TALES FROM THE CRYPT:
ON THE ROLE OF DEATH IN LIFE

by Sheldon Solomon, Jeff Greenberg, and Tom Pyszczynski

Abstract.　　An existential psychodynamic theory is presented based on Ernest Becker's claim that self-esteem and cultural worldviews function to ameliorate the anxiety associated with the uniquely human awareness of vulnerability and mortality. Psychological equanimity is hypothesized to require (1) a shared set of beliefs about reality that imbues the universe with stability, meaning, and permanence; (2) standards by which individuals can judge themselves to be of value; and (3) promises of safety and the transcendence of death to those who meet the standards of value. An empirical research program in support of this theory is then described, and the personal and interpersonal implications of these ideas are briefly considered.

Keywords:　　culture; death; prejudice; psychological defenses; religion; self-esteem; socially constructed reality.

"I can't imagine myself ever dying, Daddy, can you?"
　　　　　　　　　　　　　—Ruby Solomon, age nine, January 1997

"No."

　　　　　　　　　　　　　　— Sheldon Solomon (Daddy)

"My three wishes would be to never die, be the richest person in the world, and have all the video games."
　　　　　　　—Jonathan Murray Greenberg, age six, September 1992

"Smart kid."

　　　　　　　　　　　　　　—Jeff Greenberg (Daddy)

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I hope I don't die while I'm still a kid
I am a girl who loves her dog.

—by Marya Myszczynski, age eight,
from the poem entitled "I Am a Girl Who Loves Her Dog,"
February 1997

"Whoa!"

—Tom Pyszczynski (Daddy)

The late cultural anthropologist Ernest Becker argued in *The Structure of Evil* (1968) that the primary responsibility of social scientists is to address the question, *Why do people do what they do when they do it?* in order to develop a comprehensive account of the motivational underpinnings of human behavior in the service of promoting constructive individual and social change. For Becker, a careful *integration* and *synthesis* of important insights gleaned from evolutionary biology, anthropology, psychology, sociology, the humanities, and listening to our children yields a broad and powerful conceptual analysis of human motivation based on the notion that the awareness of death, and the consequent denial thereof, is a dynamic force that instigates and directs a substantial proportion of human activity (Becker 1962/1971, 1968, 1973, 1975).

    Despite commercial success and popular acclaim—especially the 1974 Pulitzer Prize for general nonfiction for *The Denial of Death* (1973)—Becker's work was generally dismissed by academics at the time as either untestable and therefore beyond the bounds of legitimate science or wild speculation based on psychological constructs of dubious validity derived from psychoanalysis. But as experimental social psychologists interested in understanding the psychological function of self-esteem and the reasons why people have such an inordinately difficult time peacefully coexisting with different others, we were convinced, when we first encountered Becker's books in 1980, that the ideas were profound and could have powerful implications for understanding and affecting human behavior, that they could be framed in ways that would allow us to test them directly, and that they might even be true. We consequently developed *Terror Management Theory* (Greenberg, Pyszczynski, and Solomon 1986; Solomon, Greenberg, and Pyszczynski 1991; Greenberg, Solomon, and Pyszczynski 1997) and have acquired a large body of experimental evidence in support of Becker's central claim that concerns about mortality play a pervasive role in human affairs. In this paper, an overview of the theory will be followed by an account of our empirical research program and a brief consideration of the individual and social implications of these ideas.

TERROR MANAGEMENT THEORY

> That I might drink, and leave the world unseen,
> And with thee fade away into the forest dim:
> Fade far away, dissolve, and quite forget
> What thou among the leaves has never known,
> The weariness, the fever, and the fret
> Here, where men sit and hear each other groan;
> Where palsy shakes a few, sad, last gray hairs,
> Where youth grows pale, and spectre-thin, and dies;
> Where but to think is to be full of sorrow
>   And leaden-eyed despairs;
> Where beauty cannot keep her lustrous eyes,
> Or new Love pine at them beyond tomorrow.
>   (John Keats, "Ode to a Nightingale")

Becker insisted that a truly scientific account of human behavior be framed in a manner that recognizes both the commonalities between humans and all other forms of life, and (especially) the characteristics that render us *distinctly* and *uniquely* human:

culture and history and religion and science . . . [are] different from anything else we know of in the universe. That is a fact. It is as if all life evolved to a certain point, and then in ourselves turned at a right angle and simply exploded in a different direction. (Jaynes 1976, 9).

Accordingly, we begin our analysis with the Darwinian assumption that human beings share with all life-forms a fundamental predisposition toward self-preservation in the service of individual survival, which in turn enhances the reproductive success of the individual and hence fitness of the species. There are an infinite number of possible physical, behavioral, and psychological adaptations that could in principle render specific species better suited for their particular environments; therefore different strategies for satisfying that most basic need for continued existence have evolved in different species. Bird wings, turtle shells, rosebush thorns, bat radar, and bee dances are all exquisite examples of marvelous adaptations by life-forms that have been in existence for millions of years.

Humans, relative latecomers to the evolutionary scene—lacking in physical size, speed, strength, and sensory acuity—embarked upon a radically different evolutionary trajectory by relying on complex cognitive activities made possible by the highly sophisticated structure of the human brain. This culminated in a conscious and self-conscious creature with a linguistically constructed self (*I*) that serves to regulate thoughts, feelings, and behaviors and provides human beings with an unprecedented degree of what Becker called "freedom of reactivity"

(Becker 1971, 7). Simpleminded creatures have relatively little freedom of reactivity; they respond immediately, instinctively, and invariably to the specific demands of their immediate circumstances (e.g., insects that seem to fly not only toward lights but even into candles and light bulbs hot enough to kill them). Human beings, however, are able consciously to refrain from reacting immediately in order to ponder alternative responses and consider their potential consequences, or to imagine new possibilities that are subsequently transformed into reality (e.g., the helicopter was envisioned by Leonardo da Vinci in the fifteenth century, and although dismissed as maniacal at the time, Leonardo's dream became reality some four hundred years later). This ability to react to the world in ways that alter it in accordance with our expectations and desires is what makes human beings the only truly creative species and is surely one of the primary reasons why we probably evolved from a small band in a single location in Africa to large numbers of rapidly proliferating humans in every conceivable environmental niche today.

Thus, from an evolutionary perspective, cognitive complexity has clearly served us well. But an unavoidable consequence of this vast intelligence culminating in consciousness is the explicit and unsettling awareness that death is inevitable, compounded by the concurrent realization that one is perpetually vulnerable to permanent obliteration for reasons that can never be adequately anticipated or controlled. What an appalling affront to share the intense desire for continued existence with all living things but be smart enough to recognize the ultimate futility of this most basic biological imperative:

. . . it has always seemed to me that the only painless death must be that which takes the intelligence by violent surprise and from the rear so to speak since if death be anything at all beyond a brief and peculiar emotional state of the bereaved it must be a brief and likewise peculiar state of the subject as well and if aught can be more painful to any intelligence above that of a child or an idiot than a slow and gradual confronting with that which over a long period of bewilderment and dread it has been taught to regard as an irrevocable and unplumbable finality, I do not know it. (William Faulkner [1936] 1990, 141–42)

Becker, following Freud and especially Otto Rank, asserted that humans would be riddled with abject terror if they were constantly plagued by the ongoing awareness of their vulnerability and mortality —twitching blobs of biological protoplasm completely perfused with anxiety and unable to effectively respond to the demands of their immediate surroundings. Consequently, *cultural worldviews* evolved; these are humanly created beliefs about the nature of reality shared by groups of people that served (at least in part) to manage the terror engendered by the uniquely human awareness of death (hence our term *terror management*).

Cultural worldviews facilitate effective terror management by providing individuals with a vision of reality that supplies answers to universal cosmological questions such as Who am I? Where did I come from? What should I do? What will happen to me when I die? in ways that imbue the universe with meaning, permanence, and stability and give hope of symbolic or literal immortality. Accordingly, all societies provide their members with an account of the origin of the universe and explicit instructions about what to do while alive. And all cultures provide precise information regarding death that affords opportunities for individuals to live forever—either symbolically, by producing great works or amassing great fortunes that extend beyond the individual's lifetime and therefore serve as a physical testament to a person's existence, or through religious beliefs that promise immortality in a variety of ways, from the Eastern conceptions of reincarnation to the more familiar (to Westerners) notion of heaven as "a world of castles, flowing rivers, and lush fields" where the blessed "can eat the most delicious food, the most luscious fruits and the tenderest cuts of meat" (Sheik Abdulla Shami, spiritual leader of Islamic Jihad, as reported by Abu-Nasr 1995, 1A).

Eligibility for immortality is, however, limited to those who do the right thing. This entails adhering to the standards of appropriate conduct associated with the social roles that exist in a given culture: for example, for a farmer in an agrarian culture, growing large pumpkins, or for a person in a society that values athletic achievement, winning an Olympic medal. The resulting perception that one is a *valuable* member of a *meaningful* universe constitutes *self-esteem*; and self-esteem is the primary psychological mechanism by which culture serves its death-denying function. But how does adhering to culturally prescribed standards of behavior in pursuit of the belief that one is a valuable member of a meaningful universe confer psychological equanimity in the face of death?

Self-esteem acquires its anxiety-buffering qualities in the context of the socialization process by which an utterly helpless and dependent, immature and slowly developing human infant is transformed into a symbol-sharing immortality-seeking member of a culturally constructed universe. According to the seminal work of John Bowlby (1969), this process is initiated by the neonate's unlimited capacity for the experience of primal anxiety, especially in novel situations. Long before babies have any awareness of death or have acquired the physical, emotional, and intellectual equipment to survive on their own, the raw terror that results from an unmet need or the unexpected intrusion of a large predator forges the development of physical and psychological attachments to primary caretakers who are able to nurture and defend their progeny. Such attachments in turn provide a sense of profound safety and security to the young child bathing in the unconditional and all-encompassing love of

their seemingly omniscient, invincible, and inexhaustible parents. Those were indeed the good old days!

Eventually, however, children must join their social milieu by learning the language, beliefs, and customs of their culture, and toward this end parental affection becomes increasingly contingent on the child's behaving in socially acceptable ways. Urinating in the toilet bowl becomes a joyous occasion that provokes an outburst of unmitigated parental praise, engendering feelings of well-being on the part of the micturitionally correct child; but urinating in the salad bowl generally provokes a host of completely different parental reactions, all of which entail a very salient absence of affection, engendering anxiety and insecurity (and for Bowlby, the fear of abandonment) on the part of the not-quite-yet-American infant. In this way, children come to associate being good with being safe (good = safe = alive) and being bad with being helpless and vulnerable (bad = insecure = dead). This is how self-esteem originally becomes an anxiety buffer.

How and why do the anxiety-buffering qualities of self-esteem, initially derived from pleasing parents in the context of socialization, ultimately come to depend on adhering to the standards of the culture at large? Preparation for this transition begins during socialization, as children learn the ways of the world suffused through their culture's history, religion, and folklore. From Moses to Jesus to George Washington to Superman to Hercules and Xena, children learn about living in a dangerous world in which the good and virtuous are rewarded with fame, fortune, and continued existence, whereas the wicked are humiliated, exiled as social outcasts, or become cannon fodder to be obliterated by the superior power of good over evil. The transition then begins as children become increasingly aware of the nature and personal implications of the inevitability of death. According to Irvin Yalom (1980), this begins as early as age three and is surely a prominent concern of children by age nine or ten, at which time the promises of safety and death transcendence offered by the culture become more compelling and reassuring to children than even the best efforts of their now seemingly not so omniscient, not so infallible, invincible, and immortal, all-too-human progenitors. Self-esteem is now derived from doing the right thing in terms of the culturally prescribed standards of conduct associated with specific social roles provided by the culture.

This analysis has several important implications. First, although self-esteem is posited to be a universal need of all humans, the social roles and associated standards of appropriate conduct by which self-esteem is acquired and maintained are both historically and culturally relative: "Prestige as a social phenomenon is a 'cultural universal'; . . . The particulars in these matters vary from one culture to another, but

the generalization that there are public expressions of personal worth remains constant . . . it gives purpose and direction to individual lives even while it is a matter conferred by the community" (Goldschmidt 1990, 33).

For example, in Western Europe in the Middle Ages, the traditional Christian worldview stressed virtue and compassion as means to salvation, whereas making excessive profit, more than the actual value of what one produced or what one needed to live comfortably, was called *avarice* and was considered a mortal sin (Fromm 1941, 71). Today, of course, there is no such stigma attached to the infinite pursuit of material wealth. Indeed, in America wealth is a central means (along with physical attractiveness) of acquiring self-esteem; an extreme form of this value system is evidenced by books such as Ayn Rand's *The Virtue of Selfishness* (1964) or the more recent proclamation by billionaire Wall Street trader (and convicted felon) Ivan Boesky that "There is nothing wrong with greed." In contemporary polygamous cultures (e.g., the Maasai in Kenya) a man is regarded in proportion to how many wives he has; whereas obviously the same man in Western Europe or America today (certain parts of Utah excepted) would break the law by having more than one at a time. The somewhat unnerving point here is that although self-esteem is an individual psychological attribute, it is ultimately culturally constructed in that there is no straightforward way to feel good about oneself in the absence of socially prescribed standards of right and wrong; and there are consequently no absolute and transcendental standards by which human beings can ever differentiate between good and evil (see Nietzsche's *Beyond Good and Evil* [(1886) 1966] and *On the Genealogy of Morals* [(1887) 1967] for extended discussions of this idea).

Second, just as the standards by which self-esteem is acquired are arbitrary in that they vary across time and space, so too are cultural worldviews arbitrary in that there is a potentially infinite variety of cultural worldviews that have existed, do exist, or could conceivably exist, each of which is believed by the average enculturated individual to be an absolute representation of reality. But no cultural worldview is literally true: "No scheme of things has ever been both coextensive with the way things are and also true to the way things are." And there is no way to unambiguously confirm the veracity of any cultural conception of reality; consequently individuals must ultimately rely on faith—"the conviction with which it is held as self-evidently true" (Wheelis 1980; cf. Hofstadter 1985, 57)—in order to preserve their belief in the particular culturally prescribed vision of reality that they subscribe to. Therefore all cultural worldviews are fundamentally religious in nature, even (indeed, especially) those that make explicit claims to the contrary. For years the "godless Communists" in Russia poured into the Kremlin to bow to Lenin in a

glass tomb; and in America, where government is explicitly based on the separation of church and state, one need only gaze at the back of a dollar to note that trust in God, not gold, underlies and sustains our faith in the magical wonders of free enterprise.

Finally, this conceptual analysis helps us understand why human beings have such a difficult time peacefully coexisting with different others. To the extent that cultural worldviews serve to ameliorate the anxiety associated with the awareness of death, the mere existence of others who have different beliefs about the nature of reality poses an explicit challenge to the claims of absolute truth of one's own point of view, thus undermining the anxiety-buffering capacity of that worldview and instigating defensive responses that serve to restore psychological equanimity through the acquisition of a new cultural worldview or enhanced allegiance to the original worldview (see Berger and Luckmann, *The Social Construction of Reality* [1966] for an extended discussion of such responses).

People occasionally respond to different others by abandoning their own worldview in favor of the worldview of the other. Religious and political conversions are the most obvious examples of this phenomenon; the Bible-thumping, bearded Christ look-alike extolling the virtues of the Cross one day is wearing a bedsheet, has a Kojak haircut and is selling incense for a guru the next; and the sixties student radical becomes chairman of the Stockbrokers for Newt lobby in Congress. But there are more subtle conversions that take place routinely and serve the same psychological purpose: the lifelong consumer of Coke switches to Pepsi when "Just for the Taste of It" begins to pale against the allure of "The Next Generation"; or the hordes of Grateful Dead fans (Dead Heads) who transferred their allegiance to Phish (Phish Heads) following the death of guitarist Jerry Garcia.

More often, however, people respond to the threat posed by the existence of different others not by changing their own worldview (in which case most of us would have different religious icons almost every day) but by behaving in ways that restore absolute confidence in their original point of view. Most common in this regard is the tendency to derogate the different other as a means to minimize the need to seriously entertain the merits of a radically different worldview. So, for example, a devout Christian who believes in a literal interpretation of Genesis (i.e., that God created the earth in six days before taking a well-deserved break) might initially be very unsettled by an encounter with a Tewa Indian who believes that the Hunt Chief created the universe by handing a blue ear of corn to one man and a white ear of corn to another and then instructed them to care for their people in the summer and winter, respectively. But if the Christian brands and dehumanizes the Tewa as preliterate, firewater-guzzling, bingo-playing savages who live in clay houses and worship the spirits of dead animals, the corny creation story that the Tewas

subscribe to no longer poses a serious challenge to the received wisdom of the biblical literalists.

An even more effective approach is to convince individuals who are different to dispose of central aspects of their individualized version of the cultural worldview (depending on the individual, this might be religion, political party, taste in wine, music, spouse, car, pet, or favorite sports team) and adopt those of the majority. Although all cultural worldviews are humanly constructed and thus somewhat arbitrary social fictions, their primary function of preserving psychological equanimity (indeed, making it possible at all) nevertheless requires that the worldview be accepted by its adherents as absolutely and unequivocally true; and this most arduous task of converting "social fiction" into absolute "truth" is more easily accomplished when there is a broad social consensus in support of a specific worldview. So when people who are different are convinced (or compelled) to adopt the beliefs of the dominant majority, the result is even broader social support for, and thus greater faith in, those beliefs. Christian missionary activity is perhaps the most obvious large-scale historical example of this phenomenon that has persisted and still thrives today. Christian fundamentalists routinely have their confidence in their brand of Christianity boosted by a delirious Jimmy Swaggart or Pat Robertson boisterously proclaiming the most recent inroads of radio evangelism and airborne missionaries and subsequent conversion of the indigenous peoples of Third and Fourth World nations. Those who subscribe to the belief that the invisible hand, not of God, but of the free market, is the ultimate path to salvation must be extremely comforted by the heaping mountains of Happy Meal toys streaming in from mainland China as the best sign that the last serious throwback of Communism is about to join us in the twentieth-century belief that there is no human problem that cannot ultimately be solved with the appropriate business plan and adequate investment capital.

Rather than convincing those who are different to dispose of their beliefs and adopt those of the majority, a somewhat more subtle (and therefore perhaps more insidious) response is to incorporate different others or portions of their alien worldviews into the dominant worldview but in ways that divest them of their threatening character. For example, blue jeans were once considered absolutely inappropriate clothing by many Americans living in the Northeast in the 1950s, who believed that only hard-drinking, mother-raping, motorcycle-riding Hell's Angels types wore them—just about the only white people at the time who voluntarily excluded themselves from the American dream. Today, however, blue jeans are a multi-billion-dollar industry, a familiar sight in even the most wealthy American's wardrobe, worn without disgrace in almost every imaginable social setting. And even the Hell's Angels have attained a kinder and gentler

image in American popular culture, having been transformed from the hideous monster ushers at Altamont to Fonzie on "Happy Days" and middle-aged accountants on Harleys with Visa cards charging their way across the country at weekend rallies with like-minded compatriots.

Finally, a not-at-all-subtle response to the threat posed by the existence of others with divergent cultural worldviews is to annihilate them, thus proving that one's own point of view must have been "true" after all. From this perspective, the ongoing series of armed conflicts that characterizes the history of the human race is best understood in psychological terms: the result of a fundamental inability to tolerate those with different death-denying visions of reality that result in mutually exclusive claims to immortality. This is not to suggest that wars have no basis in rational political and/or economic disputes; surely they do. But ultimately it is more fundamentally sacred/religious concerns that are required to convince mothers to send large numbers of a culture's young men to almost certain death. For example, when Iraq invaded Kuwait in 1990, President Bush initially framed public discourse about the conflict in purely economic terms: "Our jobs, our way of life . . . would all suffer if control of the world's great oil reserves fell into the hands of Saddam Hussein." (Apple 1990, A14). But Americans were not about to risk their lives for a job or a tank of gas, so not surprisingly, Bush's rhetoric changed significantly when it came time to actually send in the troops: "This is an historic moment. We have in this past year made great progress in ending conflict and cold war. We have before us an opportunity to forge for ourselves and for future generations a new world order, a world where the rule of law, not the law of the jungle, governs the conduct of nations" (*New York Times* 1990, A14).

That human beings tend to respond violently to encounters with different others in defense of their cultural worldviews has ominous implications for the future well-being of humankind. As Becker noted in *Escape from Evil* (1975), this problem is compounded by the fact that even if people did not stumble onto different others, we would be psychologically inclined to designate someone (an individual or group) against whose beliefs to test ours. If we can show their vulnerability, their inability to stand up to our power, we are enhanced and they are diminished. We qualify for continued durability, for life, for eternity; and they, not fully human, as scapegoat bearers of evil, warrant domination, banishment, and death.

This raises the horrifying possibility that humans may not be a viable form of life in the long run, if one by-product of consciousness and self-consciousness is the awareness of death and the consequent inability to accept alternative death-denying cultural worldviews because of the threat they pose to the absolute validity of one's own cultural drama. For most of human history this intolerance of different others has had terrible

consequences, but not fatal ones for all of humanity, simply because we lacked the technological expertise to exterminate ourselves entirely. All of this changed, of course, with the advent of nuclear weapons capable of reducing the entire planet to a smoldering cinder; perhaps a highly intelligent species of sentient meat is not fit for life on earth after all, and the radical right turn of human evolution from that of all other life forms will turn out to lead us off an evolutionary cliff.

IS THE FEAR OF DEATH REALLY A CENTRAL MOTIVATOR OF HUMAN BEHAVIOR?

The notion that culture consists of shared illusions that serve to ameliorate anxiety associated with the awareness of death through the provision of opportunities to acquire and maintain self-esteem tends to provoke extreme and extremely disparate responses. Some claim that these ideas are patently obvious, and obviously true, and wonder why there should be any serious discussion regarding the possibility that culture is (at least in part) a death-denying illusion. Others claim that these ideas are patently absurd and obviously false and wonder why there should be any serious discussion regarding the possibility that culture is (even a tiny bit) a death-denying illusion. Opposition to the notion of culture as death-denying illusion is generally framed in experiential or epistemological terms: on the level of practical experience, we often encounter responses such as "I'm not afraid of death; therefore this theory must be wrong." Epistemologically, critics usually note that theories of this nature are derived from a psychoanalytic perspective and are consequently untestable and are therefore either irrelevant from the point of view of science, or just wrong by virtue of their psychodynamic underpinnings.

Both kinds of responses are highly problematic, however, as each presumes in advance what scientific inquiry is designed to determine. Patently obvious notions have a notoriously poor track record when they are ultimately subjected to empirical scrutiny (which often must wait until the appropriate technology exists to make the necessary observations). For example, the idea that the earth is flat makes a good deal of sense, squares with most people's experiences on the planet, and was most certainly upheld as absolutely true for thousands of years. Today we know better. Conversely, the idea that the same molecule, DNA, that directs the construction of a dung beetle or an ear of corn also directs the construction of a human being seemed outrageous and inconceivable for centuries. Today we know better.

The point here is that the veracity of a theoretical claim does not necessarily hinge on whether the idea in question appears obviously sensible or patently absurd, and the best way to broach questions of this sort is to suspend personal opinions about them long enough to determine their

scientific validity. Accordingly, we began our research program by designing experiments testing two general hypotheses derived from Becker's work framed in the language of terror management theory:

1. *Self-esteem as anxiety buffer hypothesis*. If a psychological structure provides protection against anxiety, then augmenting that structure should reduce anxiety in response to subsequent threats. Thus, strengthening self-esteem would be expected to reduce anxiety and anxiety-related behavior in response to threats.

2. *Mortality salience hypothesis*. If a psychological structure provides protection against the potential terror engendered by knowledge of mortality, then bringing thoughts of mortality into consciousness should increase concern for maintaining that structure. Thus, reminding people of their own mortality would be expected to activate the need for validation of their sense of self-worth and their faith in the cultural worldview.

SELF-ESTEEM STUDIES.   We first reviewed the social science literature and found hundreds of studies documenting a *negative correlation* between self-esteem and anxiety—high self-esteem was associated with low anxiety and vice versa; and although these studies are obviously consistent with the notion that self-esteem buffers anxiety, they are nonetheless inconclusive because of the limitations of correlational data. A correlation reveals the extent to which two variables are related to each other but does not (and cannot) provide information about which variable causes the other. The negative correlation between self-esteem and anxiety thus only shows that self-esteem and anxiety are somehow related but does not reveal whether high self-esteem causes low anxiety, which is what we are claiming, or whether high anxiety causes low self-esteem, a notion very different from the idea that high self-esteem buffers anxiety. It might be the case that self-esteem does not influence anxiety directly; rather, it may fluctuate as a function of anxiety. Perhaps when people are not anxious they feel good about themselves, but anxiety undermines feelings of self-worth. This would account for the negative correlation between self-esteem and anxiety but has no bearing on the question of whether self-esteem serves to buffer anxiety.

In order to assess the anxiety-buffering qualities of self-esteem directly, studies would be required that manipulated self-esteem and then measured subsequent responses to anxiety-provoking situations. If self-esteem does indeed serve as an anxiety buffer, then when self-esteem has been temporarily elevated, people should be less anxious than when their self-esteem has not been altered. In our first experiment, (Greenberg, Solomon, Pyszczynski, Rosenblatt, et al. 1992, Study 1), college students came to the laboratory and were told that they were participating in a

study of the relationship between personality traits and reactions to emotionally arousing stimuli. More specifically, the students were told that they would be watching a short video and that we would then ask them to give us some reactions to it, which we would correlate with some of their personality traits that had been assessed by questionnaires they had completed earlier in the semester. The experimenter told the students that because students tend to be curious about it, she would give them individual reports on the results of these personality assessments.

All of the students were then given what they thought were personalized psychological assessments based on their responses to the personality questionnaires, but which were actually one of two identical descriptions that were highly general in nature so that they could plausibly apply to all people. These descriptions were designed to convey either a positive or a neutral evaluation of the student's personality. For example, in the neutral feedback condition, the assessment stated, "While you have some personality weaknesses, you are generally able to compensate for them" and "Some of your aspirations may be a bit unrealistic." In the positive feedback condition, the assessment stated, "While you may feel that you have some personality weaknesses, your personality is fundamentally strong" and "Most of your aspirations tend to be pretty realistic." With the exception of such minor changes in wording to convey different meaning, the two forms of feedback were similar with respect to content and length, and our hope was that the self-esteem of the students who received the positive feedback would be temporarily elevated, whereas the self-esteem of the students who received the neutral feedback would remain unchanged.

Half of the students then watched a seven-minute video excerpted from the documentary *Faces of Death* that included actual footage of an autopsy and an electrocution, which was meant to serve as an anxiety-provoking situation. The other half of the students watched a seven-minute video from the same documentary, but this one was explicitly nonthreatening and had no graphic depictions or references about death. All of the students then completed a standard self-report measure of anxiety, which was the primary measure of interest to us, and a self-esteem scale as a check on the effectiveness of the self-esteem manipulation.

The results indicated that students who received the positive personality feedback reported having higher self-esteem than those who received the neutral feedback, indicating that our manipulation of self-esteem was successful, and thus allowing us to test the hypothesis that raising self-esteem would reduce the anxiety produced by watching the death video. Consistent with that hypothesis, although students in the neutral self-esteem condition reported more anxiety in response to the death video than to the benign control video (indicating that the manipulation of

anxiety through the use of the death video was successful), the students in the raised self-esteem condition did not report elevated levels of anxiety in response to witnessing graphic depictions of death.

The finding that temporary elevations of self-esteem produced lower self-reports of unease following graphic depictions of death provided strong preliminary support for the notion that self-esteem causes a reduction of anxiety in response to threatening situations. A potential problem with that study, however, was the use of a self-report measure of anxiety. Perhaps self-reports are not accurate indications of actual feelings, because participants are unaware of how they really feel. In this case the participants were unable to provide an accurate assessment of anxiety; or perhaps they were somehow aware of the purpose of the study—does raised self-esteem buffer anxiety?—and altered their reports of anxiety to help us confirm our hypothesis. In this case they could have provided an accurate assessment of their anxiety but declined to do so.

We consequently undertook a second study to conceptually replicate and extend the finding that anxiety is reduced in response to threatening circumstances as a result of raised self-esteem. In this study we used a different manipulation of self-esteem and a different assessment of anxiety, which was not subject to the same problems as those inherent in self-report measures (Greenberg, Solomon, Pyszczynski, et al. 1992, Study 2). Students participating in this study were brought into a laboratory and told that we were interested in the relationship between cognitive and physical stimulation and physiological arousal. The students were then attached to a physiograph machine that measured skin conductance, an indication of autonomic arousal that is known to be highly correlated with anxiety. After resting for five minutes in order to allow us to collect baseline measures of arousal, the students were told that the cognitive stimulation we were studying would be provided by a version of the Thorndike Anagram Test, which was described as a highly accurate measure of verbal intelligence. The "Thorndike" was actually a bogus test that consisted of 20 anagrams that were designed so that the average person would solve sixteen to eighteen problems correctly in five minutes, while we ostensibly recorded their physiological responses.

The experimenter then told half of the students that because we were primarily interested in physiological responses to taking the test rather than performance, we would not score or look at the test (neutral self-esteem condition). The remaining students were told that we were especially interested in how well people performed on the anagram test and that consequently the test would be scored, and that they would receive feedback on their performance. The test was then scored by the experimenter, and the students were told that they had gotten N right (where N = the actual number of anagrams that each student had solved correctly), that no one in

the experiment thus far had gotten more than $N-2$ right, and that their score was in the ninetieth percentile. This feedback was designed to temporarily elevate self-esteem.

The students were then told that there would be a ninety-second experimental period during which they would be exposed to physical stimulation while we measured their physiological responses. Half of the students were placed in the threat condition and told that the physical stimulation would be provided by mildly painful electrical shocks that would be administered through an electrode that was attached to their wrists at the outset of the study. The remaining students served in the no-threat condition and were told that the physical stimulation that would be studied during the experimental period would be provided by the light waves given off by red and yellow lights that were in the lab. Presumably the anticipation of electrical shocks during the experimental period would be more anxiety-provoking than peering at colored lights. The experimental period then occurred as described, except that no shocks were administered to any subjects.

Our primary interest, of course, was to examine levels of physiological arousal in anticipation of electrical shocks as a function of whether or not self-esteem had been temporarily elevated. Not surprisingly, the results indicated that participants in the neutral self-esteem condition who expected to receive shocks were significantly more aroused (as measured by skin conductance) than those who gazed at colored lights, thus indicating that our manipulation of threat was most assuredly successful and allowing us to assess the effects of elevated self-esteem on physiological arousal in an anxiety-provoking situation. Consistent with the hypothesis of self-esteem being an anxiety buffer, and replicating the finding of the first study, students in the raised self-esteem condition who expected to receive electrical shocks, although more aroused than those who looked at colored lights, were not as aroused as their shock-anticipating counterparts in the neutral self-esteem condition.

For two reasons this is especially strong support for the notion that self-esteem causes a reduction of anxiety in stressful situations. First, the use of a physiological indicator of anxiety avoids the problem of ignorance or willful distortion that limits the value of self-report measures. Second, although it would not be surprising if after subjects' self-esteem was boosted they were not especially anxious if someone else called them idiots or made a comparable psychological assault, it is a much more potent demonstration of the pervasive effect of self-esteem on anxiety beyond threats of a purely psychological nature to show that self-esteem buffers anxiety engendered by the expectation of electrical shocks, a physical assault on one's very existence.

If self-esteem serves as a general anxiety buffer, then we also ought to be able to demonstrate that it specifically ameliorates anxiety surrounding the ultimate concern: the awareness of our own mortality. Previous research in social psychology has found that people often bias their behavior, beliefs, and judgments so as to minimize their perception of vulnerability to illness and death. In one study, for example, half of the participants were told that people with a high tolerance for cold have longer life expectancies, whereas the remaining participants were told that people with a low tolerance for cold generally live longer (Quattrone and Tversky 1984). All of the participants were then asked to put one of their arms in ice water for as long as they could. Because people in this study were randomly assigned to experimental conditions, individual differences in actual cold tolerance should be evenly distributed across conditions, and there should consequently have been no differences between the groups in how long they immersed their arms in cold water. However, the results indicated that people who thought that a high tolerance for cold was associated with long life kept their arms in the water much longer than those who were told that a low tolerance for cold was associated with greater life expectancies. Similarly, another study demonstrated that frequent coffee drinkers were less convinced than infrequent coffee drinkers by research showing caffeine to be associated with health hazards (Kunda 1987). Presumably, distorting behavior or judgments in these cases serves to minimize anxiety about these threatening events (short life and bad health, respectively).

However, if self-esteem provides a buffer against anxiety and the distortions described above are attempts to minimize anxiety by denying one's vulnerability to early death, then enhancing self-esteem should reduce the tendency to distort perceptions in a vulnerability-denying manner. We conducted two studies to test this hypothesis (Greenberg, Pyszczynski, Solomon, Pinel, et al. 1993). In the first study, we gave participants positive or neutral feedback about their personalities in order to temporarily raise their self-esteem or leave it unaltered. We then told half of the participants that emotional people tend to die young and the other half that emotional people tend to have longer than average life expectancies. Afterwards, we asked all of the people in the study to report on their own levels of emotionality. We found that people given neutral personality feedback engaged in vulnerability-denying distortion by reporting they were more emotional when emotionality was associated with longevity but less emotional when emotionality was related to shorter life expectancies. However, when self-esteem was raised, participants who received positive personality feedback did not report differences in emotionality as a function of information that emotional people die young or live long. Raising self-esteem thus reduced the need to engage in vulnerability-denying defensive distortions.

We then conducted a second study to replicate the finding that high self-esteem reduces vulnerability-denying defensive distortions and to shed light on a theoretical concern that could be raised about all of our previous studies of self-esteem. Specifically, in all of the studies reported thus far, self-esteem was raised temporarily by giving people positive feedback about themselves or their performance. But some clinicians make a distinction between transient elevations of feelings of self-worth that result from these kinds of events (state self-esteem) and enduring differences associated with a person's normal constitution (trait or chronic self-esteem). If self-esteem is a general anxiety buffer, then people with chronically high self-esteem should be less responsive to anxiety-provoking circumstances than those with chronically low self-esteem, even in the absence of momentary interventions that increase feelings of self-worth.

Accordingly, we had participants in our second study complete a self-esteem inventory before we told half of them that emotional people die young and the other half that emotional people live long; we then asked them to report their own level of emotionality. Consistent with our prediction and the results of the first study, low self-esteem individuals reported levels of emotionality that corresponded to those previously described as being associated with long life, but high self-esteem individuals did not. Once again, high self-esteem eliminated vulnerability-denying defensive distortions. This finding thus demonstrates that self-esteem serves to buffer anxiety both when it is temporarily elevated and when it is chronically high.

All of the evidence that we have presented is thus consistent with the proposition that self-esteem serves as a general anxiety buffer. High self-esteem was found to reduce self-reports of anxiety in response to watching gory death videos, physiological arousal in anticipation of electrical shocks, and vulnerability-denying distortions regarding life expectancy. These effects have been produced for both state and trait self-esteem, and they cannot be accounted for in terms of the subjects' being in a good mood rather than feeling good about themselves specifically.

MORTALITY SALIENCE STUDIES.   Recall that according to the mortality salience hypothesis, if a psychological structure provides protection against the potential terror engendered by knowledge of mortality, then bringing thoughts of mortality into consciousness should increase concern for maintaining that structure. To test this hypothesis, we developed a simple paradigm in which people are asked to think about their own death—what we will henceforth refer to as *mortality salience*—and then to make judgments about others who either violate or uphold important aspects of their cultural worldviews. To the extent that cultural worldviews serve to reduce anxiety associated with concerns about

mortality, thinking about death should make people especially reliant on the protection that their beliefs about the nature of reality provide for them and consequently especially prone to derogate those who violate important cultural precepts and to venerate those who uphold them.

Our first experiment was conducted with twenty-two municipal court judges in Tucson, Arizona, who volunteered to participate in the study (Rosenblatt et al. 1989, Study 1). The judges were told that we were interested in examining the relationship between personality traits, attitudes, and bond decisions (a bond is a sum of money that a defendant must pay prior to a trial in order to be released from prison). The judges then completed a set of questionnaires that consisted of some standard personality assessment instruments; we had no real interest in them but they were there to deflect attention from the actual purpose of the study. Embedded in the questionnaire packets for half of the judges was a Mortality Attitudes Personality Survey, described as a new form of projective personality assessment in which open-ended responses to questions about death were analyzed in the service of providing information about personality in general. The judges were asked to write short responses to the following questions: "Please briefly describe the emotions that the thought of your own death arouses in you," and "Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead." The other half of the judges served as the control group and were not given this questionnaire. All judges then completed a self-report checklist measuring positive affect, hostility, depression, and anxiety to assess emotional reactions to the mortality salience manipulation.

The judges were then presented with a hypothetical legal case brief that was virtually identical to those typically submitted to judges before a trial. The case brief stated the arresting charge, prostitution, and the defendant's address, employment record, and length of residency. The brief also included a copy of the citation issued to the defendant giving basic arrest information such as the location and date of the crime, the arresting officer, and the arresting charge. Notes from the prosecutor indicated that a lack of established community ties and the prosecution's inability to verify information provided by the defendant led them to oppose releasing the defendant on her own recognizance. The case brief was followed by a form asking the judges to set bond for the defendant.

Our primary interest was to determine whether the judges who were asked to contemplate their own mortality prior to setting bond for the alleged prostitute would respond differently from those who did not reflect on their death. We chose judges for the study because they are rigorously trained to make such decisions rationally and uniformly; and we had them pass judgment on an alleged instance of prostitution because it

is a crime that typically very much violates important moral convictions of the average citizen in our culture. Given our claim that cultural worldviews serve to reduce anxiety associated with death, in part by careful differentiation between good and evil in the service of providing security for the good and damnation for the bad, and the seriousness of the moral transgression that prostitution represents, we hypothesized that judges for whom mortality was made salient would subsequently set higher bonds than judges in the control condition.

The results of the study confirmed this prediction: The judges following mortality salience set an average bond of $455 and the judges in the control group set an average bond of $50. This is a shockingly large difference given that all judges reviewed exactly the same materials except for the presence or absence of the mortality salience manipulation. None of the judges seemed to be aware of the true purpose of the study; if they had they might have altered their behavior to "help" us with our research or to appear in a favorable light; and interestingly, none of the judges in the mortality salience group reported being upset by the questionnaire asking them to consider their own death. This was indicated by the fact that there were no differences between the mortality salience and control groups on the self-report emotion checklist.

This finding provided strong preliminary support for the proposition that mortality salience engenders a greater need for death-denying cultural worldviews and consequently provokes more vigorous reactions to moral transgressors. However, no scientific finding can be taken seriously unless it can be reproduced. Additionally, the study described above assumes that everyone in a culture shares exactly the same worldview—in this case, the belief that prostitution is morally reprehensible. Finally, the findings could also be plausibly explained in several other ways that do not require positing that cultural worldviews are death-denying illusions. Consequently, we did further studies to establish the robustness of the mortality salience effect, to investigate a more refined prediction regarding the circumstances in which mortality salience would lead to harsher reactions to moral transgressions, and to rule out alternative accounts of our original finding (Rosenblatt et al. 1989, Studies 2–6).

Because we had run out of municipal court judges, in our next studies we used the human version of the laboratory white rat: undergraduate college students in introductory psychology classes. We asked students to undergo the same procedure as the judges—to set bond for an alleged prostitute after completing some personality assessments in which the mortality salience manipulation was embedded for half of the subjects; control subjects in these studies completed a parallel questionnaire about innocuous topics like eating a meal or watching television. This was to rule out the unlikely possibility that the results of the first study were due

to the judges in the mortality salience condition having completed more questionnaires than their control condition counterparts.

In the second study, we assessed students' attitudes about prostitution in the packet of filler questionnaires prior to the mortality salience manipulation. We then looked at the responses of students who were either extremely opposed to prostitution on moral grounds or who believed that there was nothing particularly objectionable about prostitution as long as all parties agreed to the arrangement in question, as a function of mortality salience. The results indicated that students asked to think about death set higher bonds for the alleged prostitute than those in the control group, but only when they had extremely negative views of prostitution on moral grounds to begin with.

Two points are important here. First, this study replicated the basic finding of the judge study by demonstrating that moral transgressions are more severely punished following mortality salience. Second, the effect was obtained only if students found prostitution morally repugnant. This makes perfect sense given our theoretical perspective. Recall our claim that cultural worldviews serve to reduce anxiety surrounding death and that pondering one's mortality should engender a greater need for the protection afforded by that worldview as reflected by more vigorous responses to those who violate its most cherished prescriptions for appropriate behavior. But not everyone shares exactly the same beliefs, and consequently we would expect mortality salience to provoke a response only if a belief that one seriously subscribes to has been offended.

This is quite different from the very plausible alternative account of these findings: that thinking about death puts people in a bad mood in general, and that they then indiscriminately derogate anyone or anything that they are subsequently asked to evaluate. To further investigate this possibility, after the students in this study had completed the bond assessment, we asked them to evaluate how likable, intelligent, moral, knowledgeable, and well-adjusted they found the experimenter. If mortality salience put people in an indiscriminately negative frame of mind, then we would have expected to find derogation of the experimenter by all students who thought about their death, or at least by the students opposed to prostitution who had already prescribed higher bonds for the defendant in the hypothetical case. This did not occur, however; there were no differences between students in the various conditions in the study in their ratings of the experimenter.

This study thus demonstrated the highly specific nature of the increased bond assessment for the alleged prostitute following mortality salience, by showing that it only happens when people are personally offended by the moral transgression at issue, and that such responses are

confined to the transgression itself rather than being indiscriminately applied to all aspects of the surrounding social environment.

Further studies employing this general paradigm have ruled out other plausible explanations while providing additional replications of the basic finding that mortality salience engenders more vigorous responses to moral transgression. In one study we had students both prescribe a monetary reward to a person who behaved heroically by risking personal injury to report a suspected mugger to the police, and also set bond for the now very familiar alleged prostitute. As in previous studies, mortality salience led to a higher bond for the prostitute but also a higher reward for the hero ($3,476 after mortality salience versus $1,112 in the control condition). This is an important finding because it establishes that thinking about death engenders more positive responses to those who uphold important cultural values as well as more negative responses to those who transgress against them.

Finally, it is possible that the effects we found as a result of mortality salience would occur if we asked people to think of any negative or anxiety-provoking event. This possibility was ruled out in a series of studies comparing the effects of mortality salience to a host of other aversive circumstances, such as an upcoming exam, speaking in public, reacting to imagined or actual failures, and pondering the death of another person (Greenberg, Pyszczynski, Solomon, Simon, and Breus 1994, Studies 1 and 2; Greenberg, Simon, Harmon-Jones, et al. 1995). In each study, the basic mortality salience effect was reproduced, but other negative events (even those that caused demonstrable anxiety) did not produce this effect, providing strong support for the claim that it is concern about one's own mortality that is responsible for exaggerated responses to moral transgressors.

Having established that mortality salience produces exaggerated positive and negative responses to those who uphold or violate important cultural values, we began to test the notion that mortality salience would also provoke amplified reactions to people who are merely similar or dissimilar. Recall that according to Becker, the existence of similar others sustains faith in the worldview by social consensus, whereas the existence of different others undermines faith in the veracity of cultural worldviews. Mortality salience should thus produce more positive responses to similar others and more negative responses to those who are different, an effect we will henceforth refer to as *worldview defense*.

Accordingly, we conducted a study in which following a mortality salience (or TV control) induction, we gave Christian participants personality information that was presumably supplied by two other people in the study and asked them for their impressions of these individuals (Greenberg, Pyszczynski, Solomon, Rosenblatt, et al. 1990, Study 1). In fact, we

wrote the personality information and made sure that there were similar responses to all of the questions, except for religious affiliation, which was Christian for one target and Jewish for the other. The results showed no difference in people's evaluations of the targets as a function of religion in the TV control condition (momentarily restoring our faith in humanity). However, following mortality salience, evaluations of the fellow Christian were significantly elevated, and those of the Jewish target were significantly diminished. Worldview defense in response to mortality salience thus does not seem to require an explicit affront to or affirmation of one's moral universe in order to occur—merely being different or similar suffices.

In another study we had American college students read essays by authors that either strongly favored or opposed the United States's political system following a mortality salience or control induction (Greenberg, Pyszczynski, Solomon, Rosenblatt, et al. 1990, Study 3). We actually wrote the essays, but they were printed as an interview in *Political Science Quarterly* (a bogus journal) with a Nobel Prize–winning political science professor at Harvard. The pro–United States essay recognized economic inequalities and foreign policy mistakes but was generally positive, and concluded, "In this country, the people and not the government will be the final judges of the value of what I have to say. That is what makes this country a great place in which to be a free thinker." The anti–United States essay acknowledged the value of many parts of the American political system but then focused extensively on the influence of the power elite on the system and on the economically motivated and amoral behavior of the United States abroad. It concluded, "Morality has absolutely nothing to do with our foreign policy. That's why the idea that the U.S. is a promoter of world democracy and freedom is a total sham." It suggested that violent overthrow of the present government was in order. The students were then asked how likable and knowledgeable they found the author of the essay. Results indicated that all subjects liked the pro–United States author and found him more knowledgeable than the anti–United States author, but that this effect was significantly exaggerated following mortality salience. Specifically, after thinking about their death, subjects evaluated the pro–United States author more positively and the anti–United States author more negatively.

These studies demonstrated worldview defense following mortality salience in reaction to others that were similar and dissimilar with regard to religious and political aspects of the cultural worldview. Religion and politics are of course very central aspects of most people's worldviews, but we have hypothesized that even if there were not obviously different others to disparage, we would designate someone as different in order to have a means to dispose of concerns surrounding mortality, even if the difference in question is relatively inconsequential. In order to test this

hypothesis, we conducted a study in which our participants rated their preferences for each of five pairs of abstract art works and were then designated as belonging to a group of participants who preferred the work of either Paul Klee or Wassily Kandinsky, abstract artists with whom our participants would not likely be familiar (Harmon-Jones, Greenberg, Solomon, and Simon 1995). Following a mortality salience or control induction, participants rated members of their group and the other group. Consistent with the findings of previous research, mortality salience resulted in exaggerated affection for fellow group members, even though the group had been in existence for only a few minutes and was formed on the basis of a relatively innocuous preference for splotches of ink on paper. Perhaps Jonathan Swift's satirical account in *Gulliver's Travels* of going to war over the issue of which end of an egg should be broken open (the big end or the little end) should be taken more literally than even Swift intended!

Another means of bolstering the cultural worldview, besides derogation of different others and exaggerated regard for those who are similar, is to convince others to adopt your point of view—or to convince yourself that others already agree with you. To test this hypothesis, a study was undertaken in Germany with a procedure developed with our good friend and colleague Robert Wicklund, in which people were randomly stopped and interviewed either directly in front of, or a short distance (100 meters) away from, a funeral parlor (Pyszczynski et al. 1996, Study 1). The people were asked to report their attitudes about German immigration policies, an issue of great current concern in Germany, and then to estimate the percentage of the German public that agreed with them on this question. We considered being in front of a funeral parlor a real-life mortality salience induction, whereas being 100 meters to either side served as our control condition. Our main interest was in whether people would magnify their estimates of the number of people who agreed with them when they were in front of the funeral home. Recall that cultural worldviews are fragile illusions that are sustained primarily by social consensus. If such worldviews serve a death-denying function, then thinking about death should make us especially prone to inflating the extent to which others agree with us on important questions in order to bolster the security that we derive from them—and that is indeed what we found in this study. We then conducted a similar study in America, in which people in Colorado Springs were interviewed in front of a funeral parlor or on either side of it, and asked about the teaching of Christian values in the public schools, a highly visible and controversial issue in Colorado Springs at the time (Pyszczynski et al. 1996, Study 2). We again found that people inflated their estimates of the percentage of others who agreed with their position when they were interviewed in front of the funeral home.

We then turned our attention to investigating the possibility that physical aggression toward those who are different is at least in part instigated by concerns about mortality (McGregor et al. in press). For obvious ethical reasons, we could not provide participants with flamethrowers and hand grenades and then, after asking them to think about dying, observe their behavior toward different others. Instead, participants were given a mortality salience or control induction and then learned that someone else in the study had similar or dissimilar political views. Then all participants were asked to be in a second and supposedly unrelated study of consumer taste preferences in which they were asked to allot a variable quantity of very hot hot sauce for the similar or dissimilar participant from the first study to taste and rate. (There has been a recent surge of felonious assaults using hot sauce as a weapon. In a recent well-publicized incident, a cook at a Denny's restaurant spiked the breakfast of two New Hampshire state troopers with Tabasco sauce. One of the officers reported that his mouth was burned, and the other experienced extreme discomfort in his stomach. The cook was arrested and reported that he did not like police officers and had intended to harm the troopers [*Phoenix Gazette* 1995, A2].) We reasoned that the amount of hot sauce given would serve as an objective measure of physical aggression. Consistent with our expectations, hot sauce allotment did not vary as a function of political orientation in the control condition, but in response to mortality salience people prescribed a significantly higher dose of hot sauce to those who did not share their political orientation (26.31 vs. 11.86 grams for the dissimilar and similar other, respectively). This is a rather frightening demonstration that aggression can result from a psychological inability to tolerate the very existence of those with fundamentally different worldviews.

Self-esteem and Worldview Defense following Mortality Salience.   The evidence presented thus far provides clear support for both the self-esteem and the mortality salience hypotheses. But to the extent that self-esteem is an anxiety buffer, raising self-esteem should reduce or eliminate worldview defense following mortality salience. To test this idea directly, we (Harmon-Jones, Simon, et al. 1997, Study 1) gave students either positive or neutral personality feedback to raise their self-esteem or leave it unaltered, and then had half of them ponder their mortality whereas the remaining participants thought about watching television. Everyone then read two essays that were supposedly written by foreign exchange students about their impressions of the United States and then completed evaluations of the essays and their authors. One of the essays was extremely positive about life in America, whereas the other essay portrayed America in very negative terms. The results indicated that mortality salience led to worldview defense in the neutral self-esteem condition but not in the raised self-esteem condition. Specifically, students who received the

neutral personality feedback and then thought about their deaths rated the pro–United States essay more favorably and the anti–United States essay less favorably than the students who received the same personality feedback but then thought about watching television. However, those who received the positive personality feedback did not have more extreme reactions to the essays following mortality salience than those who thought about watching television. Raising self-esteem thus eliminated the effects of mortality salience on evaluations of both those who uphold and those who undermine important aspects of cultural worldviews.

A second study then replicated this procedure, but used students with high or low trait self-esteem rather than momentary elevations in feelings of self-worth resulting from personality feedback—with identical results (Harmon-Jones, Simon, et al. 1997, Study 2). Low self-esteem participants made more extreme evaluations of the pro– and anti–United States essays following mortality salience relative to the TV control group, but high self-esteem individuals did not. The anxiety-buffering effect of high self-esteem on worldview defense following mortality salience thus occurs regardless of whether high self-esteem is situationally induced or represents a constitutional disposition.

THE PSYCHODYNAMICS OF TERROR MANAGEMENT

The basic finding that mortality salience leads to worldview defense has been consistently replicated and has been obtained using different manipulations of mortality salience and measuring different aspects of cultural worldviews (see Florian & Mikulincer 1997 and Nelson et al. 1997 for clever conceptual replications of mortality salience effects produced outside our laboratories). Mortality salience effects have been produced in natural settings as well as in the laboratory. Additionally, plausible alternative accounts of these findings that do not invoke the notion of culture as death-denying illusion have been clearly disproved. The idea that beliefs about the nature of reality serve to ameliorate concerns about mortality is thus true in the sense that it is consistent with the available evidence and cannot be explained by other existing theoretical perspectives.

Interestingly, asking people to contemplate their own mortality reliably results in defensive responses—even when people do not report being anxious or upset by thoughts of their own death and are not physiologically aroused by them. What then are the specific psychological mechanisms by which consideration of one's own mortality produces the exaggerated responses to similar and dissimilar others that we have designated worldview defense? We began to explore this issue by reviewing Freud's original conception of psychological defenses in the *Introductory Lectures on Psycho-Analysis* ([1917] 1966). In this work Freud presents a spatial model of human mentation in which the mind

is metaphorically divided into a large and a small room, corresponding to unconscious and conscious mental activity, respectively, with a gate-keeper or watchman in a hallway between them who has the power to restrict the passage of certain unconscious ideas to consciousness as well as to push certain already conscious ideas into unconsciousness. According to Freud, ideas that would not provoke anxiety if we were (or are) aware of them are allowed to travel unimpeded throughout the rooms of our minds by the gatekeeper, whereas anxiety-provoking incli-nations are *repressed:* They are systematically restrained by the gate-keeper from entering consciousness or are systematically removed by the gatekeeper from consciousness if they are already there. Repressed ideas do not, however, just fade away; instead they continue to strive for conscious expression with even greater vigor (the "return of the repressed") and toward this end are unconsciously transformed in subtle ways to get by the "watchful eyes" of the gatekeeper.

One of the examples Freud provided to illustrate this process involved a middle-aged woman who was obsessed with the thought that her hus-band was having an affair. She became riddled with jealousy, although there was ample evidence that her husband was quite beyond suspicion. Through the woman's free association and subsequent encountering and overcoming of resistances (interruptions in the free association that Freud claimed were behavioral evidence of underlying repression), Freud con-cluded that the woman in fact had amorous desires for her future son-in-law. Although such desires would be considered in bad taste in even the most permissive social universe, such thoughts could not be even momen-tarily entertained in the restrictive moral climate of Vienna a century ago. Accordingly, the profoundly anxiety-provoking inclination to cavort with the son-in-law was repressed and then transformed—in this case by pro-jecting the forbidden desire onto her husband—into the conscious belief that the husband desired an illicit affair with another woman, which in turn served as symbolic satisfaction of the original desire and kept the repression of that desire in place, thus sparing the woman the debilitating anxiety that would result if she were to become aware of the true nature of her wishes.

This account of psychological defenses was subsequently invoked by Becker in *The Denial of Death* (1973) as the mechanism by which cultural worldviews serve to reduce and prevent anxiety. Given that death poses the ultimate threat to an individual, the immense anxiety provoked by explicitly pondering one's vulnerability and the inevitability of one's demise is presumed to be repressed. The desire for immortality repre-sented by this repressed fear is transformed and represented in conscious-ness as the cultural worldview, the adherence to which provides an account of the ways of the universe, a blueprint for safe and virtuous

action, and most importantly, a recipe for salvation and a ticket to eternity. Complete faith in the cultural worldview and confidence that one is living up to its requisite standards—self-esteem—then in turn keep the repression of thoughts of death in place. But if unconscious thoughts of death were coming (metaphorically speaking) too close to consciousness, belief in the cultural worldview would require fortification in order to continue to preserve a modicum of psychological equanimity for the individual by keeping thoughts of death at bay; and this is presumably the process that underlies the worldview defense in response to mortality salience that we find in our empirical work.

We consequently began thinking about worldview defense following mortality salience in these terms. According to a literal interpretation of Freud, psychological defenses (1) are fundamentally irrational (nonrational); that is, there is no rational connection between wanting to have sex with your future son-in-law and thinking that your husband wants to have an affair, but this is not problematic in the unconscious, where teeming desires rule unencumbered by the constraints of reality; (2) they take time to form following a specific threat, presumably for repression of anxiety-provoking inclination and subsequent transformation of repressed material into a conscious symptom that would keep the repression of the original concern in place; (3) they will not occur if people are conscious of what is being defended against—that is why the goal of psychoanalysis for Freud was to make the unconscious conscious; (4) they require a mechanism (or mechanisms) by which conscious anxiety-provoking thoughts can be removed from focal awareness—either by diffusing the nature of the threat or by active suppression of the unwanted thoughts; (5) they can and do occur unconsciously, even if people are completely unaware of the nature of their concerns; and finally (6) they work—that is, psychological defenses should be demonstrably effective for reducing concerns about whatever is defended against.

Accordingly, we undertook a research program to examine the conditions under which worldview defense occurs in response to mortality salience in light of this analysis. The results are quite consistent with Freud's original formulation of psychological defenses.

Worldview Defense Is Not Rational.   There is no direct conceptual connection between pondering one's demise and affirming one's worldview by disparaging different others and enhancing your regard for similar others. A rational person would realize the futility of condemning someone different as a means of reducing concerns about mortality. Therefore, people should not engage in worldview defense in response to mortality salience if you ask them to think rationally. This is exactly what we found in a series of studies in which we compared groups asked to respond intuitively to those asked to think rationally: mortality salience produced

worldview defense only when people were asked to respond with their gut feelings, but not when they were asked to think rationally throughout the study (Simon et al. 1997).

Mortality Salience Effects Take Time.   Worldview defense does not occur when people are asked to form judgments immediately following a mortality salience induction, but does occur if such judgments are made a few minutes later. Implication: something has to happen following the mortality salience manipulation before worldview defense appears.

Psychological Defenses May Fail.   Psychological defenses do not work if you are conscious of that which is being defended against. Freud always insisted that this was the case, but the first hint that he might be right (with regard to mortality salience effects) came from initial failures by others to reproduce worldview defense following mortality salience. Our colleague Randolph Ochsmann at the University of Mainz in Germany manipulated mortality salience by asking people to think about themselves dying for twenty minutes, in contrast to our mortality salience manipulation, which is relatively short and very innocuous: two brief questions about death tucked discretely between other filler questionnaires. It seemed to us that perhaps the more direct and sustained confrontation with death in the Ochsmann study kept mortality more consciously salient, whereas in our studies, by the time people evaluated similar and different others, thoughts of death were no longer on their minds.

To test this notion, we first compared our subtle mortality salience induction with a more intense procedure in which, after completing the typical two-question mortality salience questionnaire, participants were instructed to consider their deepest emotions about their death and to imagine having an advanced stage of cancer so as to get in touch with these kinds of feelings. As expected, we found stronger worldview defense after mortality salience for the subtle than for the intense procedure (Greenberg, Pyszczynski, Solomon, Simon, et al. 1994, Study 1). Then, to more directly test the notion that mortality salience effects do not occur if thoughts of death are still in conscious awareness, we did a second study in which, following our usual mortality salience induction, we had participants engage in a word search task in which they had to locate words in a matrix of letters for three minutes (Greenberg, Pyszczynski, Solomon, Simon, et al. 1994, Study 2). Half of the participants searched for words related to death (e.g., coffin, skull, blood, kill), whereas the remaining participants searched for television-related words (e.g., drama, actor, cable, sit-com). If mortality salience effects occur only when thoughts of death are removed from consciousness, then worldview defense should be obtained only when participants searched for neutral words following the mortality salience induction, and this is what we found.

Psychological Defenses Require Suppression.   Psychological defenses require active suppression of what is defended against. Given the findings described above, we presumed that when people are asked to think about death, an active suppression process is initiated to get thoughts of death out of conscious awareness. In order to determine what is on people's minds without asking them directly, we borrowed a word stem completion task from cognitive psychology. For example, SK__ and COFF__ are more likely to be completed as *skull* and *coffin* than *skill* and *coffee* if death is on one's mind—an effect we will henceforth refer to as *high accessibility of death thoughts*.

In one study, we measured accessibility of death thoughts immediately following mortality salience or a control induction, compared to a mortality salience treatment followed by a three-minute delay with distraction—specifically, participants were asked to read a short innocuous passage from a novel (Greenberg, Pyszczynski, Solomon, Simon, et al. 1994, Study 4). Consistent with the notion of active suppression, accessibility of death thoughts was low immediately following mortality salience induction but was elevated following the delay and distraction. However, these findings are also consistent with the more parsimonious possibility that thoughts of death are low immediately following mortality salience because people start to think about death, and then consequent rumination about death raises the accessibility of death thoughts to a critical point at which worldview defense takes place. To demonstrate active suppression more convincingly, we would therefore need to prevent it from happening and then show that death thoughts are highly accessible immediately after mortality salience and that worldview defense then occurs immediately.

Borrowing from recent work by cognitive psychologists, we presumed that like all cognitive processes, this kind of active suppression would require attentional resources and could therefore be prevented by asking people to engage in an effortful activity that would undermine the performance of such automatic processes. We did this by utilizing our typical mortality salience–worldview defense paradigm while asking half of our participants to remember an eleven-digit number throughout the procedure. Without this high cognitive load, we reproduced our typical finding of low accessibility of death thoughts and low levels of worldview defense immediately after a mortality salience induction; however, under high cognitive load, we found both increased accessibility of death thoughts and increased worldview defense immediately in response to mortality salience (Arndt, Greenberg, Solomon, et al. 1997, Studies 1 and 2).

Psychological Defenses Can Be Unconscious.   Worldview defense in response to mortality salience has been shown to occur whenever thoughts of death are highly accessible, but does this process require that people initially be consciously aware of death? To examine this question,

we had people participate in a word recognition study in which they were asked to watch pairs of words that were presented sequentially for 500 milliseconds each on a computer monitor and to judge if the words were related (e.g., car and truck) or not (e.g., taco and fence). Without fore-warning, participants were also subliminally exposed to the words either *death* or *field* for an invisible fifty milliseconds between the presentations of the two words. Although people did not report seeing anything between the word pairs and could not pick out beyond chance which word they had been exposed to when shown a short list including *death* and *field*, the participants exposed to subliminal presentations of *death* showed an immediate increase in death-word accessibility and in world-view defense (Arndt, Greenberg, Pyszczynski, and Solomon 1997).

Psychological Defenses Are Effective.   Heightened accessibility of death thoughts thus seems to be a necessary and sufficient condition for the production of worldview defense in response to mortality salience. Accordingly, if worldview defense is an effective reaction to mortality salience, then accessibility of death thoughts should be reduced after a dif-ferent other is disparaged; this is indeed what we have recently found. Similarly, if self-esteem is an effective anxiety buffer, then increasing self-esteem prior to mortality salience should attenuate the increased accessi-bility of death thoughts that is typically found after a delay and distrac-tion; this has also recently been demonstrated (Arndt, Greenberg, Solomon, et al. 1997, Study 3).

THE PSYCHODYNAMICS OF TERROR MANAGEMENT REVISITED. Taken together, these studies provide an account of the psychological processes that underlie worldview defense in response to mortality sali-ence. Reminders of mortality instigate efforts to remove thoughts of death from consciousness, either by actively suppressing death thoughts or by engaging in psychological processes that minimize the prospect of death (e.g., the studies reported earlier where people alter estimates of emotion-ality in response to information suggesting that very emotional or unemotional folks live longer). After a delay and distraction, active sup-pression of death thoughts is relaxed and such thoughts become more accessible. Worldview defense is then initiated in response to the height-ened accessibility of death thoughts that reside outside of consciousness in order to keep death thoughts from becoming explicitly conscious, thus sparing the individual from the debilitating affective consequences of a direct confrontation with mortality and reducing the accessibility of death thoughts. Heightened accessibility of death thoughts appears to be a nec-essary and sufficient condition for worldview defense to occur; high cog-nitive load and subliminal presentations of death-related stimuli produce immediate increases in the accessibility of death thoughts and consequent

worldview defense. Finally, worldview defense in response to mortality salience does not occur when people are asked to think rationally, suggesting that such defenses are fundamentally irrational in nature.

SUMMARY OF TERROR MANAGEMENT THEORY AND RESEARCH

Terror management theory posits that the unique awareness of death and tragedy renders human beings prone to debilitating terror, and that this terror is managed by a dual-component anxiety buffer consisting of a cultural worldview and self-esteem. In support of this analysis, experiments have demonstrated that dispositionally high or momentarily raised self-esteem reduces physiological and self-reported anxiety in response to a variety of threats, and that mortality salience produces a host of exaggerated positive responses to those who share or uphold one's cultural worldview, and exaggerated negative responses to those who are different or who violate important aspects of one's own cultural worldview. Although there is surely much more empirical work to be done, results of research to date are clearly in accord with the notion that concerns about death play a leading role in the ongoing drama of human life.

CONCLUSION

It is very unhappy, but too late to be helped, the discovery we have made, that we exist. That discovery is called the Fall of Man. Ever afterwards, we suspect our instruments. We have learned that we do not see directly, but mediately, and that we have no means of correcting these colored and distorting lenses which we are, or of computing the amount of their errors. Perhaps these subject lenses have a creative power; perhaps there are no objects. Once we lived in what we saw; now, the rapaciousness of this new power, which threatens to absorb all things, engages us. Nature, art, persons, letters, religions,—objects, successively tumble in, and God is but one of its ideas.

— Ralph Waldo Emerson, "Experience"

What are the personal and social implications of the idea that haunting concerns about death pervade almost every aspect of human life? For the individual, Becker noted in *The Denial of Death* that a sober examination of the motivational underpinnings of human behavior leads "beyond psychology" (Rank [1941] 1958) and directly to religion—to find the "courage to face the anxiety of meaninglessness" (Becker 1973, 279). Because psychological equanimity requires a meaningful conception of reality and no such conception can ever be unambiguously confirmed, all such meanings are sustained by faith and are hence fundamentally religious. Human beings are thus by nature innately spiritual creatures, not in the psychopathological sense of religion advanced by Marx and Freud but in the

sense of religion as *ultimate concern* as expressed by the likes of Søren Kierkegaard and Paul Tillich. Daily life then becomes an ongoing open-ended quest for cosmic meaning in the context of personal experience. In Becker's words, "Who knows what form the forward momentum of life will take in the time ahead or what use it will make of our anguished searching. The most that any one of us can seem to do is to fashion something—an object or ourselves—and drop it into the confusion, make an offering of it, so to speak, to the life force" (Becker 1973, 275).

Social scientists, Becker argued in *Escape from Evil* (1975) have a responsibility to participate in the design, implementation, and evaluation of cultural worldviews that maximize opportunities for individual growth and development while minimizing the conflicts that historically occur as a result of collisions between different death-denying visions of reality. Specific cultures can be judged in terms of the extent to which they (1) provide for the material needs of their members given their current level of technology and resources, (2) provide social roles that allow as many people as possible to obtain and maintain self-esteem, and (3) accomplish these first two goals without undue harm to others inside or outside of the culture. One hopeful possibility in this regard is a *liberal* worldview that places a high value on tolerance, open-mindedness, and respect for those who are different.

Indeed, whereas the general tenor of mortality salience research suggests that mortality salience increases intolerance, there may be conditions under which this will not occur. Specifically, if mortality salience increases people's tendency to behave in accordance with their own values, then people for whom tolerance is highly valued should not display increased worldview defense following mortality salience. Evidence consistent with this reasoning was initially provided by a study in which high, but not low, authoritarians responded to mortality salience with increased derogation of attitudinally dissimilar others. Given that the authoritarian individual is characterized by high regard for authority, rigidity, and conventionality, it was not surprising that those with the most rigid worldviews would defend them most vigorously. However, the absence of such an effect among low authoritarians suggested to us that some worldviews might actually mitigate against increased prejudice as a consequence of mortality salience.

On the basis of the finding that low authoritarian individuals did not derogate attitudinally dissimilar others when mortality was made salient, and the theoretical and empirically demonstrable relationship between authoritarianism and political conservatism, as well as the notion that American liberal political ideology espouses the value of tolerance of different others, we hypothesized that extremely liberal individuals would be less likely than their conservative counterparts to become increasingly

intolerant following mortality salience. To test this hypothesis, we selected Americans who were either very liberal or very conservative and asked them to evaluate liberal and conservative targets under mortality-salient or control conditions (Greenberg, Simon, Pyszczynski, et al. 1992). We predicted and found that mortality salience would produce more favorable impressions of similar targets and more unfavorable impressions of dissimilar targets, but only among conservatives (in fact, liberals actually liked conservative targets more following mortality salience). This finding raises the hopeful possibility that cultural worldviews can be constructed that do not inevitably lead to hostility toward those who are different, even when mortality concerns have been aroused.

Perhaps, then, the human race is not doomed to self-extinction. Perhaps a refined understanding of *why people do what they do when they do it* will "introduce just that minute measure of reason to balance destruction" (Becker 1975, 170). Perhaps Emerson was right when he wondered whether we could apply the same faculties responsible for the Fall consciously and creatively to transform ourselves and the world around us. Perhaps Camus's observation at the conclusion of *The Plague*, that "we learn in a time of pestilence that there are more things to admire in men than to despise," is true. Perhaps.

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