wide range of superficially distinct forms of human behavior are oriented toward the pursuit of self-esteem and faith in a cultural worldview, to obtain the protection that these psychological structures provide from the potential for anxiety that results from the awareness of the inevitability of death in a highly intelligent, self-conscious animal that is instinctively programmed for self-preservation. Along with the evolutionary emergence of cognitive abilities that enabled members of our species to comprehend our own mortality, our ancestors developed a solution to the problem of death in the form of a dual-component cultural anxiety buffer consisting of (a) a cultural worldview—a humanly

constructed symbolic conception of reality that imbues life with order, permanence, and stability; a set of standards through which individuals can attain a sense of personal value; and some hope of either literally or symbolically transcending death for those who live up to these standards of value¹; and (b) self-esteem, which is acquired by believing that one is living up to the standards of value inherent in one's cultural worldview. Given the broad diversity of cultural worldviews (past and present) and the similarly wide variety of standards by which people obtain self-esteem, the two components of the cultural anxiety buffer are viewed as somewhat arbitrary, and therefore fragile, social constructions that require continual consensual validation to function effectively. Much human behavior is oriented toward attaining such validation and warding off threats to the distinctly human needs for faith in one's cultural worldview (meaning) and self-esteem (value). For a more complete presentation of the theory, see S. Solomon et al. (1991a).

To date, more than 75 separate experiments conducted in the United States, Canada, Germany, Israel, and the Netherlands have provided support for TMT hypotheses (for a review, see Greenberg et al., 1997). This research has been focused on two basic hypotheses and their corollaries. The anxiety-buffer hypothesis states that, to the extent that self-esteem provides protection against anxiety, then strengthening self-esteem should make one less prone to anxiety and anxiety-related behavior, and weakening it should make one more prone to anxiety and anxiety-related behavior. Consistent with this hypothesis, research has shown that self-esteem covaries inversely with anxiety and that threats to self-esteem produce anxiety (S. Solomon, Greenberg, & Pyszczynski, 1991b). Research has also shown that increasing self-esteem leads to less self-reported anxiety in response to graphic video depictions of death, less physiological arousal in response to the threat of physical pain, and less defensive distortions to deny one's vulnerability to an early death (Greenberg et al., 1993; Greenberg, Solomon, et al., 1992). Studies have also shown that both dispositionally high and experimentally enhanced self-esteem reduce the effect of death-related thought typically found on reactions to threats to one's cultural worldview (Harmon-Jones et al., 1997). These findings are complemented by other studies showing that depressed individuals, who tend to be low in self-esteem and have difficulty finding meaning in life, respond in an especially vigorous manner to reminders of their mortality (Simon, Arndt, Greenberg, Pyszczynski, & Solomon, 1998; Simon, Harmon-Jones, Greenberg, Solomon, & Pyszczynski, 1996).

The mortality salience (MS) hypothesis states that to the extent that a psychological structure provides protection against anxiety, then reminding people of the source of their anxiety should lead to an increased need for that structure and thus more positive reactions to things that support it and more negative reactions to things that threaten it. In support of this hypothesis, research has shown that reminding people of their mortality increases their need for faith in their cultural worldviews and, consequently, leads to more positive evaluations of people and ideas that support their worldviews and more negative evaluations of people and ideas that threaten their worldviews (worldview defense). To give just a few examples, MS has been shown to lead to harsher evaluations of moral transgressors and more favorable evaluations of those who uphold moral standards (e.g., Florian & Mikulincer, 1997), more favorable evaluations of those who praise the culture and more negative evaluations of those who criticize it (e.g., Greenberg et

al., 1990; Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994), and increased aggression against attitudinally dissimilar others (McGregor et al., 1998). MS has also been shown to increase discomfort when performing behavior counter to cultural norms (Greenberg, Porteus, Simon, Pyszczynski, & Solomon, 1995), increase acceptance of attitudinally dissimilar others among those committed to the value of tolerance—especially when that value has recently been primed (Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992)—and increase perceptions of social consensus for one's attitudes (Pyszczynski et al., 1996).

In these studies, MS has been operationalized in a variety of ways, including open-ended questions about participants' own death, fear of death scales, proximity to a funeral home, and gory accident footage (Greenberg et al., 1994; Nelson, Moore, Olivetti, & Scott, 1997). These effects are specific to thoughts of one's own death; parallel effects are not produced by other aversive or anxiety-producing stimuli, such as thoughts of intense physical pain, worries about life after college, giving a speech, failing an exam, or the actual experience of performing poorly on a supposed intelligence test (e.g., Greenberg et al., 1994; Greenberg, Simon, et al., 1995). Taken together, the results of studies testing the anxiety-buffer and MS hypotheses provide strong support for the TMT proposition that self-esteem and faith in the cultural worldview function, at least in part, to provide protection from deeply rooted fears of death and vulnerability. However, neither the original formulation of TMT nor the results of these studies explain the cognitive processes through which thoughts of death produce such broad-ranging effects on human thought and behavior. It is to this question we now turn.

The Role of Consciously Experienced Affect in Mortality Salience Effects

Although most people are certainly aware that they want to live and have some emotional reaction to the thought of their own death, TMT research indicates that it is the accessibility of death-related thoughts rather than the direct emotional experience of fear, anxiety, or terror that drive the interpersonal thought and behavior that constitute terror management defenses. People manage their potential for terror without having to actually experience that terror, just as people and other animals can learn to engage in actions to avoid fear-producing stimuli without experiencing the affect that such situations would engender in the absence of such avoidance responses (e.g., Sidman, 1966; R. L. Solomon & Wynne, 1953). In support of this view, research has shown that the MS inductions used in our studies do not typically increase negative affect, anxiety, physiological arousal, or other forms of psychological distress. This is not to suggest that thoughts of death never produce affect; indeed, many studies have shown that death-related thought can produce both subjectively experienced affect and physiological arousal (e.g., Alexander, Colley, & Adlerstein,

¹ The hope of literal immortality is provided by religious teachings and other aspects of cultural worldviews that provide hope that one's soul or some other remnant of the self will survive beyond the point of physical death. The hope of symbolic immortality is provided by enabling individuals to feel a part of something larger, more powerful, and more eternal than themselves, such as the family, church, nation, corporation, or other enduring social entities.

1957; Greenberg, Solomon, et al., 1992). The fact that MS increases worldview defense in the absence of such distress suggests, however, that subjective affect is not necessary for these effects to occur and that such affect does not mediate the effects of MS on cultural worldview defense.

Consistent with this view, correlational, covariance, and regression analyses have consistently failed to demonstrate a direct mediational role of subjectively experienced affect in the increased worldview defense that typically occurs in response to MS (e.g., Greenberg, Simon, et al., 1992). Indeed, some studies have shown an inverse relationship between the amount of death-related distress expressed and the extent of worldview defense observed (e.g., Greenberg, Simon, et al., 1995). The consistent finding that MS leads to increased allegiance to one's worldview in the absence of any sign of affective mediation raises an intriguing question: If consciously experienced affect does not mediate the effects of death-related thought on interpersonal thought and behavior, exactly how does such ideation produce its effects?

Distinct Modes of Defense Against Conscious and Unconscious Threats

There is clear evidence that people use a variety of cognitive distortions to deny their vulnerability to an early demise in a rational and logical manner when consciously confronted with reminders of their vulnerability (e.g., Ditto, Jemmott, & Darley, 1988; Kunda, 1987). The defensive reactions observed in our MS studies contrast sharply with such maneuvers in that terror management defenses bear no clear logical or semantic relation to the problem of death. Prescribing harsher punishment for moral transgressors, becoming more hostile toward outgroups, and exaggerating the extent of social consensus for one's attitudes have little or no logical bearing on the fact that one will die someday. From a TMT perspective, such defensive reactions shield individuals from fears surrounding death by enabling them to view themselves as valuable members of an eternal cultural reality that persists beyond the point of their own physical death.

It appears, then, that people sometimes cope with the problem of death by denying their vulnerability to life-threatening conditions in a pseudorational manner and, at other times, cope in a way that seems to bypass a rational consideration of the problem by increasing their efforts to find meaning in life and value in themselves. Current thinking in cognitive psychology suggests that there are two distinct information-processing or memory systems, one dealing with the recall and rational manipulation of declarative information about the world and the other dealing with the acquisition of skills, procedures, and behavior patterns (e.g., Graf & Schacter, 1985; Squire, 1992). Although many such dichotomies have been proposed (e.g., explicit vs. implicit memory, declarative vs. procedural memory, rational vs. experiential modes of processing), and there are important theoretical distinctions among them, if distinct cognitive systems do in fact exist, it seems likely that both systems would be involved in providing protection against basic human fears and that they might produce defensive processes that operate in very different manners.

Dual-process theory posits that conscious thoughts of death are defended against with proximal defenses: rational threat-focused attempts to remove conscious death-related thoughts from focal attention either by suppressing such thoughts with distractions or

Proximal and Distal Modes of Defense

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| <ul style="list-style-type: none"> • Proximal Defense • Deals with conscious thoughts of death at the level at which the threat is construed • Removes death-related thoughts from consciousness and/or pushes death into the distant future • Rational • Occurs immediately after mortality salience • Does not occur in response to subliminal death stimuli | <ul style="list-style-type: none"> • Distal Defense • Deals with implicit knowledge of the inevitability of death at a level distal from that at which the threat is construed • Embeds individual as a valuable member of an eternal death-transcending reality • Experiential • Occurs after distraction from mortality salience • Occurs immediately in response to subliminal death stimuli |
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Figure 1. Proximal and distal modes of defense.

by pushing the problem of death into the distant future by biasing rational inferential processes to deny one's vulnerability. Unconscious thoughts of death, on the other hand, are defended against with distal defenses: symbolic conceptions of self and reality specified by one's culture as a way of dealing with the unconscious knowledge (as opposed to current conscious awareness) of the inevitability of death. These alternate modes of defense confront the problem of death in very different ways and operate according to very different principles. An overview of the differences between these dual systems of defense is presented in Figure 1.

We refer to these distinct defensive modes as proximal and distal because they operate by attacking the threatening material at different levels of abstraction in a self-regulatory hierarchy of goals or standards (cf. Carver & Scheier, 1981). As we have argued elsewhere (e.g., Pyszczynski, Greenberg, & Solomon, 1997; Pyszczynski, Greenberg, Solomon, & Hamilton, 1990), the terror management system of defense against the fear of death can be thought of as a hierarchical organization of standards and values through which the individual acquires meaning in life and value in himself or herself. From this perspective, a biologically based drive for self-preservation and continued life is seen as a superordinate goal toward which a diverse array of more circumscribed psychological motives are ultimately oriented.² Most of the biological systems of the body (e.g., heart, lungs, kidneys; other biological systems function to facilitate reproduction) serve the superordinate goal of continued life in a direct way by keeping the animal alive and functioning. The highly abstract psychological goals of maintaining a benign and comforting conception of reality (cultural worldview) and maintaining a positive conception of oneself (self-esteem) serve the superordinate goal of continued life in an indirect and symbolic manner by assuaging the potential for

² From an evolutionary perspective, adaptations that facilitate the passing on of the organism's genes are selected for, and are thus more likely to be passed on to future generations. Thus, adaptations that keep the organism alive long enough to reproduce and care for its offspring, and that directly facilitate reproduction, are especially likely to be selected. This, of course, is consistent with Freud's conception of Eros, a basic life instinct that facilitates the survival of the species.

terror created by awareness of death, thus making ongoing pursuit of important life goals possible.

From a hierarchical perspective, the highly abstract symbolic goals of maintaining self-esteem and faith in one's cultural worldview are served by increasingly concrete means of achieving these ends. For example, self-esteem is maintained by conceiving of oneself as possessing various culturally valued attributes (e.g., intelligence, creativity, beauty) or fulfilling the requirements of various social roles (e.g., parent, professor, friend). These attributes and roles are fulfilled by demonstrating various more specific symbols one's culture deems exemplary of these identities (cf. Wicklund & Gollwitzer, 1982), which in turn are achieved by meeting the increasingly concrete sets of standards through which such symbols are attained, ultimately entailing very concrete body movements, muscle twitches, and chemical reactions.

Vallacher and Wegner (1985) posited that, at any moment, behavior can be construed at any point along such a hierarchy of abstraction. This theory implies that at any given moment, people are not consciously aware of other construals of their behavior at other levels of abstraction. For example, although it seems clear that much achievement-oriented behavior is driven by the superordinate goal of maintaining a positive self-image, one is hardly aware of this motive while engrossed in taking an exam or delivering a lecture. These other construals are thus, by definition, outside of the individual's current conscious awareness.

Proximal defenses entail attempts to defuse a threat at roughly the same level of abstraction at which it is construed. For example, coping with a failed exam by denying its validity or fairness, or coping with awareness of one's mortality by denying one's risk factors for an early death are proximal ways of coping with these threats. When threatening material is in current focal attention, it must be defended against at roughly the same level of abstraction at which the threat is construed because conscious attention instigates rational processing of information according to the rules of logic. When consciously monitoring our thoughts, we are constrained to appear to be rational, sensible, and consistent. Thus, conscious threats must be defused either by using the rules of logic to undermine their credibility or implications, or by pushing these thoughts out of consciousness with distraction or other thought-suppression tactics.

Distal defenses entail attempts to defuse a threat by attacking it at a level of abstraction different from the level at which the threat is construed. Because of the distal nature of the hierarchical relationship, the individual is unaware of the connection between the threatening material and the defensive maneuver and is thus also unaware of the defensive motivation underlying the behavior. As the relationship between threat and defense becomes increasingly distal, the defense becomes less and less related to the threat in terms of superficial, semantic, or logical linkages, and the individual becomes even less capable of realizing the defensive function of the behavior. Nonetheless, the functional relationship across the various levels of the hierarchy provide the connection through which distal defenses defuse the threat.

Unconscious threats lead to distal defense for two reasons. First, the absence of consciousness obviates the need to respond in a way that is rationally or logically connected to the threat. Second, when a threat is outside of consciousness, it is outside of conscious control and therefore is likely to trigger a spreading activation of associated concerns leading to a broader and more potentially

devastating conception of the threat. As Florian and Mikulincer (1997), Niemeyer and Moore (1994), and Wong, Reker, and Gesser (1994) have suggested, the problem of death is multifaceted, entailing a broad range of frightening aspects (e.g., annihilation, pain, unfulfilled goals, burial, cremation, decay, loss of loved ones). It may be that such broader activation further increases the need for broader distal terror management defense.

This analysis is, of course, similar in some ways to Freud's (1946) view of the unconscious as unbounded by rationality and logic, and Epstein's (1995) more recent suggestion that unconscious thought is largely experiential (rather than rational) in nature. Consistent with this view, Greenwald and Banaji (1995) have reviewed a broad range of evidence suggesting that focusing attention on or making participants aware of nonconscious but accessible stimuli often reduces or eliminates the effect of such stimuli. For example, Schwarz and Clore (1983) found that the effect of the weather on quality of life judgments was eliminated when participants were induced to describe the weather, and Bornstein (1992) found that mere exposure effects on attraction were increased by decreasing the memorability of the prior exposures. To the extent that current weather conditions are not really indicative of the quality of one's life and that frequency of exposure bears no logical connection to the quality of a stimulus, these findings are consistent with the view that conscious attention encourages rational processing and undermines irrational experiential processes.

Why not deal with both conscious and unconscious death concerns in the same way, by suppressing such thoughts or denying one's vulnerability to specific threats to a long life? We suggest that distal worldview and self-esteem defenses emerge in response to unconscious death concerns because the more proximal threat-focused defenses are of limited use in coping with the ultimate fear of annihilation that underlies the needs for self-esteem and faith in the cultural worldview. Although it may be possible to use rational defenses to push the problem of death off into the future, there is only so far that it can be pushed. Although exaggerating one's health and hardiness might create an illusory expectation of a few decades of additional life, it does nothing to combat the fact that death is inevitable and inescapable. This can be accomplished only through the use of distal terror management defenses that enable the individual to conceive of himself or herself as a person of value in an eternal world of meaning.

Proximal Defenses

The initial line of defense against conscious death-related thoughts are proximal, relatively rational, threat-focused cognitive maneuvers that push these thoughts out of consciousness, often by simply seeking distractions. For example, after passing a gruesome accident scene, a person might turn up the radio or intensify the attention being focused on plans for the evening. As ironic process theory (Wegner, 1994) suggests, seeking distractions can be an effective way of banishing thoughts from consciousness, as long as one's cognitive resources are not unduly taxed. This suppression may be augmented by the use of various rationalizing cognitive strategies to deny one's current vulnerability, thereby pushing the problem of death into the distant future. For example, people may remind themselves that they get a lot of exercise, don't smoke, have relatively low levels of serum cholesterol, and so on. If

thoughts of this nature are implausible because of clear evidence to the contrary (i.e., if people are aware that they do indeed possess risk factors of these sorts), they may use other cognitive strategies, such as denying the extent of risk that such behaviors or characteristics entail, focusing their attention on whatever evidence might be available to support a long life expectancy, or promising themselves to do what they can in the future to increase their life expectancy (e.g., I'm going on a diet next week, quitting smoking, and starting an exercise program).

In either case, the goal of these proximal defenses is to defuse the threat at the level of abstraction at which it is construed, by either pushing it out of conscious awareness through the use of distractions or diffusing the threat by convincing oneself that the threat is not an immediate problem. For the most part, these defenses are rational in the sense that they entail logical, albeit biased, analyses of available information to support the belief that death is not an immediate problem. In Epstein's (1995) terms, they involve processing within the rational system and operate according to the rules of logic and evidence. This is not to say that such processing is, in fact, logical or unbiased. As Quattrone and Tversky (1984), Kunda (1987), Ditto et al. (1988) and others have shown, people use a broad array of cognitive biases to enable them to rationally deny their vulnerability to illness and death.

For example, Kunda (1987) has shown that heavy coffee drinkers deny the validity of bogus research evidence suggesting that caffeine consumption is related to fibrocystic disease; Jemmott, Ditto, and Croyle (1986) have shown that people rate a diagnostic test as less accurate and an illness as less severe if they are led to believe the test shows them to have a fictitious enzyme deficiency; and Quattrone and Tversky (1984) have shown that people are willing to undergo higher levels of pain if they are led to believe that high pain tolerance is associated with a long life (see Croyle & Sande, 1988; Croyle & Williams, 1991; and Sun & Croyle, 1995, for related findings). In order for these biases to effectively serve their function, the individual must maintain an illusion of objectivity about his or her beliefs by controlling the information that is accessed and how it is processed so that it appears that the inference of a long life expectancy is derived in an entirely rational manner (Pyszczynski & Greenberg, 1987).

From the perspective of Kruglanski's (1980) lay epistemology theory, the desire to deny one's mortality can be thought of as a directional motive that influences how the inferential process is carried out. Pyszczynski and Greenberg (1987) proposed a more detailed biased hypothesis-testing model of how such directional motives produce biases at various steps in an information-processing sequence to yield desired conclusions. Kunda (1990) proposed a complementary model of these processes and reviewed a broad range of evidence that directional motives lead to biased conclusions by biasing various components of encoding, inferential, and retrieval processes so that one's conclusions appear objective and unbiased.

Distal Defenses

Distal defenses are activated to defend against death-related thoughts that are outside of current consciousness or focal attention. They address the problem of death in a more indirect symbolic manner by providing a sense that one is a valuable contributor to a meaningful, eternal universe. Rather than pushing the

problem of death out of consciousness or rationalizing it away into the distant future, distal defenses provide security by making one's life seem meaningful, valuable, and enduring. This attempt to deal with threats indirectly, by embedding oneself in a meaningful enduring cultural reality that is hierarchically connected to the threatening material, is the essence of distal defense.

Death anxiety is rarely experienced directly because it is too disruptive and overwhelming. Instead, it is expressed through fears about specific things (rather than anxiety about nothing), is repressed, or is transmuted into more complex forms. . . . These existential uncertainties are not necessarily eliminated or diminished through the use of logical-mathematical thought. Indeed, these uncertainties may give rise to other ways of considering the world, ways that may be non-logical in nature. (Vandenberg, 1991, p. 1279)

We are suggesting, then, that distal terror management defenses emerge when the individual is in a state that Wegner and Smart (1997) referred to as deep activation, when death-related thought is highly accessible but not in current consciousness, focal attention, or working memory. Wegner and Smart argued that this state of deep activation has a number of unique and important properties that make it especially influential in motivating human thought and behavior. In a related vein, Greenwald and Banaji (1995) suggested that implicit cognitions, of which the individual has no explicit conscious awareness, affect a diverse array of social phenomena, including attitudes, stereotypes, prejudice, and self-esteem.

Attacking the problem of death at a level in the hierarchy that is distal and remote from the actual physical reality of death may well be the only way to deal with something that the individual knows is absolutely certain to happen. Regardless of how effective one is at exaggerating one's health and hardiness, the ultimate inevitability of death cannot be rationally denied. Furthermore, although one may be able to banish thoughts of death from conscious attention, Wegner and colleagues' research (for reviews, see Wegner, 1994; Wegner & Smart, 1997) suggests that suppressed thoughts typically remain highly accessible and thus can continue to pose problems for the individual. Consequently, defenses are needed to reduce the accessibility of such thoughts. Distal terror management defenses are posited to serve precisely this function.

In summary, whereas proximal defenses are activated only when the problem of death enters current focal attention, distal defenses, involving the pursuit of self-esteem and faith in one's cultural worldview, are active whenever the individual is awake and conscious. Activation of distal worldview defense increases with increasing accessibility of death-related thought, up to the point at which these thoughts enter consciousness. At this point, proximal defenses to remove these thoughts from consciousness are initiated. Once this is achieved, distal defenses are activated in the service of reducing the accessibility of death-related thoughts, thereby keeping the potential for terror in check (see Figure 2 for a graphic depiction of this process).

Empirical Evidence for the Dual-Process Theory of Defense

Distal defense is experiential rather than rational in nature. Dual-process theory posits that the protection provided by distal defense is experiential rather than rational in nature (Epstein,

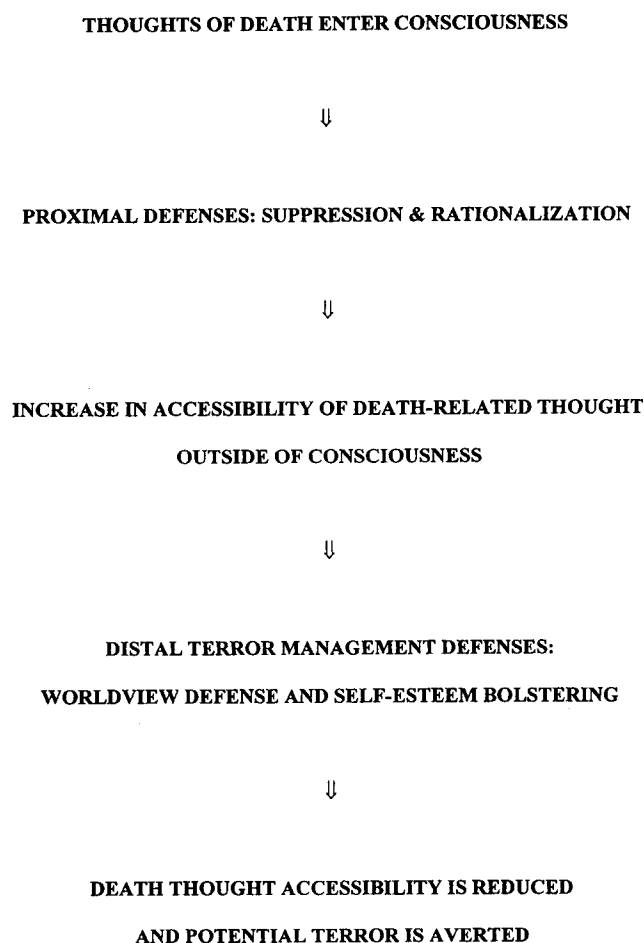


Figure 2. Defensive processes activated by conscious and unconscious death-related thought.

1995). TMT posits that the anxiety-buffering function of these defenses emerges from relatively primitive associations formed early in life between valued behavior and safety and protection provided by the parents, deistic constructs, and other powerful cultural figures. Consistent with this view, Simon et al. (1997) have shown that cultural worldview defense, a distal type of defense, emerges when individuals are in an experiential mode of processing but not when they are in a rational mode. In these studies, an experiential mode of processing was induced by exposing participants to a very casual and relaxed experimenter or encouraging them to "go with your natural gut reactions" in responding to the materials. A rational mode of processing was induced by exposing participants to a very rigid and formal experimenter or encouraging them to think carefully and logically about the materials to which they were exposed. Across three experiments, MS led to increased worldview defense among experiential mode participants but not among rational mode participants. A follow-up study then demonstrated that MS led to the highest levels of worldview defense when participants were in an experiential mode of processing both when thinking about death and when exposed to the threat to their cultural worldviews. Taken together, these findings suggest that the protection provided by the

cultural worldview is experiential rather than rational in nature.

Distal defense emerges after delay and distraction. Dual-process theory implies that death-related thoughts are especially likely to increase distal worldview defense when they are on the fringes of consciousness. Ironically, the theory also implies that keeping death-related thoughts in consciousness should attenuate or eliminate the use of these defenses. Consistent with this analysis, research has shown that worldview defense is greater in response to subtle than more blatant reminders of one's mortality (Greenberg et al., 1994, Study 1). Follow-up studies assessed the effects of distracting participants from death-related thought versus keeping such thoughts in focal attention (Greenberg et al., 1994, Studies 2 & 3). These studies showed that worldview defense is elevated only when people are distracted from death-related thoughts before they fill out the worldview defense measures.

Role of delay and distraction in proximal and distal defenses. A more recent study directly compared the effects of distraction on proximal and distal defenses in response to MS (Greenberg, Simon, Arndt, Pyszczynski, & Solomon, in press). Participants were induced to think about either their own mortality or a neutral topic and were then given the opportunity to either deny their vulnerability to an early death and then defend their cultural worldview (proximal defense followed by distal defense) or to defend their cultural worldview and then deny their vulnerability to an early death (distal defense followed by proximal defense). Proximal defense was assessed by leading participants to believe that high levels of emotionality are associated with either a long or short life expectancy and then having them rate their emotional reactivity. Proximal defense is reflected by a bias toward reporting whatever level of emotionality is thought to be associated with a long life expectancy. Distal terror management defense was assessed, as in many previous studies, by having participants read and evaluate essays written by foreign students that either praised or criticized the United States. High levels of distal defense are indicated by higher levels of preference for the pro-U.S. author over the anti-U.S. author. As predicted, proximal denial of one's vulnerability to an early death emerged immediately after the MS induction but not after a delay and distraction. Also as predicted, increases in distal worldview defense occurred when there was a delay and distraction between the MS induction and assessment of worldview defense (provided either by first filling out the vulnerability-denying measure or by completing a distracting word search puzzle) but not when assessment of worldview defense immediately followed MS. These findings support the hypothesized sequence of proximal defense occurring while death-related thoughts are in consciousness and distal defense occurring when death-related thoughts are highly accessible but not in current focal attention.

Research on proximal threat-focused defenses to deny one's vulnerability to an early death conducted by other investigators provides further support for the proposition that these defenses emerge soon after exposure to the threatening material, while the threat is still in current conscious awareness. For example, Jemmott et al. (1986) led participants to believe that they either had or did not have a fictitious enzyme deficiency. Immediately after receiving this diagnosis, participants rated the seriousness of the disorder, the accuracy of the test, and how much they would like to receive more information about the disorder. Participants who

were under conscious threat, believing they had the deficiency, showed increased proximal defense, rating the disorder as less severe and the test as less accurate than those not under threat.

A related investigation by Croyle and Sande (1988) allowed only 5 min to pass from self-diagnosis of an enzyme deficiency to completion of the dependent measures and provided further support for the use of proximal defenses when threatening material is in focal attention. Participants who believed they had the deficiency rated the disorder as both more prevalent and less serious, and the diagnostic test as less accurate, than those not so diagnosed. Related research using fictitious diagnoses of high blood pressure (Croyle & Williams, 1991) and high cholesterol (Sun & Croyle, 1995) has also shown increased use of proximal threat-focused defense when participants are consciously aware of the threat. Furthermore, unlike our studies of distal terror management defense, Sun and Croyle found an increase in both negative affect and denial of the implications of the diagnosis immediately after a fictitious diagnosis of high cholesterol. These studies show that, unlike the distal defenses observed in our MS studies, proximal vulnerability-denying defenses emerge very soon after exposure to the threatening information, while participants are still aware of the threat, and may be mediated by consciously experienced negative affect.

Role of death-theme accessibility in distal terror management defense. Terror management is an ongoing process that people continually pursue to ward off the potential for anxiety that results from the knowledge that death is inevitable. Reminders of the inevitability of death simply increase the need for the protection provided by the cultural anxiety buffer. The fact that reminders of the inevitability of death increase the intensity of worldview defense suggests that such distal worldview defense may be mediated by the accessibility of death-related thought in memory. Dual-process theory posits that the need for the cultural anxiety buffer increases as the accessibility of death-related thoughts increase, up to the point at which such thoughts enter consciousness, at which point the accessibility of these thoughts is suppressed through the activation of more proximal threat-focused defenses.

If the need for worldview defense increases with the accessibility of death-related thought, then death-theme accessibility should be relatively high under conditions that lead to high levels of worldview defense and relatively low under conditions that lead to low levels of worldview defense. For example, one would expect that death-theme accessibility would be low immediately after MS but would increase after a delay and distraction. Greenberg et al. (1994, Study 4) found exactly that in a study using a word-stem completion measure of death-theme accessibility, adapted from a similar measure used by Gilbert and Hixon (1991). Death-theme accessibility was low immediately after an MS induction but increased after a delay and distraction.

Harmon-Jones et al. (1997) have shown that both high levels of dispositional self-esteem and situationally imposed boosts to self-esteem reduce or eliminate the effect of MS on worldview defense. Furthermore, the same situational boost to self-esteem that eliminated the effect of MS on worldview defense also eliminated the delayed increase in death-theme accessibility that was found in a neutral self-esteem control condition and in previous research (Greenberg et al., 1994). Similarly, Simon et al. (1997) have shown that whereas MS increases worldview defense when participants are in an experiential but not a rational mode of process-

ing, putting participants in a rational mode also eliminates the delayed increase in death-theme accessibility that emerges when participants are in an experiential mode. Thus, a convergence of the conditions that lead to high death-theme accessibility and those that lead to high worldview defense has been found across three distinct moderating variable paradigms.³

The effect of subliminal death-related stimuli. If high levels of death-theme accessibility increase distal terror management defense, then high death-theme accessibility should lead to high levels of worldview defense even if there has been no conscious consideration of death-related issues. To assess this possibility, we examined the effect of subliminal reminders of death on both death-thought accessibility and cultural worldview defense (Arndt, Greenberg, Pyszczynski, & Solomon, 1997). If worldview defense following conscious consideration of death does not occur immediately because people seek distraction or use other proximal defenses, then there should be no need for either delay or distraction after subliminal stimuli to produce increases in death-theme accessibility and worldview defense.

In the first study, participants were shown two words (which actually functioned as masks for the subliminal stimuli) for 428 ms each and were asked to indicate whether the words were related. In the interval between presentation of the masks, the words *death* or *field* were presented for 43 ms on 10 separate trials. The subliminal nature of the presentation of the crucial stimuli was demonstrated by findings that no participant reported seeing the word, none could guess the word in a free-response format, and when asked to pick the word from a list of four, participants' responses did not differ from chance levels. Even when told that there was a word between the masks and asked to guess between *dead* and *pain* after each trial, correct guesses did not exceed chance levels. Accessibility of death-related thoughts was assessed as in previous studies, with a word-stem completion task in which participants could respond with either death-related or neutral words. Subliminal presentation of the word *death* led to significantly higher levels of death-thought accessibility than subliminal presentation of the neutral word. More importantly, subliminal death stimuli also led to increased preference for a pro-American author over an anti-American author (increased worldview defense). These findings were replicated in a follow-up study in which a subliminal death-related stimulus (the word *dead*) was contrasted with a subliminal presentation of another negative word (*pain*). Again, subliminal death-related stimuli led to increases in both death-theme accessibility and worldview defense.

Importantly, whereas our typical supraliminal MS treatment leads to worldview defense only after a delay and distraction, the subliminal death stimuli used in both studies produced their effects immediately after presentation. This suggests that it is the accessibility of death-related thought rather than some other effect of

³ Although it would be desirable to assess both death-theme accessibility and worldview defense within the same participants so that mediational analyses could be conducted, doing so poses a daunting methodological challenge. The existing evidence suggests that assessing death-theme accessibility would be likely to affect that accessibility and perhaps even make such thoughts conscious, which would then affect the incidence of worldview defense. For this reason, we have relied on converging manipulations and measures in separate studies for evidence of mediation.

delay and distraction that plays the critical role in initiating increased worldview defense. A final study replicated the finding that subliminal death stimuli produce an immediate increase in worldview defense and showed that the same stimuli presented at a slower speed that participants could easily perceive did not produce an immediate increase in worldview defense. These findings demonstrate that by activating unconscious goals, subliminal primes can exert an influence on social judgments that extends far beyond semantic or conditioned associative linkages.

Evidence for high accessibility in the absence of consciousness. The results of these studies show that thoughts of death lead to distal terror management defenses when such thoughts are in a state of deep activation (Wegner & Smart, 1997), on the fringes of consciousness, highly accessible, but outside of current focal attention. The conditions that lead to high levels of death-theme accessibility, such as delay and distraction or subliminal reminders of death, are the same ones that produce high levels of worldview defense. Although it is unlikely that death thoughts are in focal attention under these conditions, the evidence reviewed up to this point does not rule out this possibility; however, a recent study has done just that. Participants were led to think about death or dental pain, were asked to read the same distracting reading passage used in Greenberg et al. (1994), were asked to write down whatever thoughts came to mind during the ensuing 3 min, and finally, completed a word-stem death-thought accessibility measure. The results showed that death was not prevalent in the thought samples for either condition, even though as in prior research, accessibility of death thoughts was elevated in the MS condition. Thus, the conditions under which worldview defense is amplified are those in which death thoughts are accessible but not in focal attention.

Evidence for active suppression of conscious death-related thought. The function of proximal threat-focused defenses is to push threatening thoughts out of consciousness; one of the most common initial responses to thoughts of death is the simple suppression of threatening thoughts by focusing on distractions. Wegner's (1992, 1994) ironic process theory of such suppression posits two interacting processes: an operating process that seeks distractions to push undesirable thoughts out of consciousness and a monitoring process that scans consciousness for signs of failure of the suppression (i.e., contents related to the to-be-suppressed thought). Because the monitoring process is posited to function automatically with little need for cognitive resources and the operating process is assumed to be effortful and resource dependent, Wegner hypothesized and found that high levels of cognitive load undermine efforts at suppression and thus lead to hyperaccessibility of to-be-suppressed thoughts (e.g., Wegner & Erber, 1992). On the basis of this model, we reasoned that if participants are suppressing death-related thoughts immediately after being reminded of their mortality, then putting them under high cognitive load should increase both the accessibility of such thoughts and worldview defense immediately after an MS induction.

Arndt, Greenberg, Solomon, Pyszczynski, and Simon (1997) tested this reasoning in a series of studies in which the accessibility of death-related thought and worldview defense were assessed after MS under varying conditions of cognitive load. Specifically, participants were asked to rehearse and remember an 11-digit number, were exposed to MS or a control treatment, and were then asked either to do a word-stem completion task to assess death-thought accessibility or to read and evaluate pro- and anti-U.S.

essays. They were further instructed to stop rehearsing the number at one of several points in the procedure, thus enabling us to vary the point at which the cognitive load was released. Whereas participants not under high cognitive load at the time of assessment exhibited elevated levels of both death-theme accessibility and worldview defense in response to MS only after a delay and distraction, those under high cognitive load at the time of assessment exhibited high levels of both death-theme accessibility and worldview defense immediately after the MS induction. This result is consistent with previous findings that subliminal but not supraliminal death stimuli produce immediate increases in distal defense.

The fact that high cognitive load led to an immediate increase in both death-theme accessibility and worldview defense suggests that people normally attempt to actively suppress such thoughts and that such suppression is successful in the absence of strong demands on their processing capacity, providing further evidence that the proximal defense of suppressing death-related thoughts occurs immediately after MS. When such thoughts are out of consciousness but highly accessible, as under conditions of high cognitive load, distal terror management defenses then increase in intensity.

Worldview defense decreases the accessibility of death-related thoughts. Perhaps the most basic question about the dynamics of terror management is how the cultural anxiety buffer serves its terror management function. The finding that increases in the accessibility of death-related thoughts stimulate increased efforts to maintain the cultural anxiety buffer suggests that increases in the strength of the cultural anxiety buffer might reduce the accessibility of death-related thoughts. Arndt, Greenberg, Solomon, et al. (1997, Study 3) tested this proposition in an experiment in which participants were induced to think about either death or a neutral topic, were exposed to essays that attacked the cultural worldview, and then either were or were not given an opportunity to defend their worldviews by derogating the essays and their authors. Accessibility of death-related thoughts was then assessed. MS increased the accessibility of death-related thoughts among participants not given the opportunity to defend their worldviews. In addition, as in previous studies, participants who were given the opportunity to defend their worldviews took advantage of this opportunity and derogated the anti-American author and essay. Most importantly, for present purposes, participants who were given the opportunity to defend their worldviews failed to show the pattern of delayed increase in death-theme accessibility that was observed among the MS no-opportunity-to-defend participants. These findings suggest that defending one's cultural worldview in response to MS functions to reduce the increase in death-theme accessibility that would occur in the absence of such defense.

This study did not resolve the important question of whether the low levels of death-thought accessibility that resulted from worldview defense reflect an actual dissipation of such thoughts or a resuppression of them. To answer this question, we recently conducted a study in which MS was manipulated and participants either were or were not given an opportunity to defend their cultural worldviews (as in Arndt, Greenberg, Solomon, et al., 1997). Half of the participants given an opportunity to defend their worldviews were put under high cognitive load until after the accessibility measure was administered. If these latter participants

were suppressing death-related thoughts, the cognitive load should have disrupted this suppression, thereby leading to high death-thought accessibility. However, if the low death-thought accessibility is because of an actual dissipation of such thoughts, accessibility under high cognitive load should remain low. As in Arndt, Greenberg, Solomon, et al. (1997), whereas participants not given an opportunity to defend their worldviews showed an increase in death-thought accessibility, those who were given an opportunity to defend their worldviews exhibited no such increase, regardless of level of cognitive load. The fact that cognitive load had no effect on death-thought accessibility after worldview defense suggests that worldview defense produces an actual dissipation of the accessibility of such thoughts rather than a mere suppression of them. Although additional research on the cognitive consequences of worldview defense is needed, these findings suggest that worldview defense serves its terror management function by reducing the accessibility of death-related thought.

Dual Modes of Defense Against Other Types of Conscious and Unconscious Threats

Although our focus has been on the defensive processes activated by thoughts of death, it may be worth considering the relevance of this analysis to other types of threats and defenses. The vast majority of contemporary conceptions of defensiveness focuses exclusively on defense against threatening material within consciousness at the same level of abstraction as the threat itself. For example, research has shown that people use a wide variety of defensive distortions to maintain a positive self-image, including self-serving attributions (e.g., Zuckerman, 1979), self-handicapping strategies (e.g., Berglas & Jones, 1978), downward comparison (e.g., Wills, 1981), reflection processes (e.g., Tesser, 1988), and thought suppression (e.g., Wegner, 1994). Research has shown that these defensive responses can occur very quickly (Paulhus & Levitt, 1987), that they are activated by negative affect and intensified by unlabeled arousal (Gollwitzer, Earle, & Stephan, 1982), and that their use decreases negative affect (Mehlman & Snyder, 1985). Because these defenses defuse the threat by either removing it from consciousness through distraction or using the rules of logic and rationality to strip the threat of its validity, credibility, or applicability to oneself, they fit well with our conceptualization of proximal defense.

Whereas most recent research on self-esteem defense has dealt with defensive maneuvers focused directly on the threatening material, some studies have investigated more distal forms of defense focused on global self-esteem. For example, Baumeister and Jones (1978) and Greenberg and Pyszczynski (1985) have shown that people sometimes inflate their global self-evaluations after public failure. Similarly, Steele's (1988) research on self-affirmation suggests that people sometimes respond to specific threats to self-esteem or consistency by affirming their global values. Findings of basking in reflected glory (Cialdini & Richardson, 1980) and other interpersonal self-evaluation maintenance tactics (Tesser, 1988) also seem to deal with a specific threat by shoring up one's global sense of self-worth. These compensatory defensive strategies do not directly address the specific threat to self-esteem posed by a particular failure or inconsistency; instead, they seem focused on restoring the general abstract psychological entity—self-esteem—that was undermined by the particular threat.

From the present perspective, they would be conceptualized as midrange defensive strategies, more distal than the specific threat-focused defenses observed in most research on self-esteem defense (e.g., self-serving attributions, self-handicapping), but more proximal than the symbolic terror management defenses in which cultural beliefs and values are used to protect one from concerns about death, which have no semantic or logical ties to the problem of death.

These midrange defenses show that our proximal–distal dichotomy is a rough way of categorizing different points on a continuum with respect to how remotely they are related on a hierarchy of standards, just as the distinction between conscious and unconscious awareness of threatening material is also better conceptualized as a continuum than as a rigid dichotomy. The present perspective suggests that as threatening material becomes less conscious, one is likely to respond with increasingly distal ways of defending against the threat.

Although research on self-esteem defense has thus far focused only on consciously experienced threats, it may be interesting to investigate the effects of threats to self-esteem presented outside of conscious awareness. Although posing unconscious threats to self-esteem may entail some difficult methodological challenges, recent work by Baldwin and colleagues suggests that information outside of focal consciousness can indeed activate self-evaluative responses and self-esteem concerns (e.g., Baldwin, Carrell, & Lopez, 1990; Baldwin & Sinclair, 1996). Would such unconscious threats to self-esteem lead to a broader and more distal style of defensive response? Would these more distal forms of defense emerge after consciously processed threats to self-esteem are removed from focal attention by delay, distraction, or both? These are but a few of the novel but as yet unexplored questions about other types of defenses that arise out of the dual-modal conception of defense.

Summary and Conclusion

We have provided evidence that separate and distinct defensive systems are activated to defend against thoughts of one's mortality that are in current focal consciousness and death-related thoughts that are highly accessible but not in current conscious attention. Conscious thoughts of death are responded to with proximal, threat-focused defenses that function to either push these thoughts out of consciousness or to push the threat of death into the distant future by denying one's vulnerability and emphasizing one's prospects for longevity. Nonconscious thoughts of death are responded to with distal terror management defenses that enable the individual to view himself or herself as a valuable participant in a meaningful universe. As nonconscious death-related thoughts become increasingly accessible, the need for the symbolic protection provided by self-esteem and faith in one's cultural worldview increase, and the individual becomes increasingly motivated to maintain these structures and defend them against threats. Through these processes, nonconscious concerns about death have a broad-ranging influence on social judgment and behavior.

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Received February 10, 1998

Revision received January 29, 1999

Accepted January 29, 1999 ■