Why Do People Need Self-Esteem? A Theoretical and Empirical Review

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Terror management theory (TMT; J. Greenberg, T. Pyszczynski, & S. Solomon, 1986) posits that people are motivated to pursue positive self-evaluations because self-esteem provides a buffer against the omnipresent potential for anxiety engendered by the uniquely human awareness of mortality. Empirical evidence relevant to the theory is reviewed showing that high levels of self-esteem reduce anxiety and anxiety-related defensive behavior, reminders of one's mortality increase self-esteem striving and defense of self-esteem against threats in a variety of domains, high levels of self-esteem eliminate the effect of reminders of mortality on both self-esteem striving and the accessibility of death-related thoughts, and convincing people of the existence of an afterlife eliminates the effect of mortality salience on self-esteem striving. TMT is compared with other explanations for why people need self-esteem, and a critique of the most prominent of these, sociometer theory, is provided.

Everything cultural is fabricated and given meaning by the mind, a meaning that was not given by physical nature. Culture is in this sense "supernatural," and all systematizations of culture have in their end the same goal: to raise men above nature to assure them that in some ways their lives count more than merely physical things count. (Becker, 1975, p. 4)

They earn this feeling by carving out a place in nature, by building an edifice that reflects human value: a temple, a cathedral, a totem pole, a skyscraper, a family that spans three generations. The hope and belief is that the things that man creates in society are of lasting worth and meaning, that they outlive or outshine death and decay, that man and his products count. (Becker, 1973, p. 5)

The idea that people are keenly motivated to maintain high levels of self-esteem and that this motive underlies a great deal of human behavior has been a central theme in psychological theorizing, stretching from the very beginnings of scientific psychol-

ogy to the current day (e.g., Crocker & Wolfe, 2001; Fein & Spencer, 1997; Horney, 1937; James, 1890; Kernis & Waschull, 1995; Sullivan, 1953; Tesser, 1988). Indeed, the notion that people are motivated to sustain high levels of self-esteem is so pervasive and widely accepted that most theorists use it as a postulate or paradigmatic assumption without providing justification or explanation. Such diverse forms of behavior as altruism and aggression, love and hatred, and conformity and deviance, have all been explained as ultimately rooted in the human need to see ourselves as valuable. Although there has been some recent discussion concerning whether the self-esteem motive is specific to Western culture or a universal feature of human nature (Heine, Lehman, Markus, & Kitayama, 1999) and whether high levels of self-esteem are always a good thing (Baumeister, 1998; Seligman, Reivich, Jaycox, & Gillham, 1995), the vast majority of psychological theories assume that self-esteem is a pervasive force in human motivation that is generally adaptive and associated with a broad range of desirable outcomes, in spite of the fact that the pursuit of self-esteem clearly can also lead to negative consequences and undesirable behavior.

The concept of self-esteem generally refers to a person's evaluation of, or attitude toward, him- or herself (James, 1890). Over the years, theorists have made many distinctions concerning different types of self-esteem (e.g., contingent vs. noncontingent, Crocker & Wolfe, 2001; Rogers, 1959; explicit vs. implicit, Greenwald & Farnham, 2000; Hetts & Pelham, 2001; authentic vs. false, Deci & Ryan, 1995; Horney, 1937; stable vs. unstable, Kernis & Waschull, 1995; global vs. domain specific, Dutton & Brown, 1997), and theories vary in terms of the precise dynamics through which the self-esteem motive is posited to operate. However, the themes that underlie all of these conceptions are that *self-esteem*

refs to a person's evaluation of self and that people are generally motivated to maintain high levels of self-esteem and defend their self-esteem when it comes under threat.

Although some theorists advance the possibility that people can attain a healthier, more adaptive form of self-esteem that is relatively impervious to threat and does not require defense, they too acknowledge the existence and ubiquitous influence of the motive to maintain and defend positive evaluations of self (e.g., Deci & Ryan, 1995; Kernis, 2003; Rogers, 1959). The question of what makes people more or less defensive with respect to their self-evaluations is an extremely important one that is currently generating a great deal of theoretical interest and empirical research (e.g., Crocker & Wolfe, 2001; Deci & Ryan, 1995, 2000; Kernis, 2003; Kernis & Waschull, 1995; Pyszczynski, Greenberg, & Goldenberg, 2003; Schimel, Arndt, Pyszczynski, & Greenberg, 2001). However, in this article we focus on the more basic question of what psychological function self-esteem serves for the individual.

Despite the extensive use of the self-esteem motive as an explanatory concept in psychological theorizing, it was only recently that experimental psychologists turned their attention to explaining why people need self-esteem or what psychological function it serves. To our knowledge, terror management theory (TMT; Greenberg et al., 1986) was the first empirically oriented theory to address this question. Since it was first proposed in 1986, TMT has generated more than 250 separate studies, conducted in at least nine different countries, that supported hypotheses derived from it.

TMT has also generated a good deal of discussion and criticism (e.g., Boyer, 2001; Deci & Ryan, 2000; Lerner, 1997; Muraven & Baumeister, 1997; Paulhus & Trapnell, 1997; Vallacher, 1997; Wicklund, 1997). One particularly common claim is that although there is substantial evidence linking death-related thought to defense of the cultural worldview, the evidence for TMT's most basic proposition, that self-esteem serves an anxiety-buffering function, is weak and unconvincing (e.g., Leary, 1999; Leary & Baumeister, 2000; Leary & Schreindorfer, 1997). Indeed, in presenting their own sociometer theory of why people need self-esteem, Leary and Baumeister (2000) dismissed the TMT analysis of the function of self-esteem as "controversial," stating that "despite strong evidence for aspects of the theory, data do not yet support the strong argument that the function of self-esteem is to buffer existential anxiety, and a few studies have failed to support aspects of the theory" (p. 8). Unfortunately, Leary and Baumeister neglected to specifically cite or adequately describe the few studies supposedly at odds with TMT, to address the considerable body of empirical evidence pertinent to and consistent with the TMT analysis of the self-esteem motive, or to explain how their analysis could account for these findings.

Because (a) the initial impetus for the development of TMT was to address the question of why people need self-esteem, (b) a rather large number of new studies that directly address this question have been published since the last general review of the terror management literature (Greenberg, Solomon, & Pyszczynski, 1997), and (c) there have been a variety of important developments in both the self-esteem and terror management literatures since the last statement of the theory, we feel that a reconsideration of the TMT analysis of self-esteem is in order. In the present article, we review the evidence relevant to the TMT conception of the function of the self-esteem motive and compare the TMT analysis with other explanations of the function of the self-esteem motive, pay-

ing special attention to Leary and colleagues' (Leary & Baumeister, 2000; Leary, Tambor, Terdal, & Downs, 1995) sociometer theory because this is the most fully developed and widely disseminated alternative to the TMT account of self-esteem (cf. Brehm, Kassin, & Fein, 2002; Gazzaniga & Heatherton, 2003; Kendrick, Neuberg, & Cialdini, 1999; Myers, 2002).

Terror Management Theory and Research

Terror Management Theory of Self-Esteem

The crux of the terror management answer to the question, Why do people need self-esteem? is that self-esteem functions to shelter people from deeply rooted anxiety inherent in the human condition. Self-esteem is a protective shield designed to control the potential for terror that results from awareness of the horrifying possibility that we humans are merely transient animals groping to survive in a meaningless universe, destined only to die and decay. From this perspective, then, each individual human's name and identity, family and social identifications, goals and aspirations, occupation and title, are humanly created adornments draped over an animal that, in the cosmic scheme of things, may be no more significant or enduring than any individual potato, pineapple, or porcupine. But it is this elaborate drapery that provides us with the fortitude to carry on despite the uniquely human awareness of our mortal fate.

TMT was inspired by the writings of cultural anthropologist Ernest Becker, who synthesized ideas from the natural sciences, social sciences, and humanities to formulate what he hoped would become "a general science of man" (Becker, 1971, p. vii, 1973). TMT thus builds on ideas that reflect a long intellectual tradition, dating back at least to Plato, Aristotle, and other Greek and Roman philosophers, and continued through the thinking of Pascal, Kierkegaard, Hiedegger, Nietzsche, Freud, Rank, and many others. This tradition attempts to explain a wide array of human actions, good and evil, adaptive and maladaptive, as responses to the existential dilemma into which our species was born.

TMT starts with the proposition that the juxtaposition of a biologically rooted desire for life with the awareness of the inevitability of death (which resulted from the evolution of sophisticated cognitive abilities unique to humankind) gives rise to the potential for paralyzing terror. Our species "solved" the problem posed by the prospect of existential terror by using the same sophisticated cognitive capacities that gave rise to the awareness of death to create cultural worldviews: humanly constructed shared symbolic conceptions of reality that give meaning, order, and permanence to existence; provide a set of standards for what is valuable; and promise some form of either literal or symbolic immortality to those who believe in the cultural worldview and live up to its standards of value. Literal immortality is bestowed by the explicitly religious aspects of cultural worldviews that directly address the problem of death and promise heaven, reincarnation, or other forms of afterlife to the faithful who live by the standards and teachings of the culture. Symbolic immortality is conferred by cultural institutions that enable people to feel part of something larger, more significant, and more eternal than their own individual lives through connections and contributions to their families, nations, professions, and ideologies.

Self-esteem as a cultural construction. TMT posits that self-esteem is a sense of personal value that is obtained by believing (a)

in the validity of one's cultural worldview and (b) that one is living up to the standards that are part of that worldview. It is the feeling that one is a valuable contributor to a meaningful universe—a sense that one's life has both meaning and value. Becker (1973) put it this way:

> It doesn't matter whether the cultural hero-system is frankly magical, religious, and primitive, or secular, scientific, and civilized. It is still a mythical hero system in which people serve to earn a feeling of primary value, of cosmic specialness, of ultimate usefulness to creation, of unshakable meaning. (p. 5)

Thus, for TMT, self-esteem is ultimately a culturally based construction that consists of viewing oneself as living up to specific contingencies of value (cf. Crocker & Wolfe, 2001) that are derived from the culture at large but are integrated into a unique individualized worldview by each person. This implies that there is likely to be considerable variability, across both cultures and individuals, in the specific contingencies that an individual must meet to feel valuable. Whereas beating another person to a cab, loudly proclaiming one's successes, and demonstrating one's individuality and relative immunity to concerns about others might lead a typical urban American to feel valuable, the same behavior might lead to feelings of shame and dramatic drops in self-esteem for a typical Japanese urbanite, who would feel better about him- or herself after stepping back to offer the cab to another person, playing down accomplishments and crediting colleagues for their role in the group effort, and blending into the group. Despite these general differences in cultural values, individuals within each culture also vary in the contingencies of value that they have internalized from the larger culture and thus in the contingencies through which they achieve self-esteem. Although the specific contingencies through which self-esteem is attained vary across cultures and individuals, the underlying need for self-esteem is posited to be a cultural universal.

The role of others in self-esteem maintenance. Although TMT conceptualizes self-esteem as resulting from one's own assessment of the extent to which one is living up to internalized cultural standards of value, other people play an important role in the process of maintaining both self-esteem and faith in the internalized version of the cultural worldview from which self-esteem is ultimately derived. Both self-esteem and faith in one's cultural worldview are maintained through a process of consensual validation (cf. Festinger, 1954; Swann, 1987). When others agree with one's conception of reality and evaluation of self, it implies that these conceptions are correct and based in external reality; when others disagree with these conceptions, it threatens to undermine this faith and confidence. From the perspective of TMT, self-esteem is a culturally derived construction that is dependent on sources of social validation, it is essentially defensive in nature, and it functions to provide a buffer against core human fears.

Development of the anxiety-buffering capacity of self-esteem. TMT follows a tradition of tracing the emergence of the anxiety-buffering capacity of self-esteem through a developmental analysis that starts with the precarious situation into which the human infant is born (e.g., Becker, 1971; Bowlby, 1969/1982; Freud, 1930; Horney, 1937; Mead, 1934; Rank, 1929/1973). Consistent with Bowlby's (1969/1982) attachment theory, TMT posits that human infants are born with an innate propensity to experience and express negative affect in response to circumstances that threaten their continued existence. Because of the newborn infant's profound immaturity and helplessness, he or she is heavily dependent on the parents for the fulfillment of basic needs and protection from threats to continued existence. Throughout the socialization process the child learns that his or her needs are fulfilled and thus anxiety is attenuated when he or she lives up to parental standards of goodness. However, when the child falls short of the parents' standards, he or she is denied that love and protection. Thus as children develop, their sense of security becomes increasingly contingent on meeting parental standards of value, which ultimately reflect the parents' internalized version of the prevailing cultural worldview. In this fashion, self-esteem acquires its anxiety-buffering properties.

In the early stages of development, affection from the parents provides this anxiety-buffering function in the absence of any conscious awareness of death or the frightening nature of this ultimate reality. The child's innate potential to respond with fear to circumstances that threaten the child's continued existence is quelled by the parents' affection before the cognitive capacities for fully understanding the core threat have developed. However, with the dawning realization of mortality and the inability of the parents to adequately protect the child from this inevitable threat, the primary basis of security shifts from the parents to a worldview ultimately derived from the deistic and secular figures and constructs of the culture at large. From the terror management perspective, then, self-esteem results from believing in and living up to internalized standards and is the feeling that "*one is an object of primary value in a world of meaningful action*" (Becker, 1971, p. 79).

Summary of TMT conception of self-esteem. TMT proposes that people need self-esteem because self-esteem provides a shield against a deeply rooted fear of death inherent in the human condition. Self-esteem is obtained by confident belief in a humanly constructed cultural worldview and meeting or exceeding the standards of value associated with the social role one plays within that worldview. When self-esteem is strong, this anxiety is mitigated and the person is able to go about his or her daily affairs and act effectively in the world. When self-esteem is weak or challenged, this threatens a "leakage" of this core anxiety, which instigates various forms of defensive behavior aimed at shoring up whatever aspect of one's worldview or self-evaluation has come under threat or at more generally bolstering self-worth through compensatory efforts. In addition to defending self-esteem and worldviews in the face of threats, the theory implies that because of each person's knowledge of the inevitability of death and the protection against the resultant anxiety that self-esteem and worldviews provide, people continually strive to bolster these two psychological entities. Thus, people seek self-esteem not only to escape anxiety that they are currently experiencing but also to avoid the anxiety that is inherent in their knowledge of their mortality. Even when people are not consciously thinking about death and external events are not drawing attention back to this problem, the pursuit of self-esteem and faith in one's worldview are ongoing endeavors that function to protect them from implicit knowledge of their ultimate fate.

Although we have used reminders of mortality in our research (for a review, see Greenberg et al., 1997) to help document the terror management function of self-esteem and cultural worldviews, the theory in no way implies that such reminders are necessary precursors to the ongoing pursuit of self-esteem and

worldview validation because human knowledge of the inevitability of death persists regardless of whether one is consciously thinking about this problem, much like one's knowledge of one's identity, social norms, and long-range personal goals persist and influence behavior when outside of conscious attention. Thus the proposition that people seek self-esteem because of its terror management function in no way implies that conscious thoughts of death or external reminders of mortality must be present to stimulate such pursuits.

An important question is whether self-esteem serves functions other than anxiety reduction in the ultimate service of death denial. TMT posits that, phylogenetically, the self-esteem motive emerged as a side effect of the evolution of the sophisticated intellectual abilities that made members of our species aware of their inevitable mortality. However, self-esteem undoubtedly provides other benefits for the individual as well. For example, positive evaluations may simply feel good, thus contributing to the individual's general level of positive affect, although why they make people feel good, whether it is by increasing feelings of security or through other mechanisms, requires specification. High levels of self-esteem also provide the sense of efficacy that is necessary for engagement in difficult activities and that provides resources for coping with difficulties, setbacks, and failures (Carver & Scheier, 1981, 1998). However, TMT views these as ancillary benefits of the protection against core anxiety that self-esteem provides.

Empirical Evidence of Anxiety-Buffering Properties of Self-Esteem

A large body of evidence is broadly consistent with the idea that self-esteem serves an anxiety-buffering function (for a review, see Solomon, Greenberg, & Pyszczynski, 1991). Self-esteem is negatively correlated with indicators of anxiety and anxiety-related problems and positively correlated with successful coping with stress and with indicators of good mental and physical health. In addition, laboratory research has shown that threats to self-esteem arouse anxiety and a wide variety of cognitive and behavioral defenses and that these defenses reduce self-reported anxiety back to baseline levels (for a review, see Arndt & Goldenberg, 2002).

In reviewing the literature concerning the function of self-esteem, we searched the psychological literature for references to the self-esteem motive, TMT, and the various alternative accounts of the function of self-esteem discussed later in the article. We later describe more specifically our search for evidence for the sociometer theory in particular. We also relied on our collective knowledge of this literature and of recent as-yet-unpublished work on these issues.

Direct evidence that self-esteem buffers anxiety. The earliest direct assessments of the TMT analysis of the self-esteem motive tested the anxiety buffer hypothesis: To the extent that self-esteem provides protection against anxiety, then increasing self-esteem should make one less prone to anxiety when later exposed to threatening material (a summary of the empirical evidence relevant to this hypothesis is presented in Table 1). In the initial test of this hypothesis, Greenberg, Solomon, et al. (1992) demonstrated that boosting self-esteem with positive feedback on a personality test led to lower levels of self-reported anxiety on the State Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970) in response to graphic video depictions of death. Two subsequent studies showed

Table 1
Direct Evidence That Self-Esteem (SE) Buffers Anxiety

Report	Context	Dependent variable	Hypothesis	Statistical result
Greenberg, Solomon, et al. (1992, Study 1)	Participants received bogus positive vs. neutral personality feedback and then watched a threatening video about death vs. a neutral video.	State anxiety (Spielberger et al., 1970)	Bolstered SE should reduce anxiety in response to threat.	SE × Threat interaction, $F = 4.20$, $p < .05$. *Key pairwise:* Neutral SE–threat participants had the highest anxiety, $ts > 2.10$, $ps < .05$.
Greenberg, Solomon, et al. (1992, Studies 2 & 3)	Participants received bogus positive vs. neutral feedback on an intelligence test (Study 2) or on a personality test (Study 3) and then engaged in a physiological stimulation task in which they were told they would receive electric shocks vs. neutral visual stimulation.	Physiological arousal (skin conductance)	Bolstered SE should reduce physiological arousal in anticipation of painful electric shocks.	SE × Threat interaction, $Fs > 5.48$, $ps < .05$. *Key pairwise:* Neutral SE–threat participants had the highest anxiety, $ts > 2.38$, $ps < .05$.
Greenberg et al. (1993, Studies 1 & 2)	Participants received bogus positive vs. neutral personality feedback (Study 1) or were solicited on the basis of high vs. low trait SE scores (Study 2) and were told that low vs. high emotionality is associated with an early death. Participants then completed an emotionality scale.	Denial of a short life expectancy (level of emotionality)	High SE should reduce participants' tendency to deny a short life expectancy.	SE × Emotionality interaction, $Fs > 3.87$, $ps < .05$. *Key pairwise:* Among neutral SE participants, emotionality information led to biased reports of emotionality to deny a short life, $ts > 2.00$, $ps < .05$. High SE participants reported no such bias, $ts < 1.00$, *ns.*

Note. Research reports are listed in the order they appear in the present article. Only the hypotheses and results that are relevant to the discussion in the present article are summarized in the table.

that both positive personality feedback and success on a supposed test of intelligence led to lower levels of physiological arousal (specifically, skin conductance) in response to the threat of painful electric shock, levels no higher than those exhibited by participants not threatened with shock. Additional support for the anxiety buffer hypothesis was provided by Greenberg et al. (1993), who demonstrated that both experimentally enhanced and dispositionally high self-esteem lead to lower levels of defensive distortions to deny one's vulnerability to an early death. Whereas in control conditions participants reported whatever level of emotionality (high or low) they had been led to believe is associated with a long life expectancy, participants with dispositionally high or experimentally enhanced self-esteem did not show this bias.

Self-esteem reduces the effect of mortality salience (MS) on worldview defense and death-thought accessibility. A large body of evidence indicates that subtle reminders of death (i.e., *mortality salience*; typically induced by asking participants to respond to two open-ended questions, "Please briefly describe the emotions that the thought of your own death arouse in you" and, "Jot down, as specifically as you can, what you think will happen to *you* as you physically die") intensifies positive reactions to worldview validators and negative reactions to worldview threateners. For example, Greenberg, Pyszczynski, et al. (1990) had Christian participants evaluate Christian and Jewish targets who were very similar demographically except for religious affiliation. Although there were no differences in evaluation of the targets in the control condition, MS participants reported greater fondness for the Christian target and more adverse reactions to the Jewish target. For a review of MS research, see Greenberg et al. (1997). If self-esteem buffers people's concerns about death, then high self-esteem should reduce such defensive reactions to reminders of mortality and the increase in the accessibility of death-related thought that MS typically produces. A summary of evidence relevant to these hypotheses is found in Table 2.

In support of these hypotheses, Harmon-Jones et al. (1997) demonstrated that both experimentally enhanced and dispositionally high self-esteem leads to lower levels of worldview defense and death-thought accessibility in response to reminders of one's mortality. Whereas, as in many previous studies, priming participants with a reminder of their mortality led to increased defense of the cultural worldview under neutral conditions, this increased worldview defense was completely eliminated by a boost to self-esteem in the form of bogus positive feedback on a personality test. Another study demonstrated that whereas participants with moderate levels of dispositional self-esteem responded to MS with increased worldview defense, those with high levels of dispositional self-esteem did not. Arndt and Greenberg (1999) replicated this finding but also found that a self-esteem boost did not eliminate MS-induced derogation of a worldview threatener if that worldview threatener attacked the very domain upon which the prior self-esteem boost was based.

In a third study, Harmon-Jones et al. (1997, Study 3) demonstrated that experimentally enhancing self-esteem eliminated the delayed increase in death-thought accessibility, as measured by a word-stem completion task (cf. Gilbert & Hixon, 1991), that is typically found following MS treatments (e.g., Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994). This is consistent with the view that worldview defense increases as death-related thoughts become more accessible and suggests that self-esteem undermines the need to defend the worldview by keeping death-related thoughts low in accessibility.

Arndt, Greenberg, Solomon, Pyszczynski, and Simon's (1997; see also Greenberg, Arndt, Schimel, Pyszczynski, & Solomon, 2001) finding that worldview defense reduces death-thought accessibility after a MS prime provides further support for this proposition. Additional evidence is provided by Mikulincer and Florian's (2002, Study 3) finding that the opportunity to engage in self-serving attributions (e.g., attributing poor performance following failure to external causes), which is a well-established self-esteem maintenance strategy (see, e.g., Pyszczynski & Greenberg, 1987), also serves to reduce death-thought accessibility in response to MS.

Contrary to what TMT would predict, Baldwin and Wesley (1996) found that the effect of MS on evaluations of worldview validators and transgressors was somewhat higher for dispositionally high than low self-esteem participants. Why high self-esteem participants showed stronger rather than weaker worldview defense, as in the Harmon-Jones et al. (1997) study, is unclear. Baldwin and Wesley suggested that this is consistent with other findings that high self-esteem individuals tend to be more defensive than those with low self-esteem.

This inconsistency in the literature suggests some caution regarding the relationship between dispositional self-esteem and responses to MS. Because of the correlational nature of studies examining relationships with chronic self-esteem, it may be that some third variable correlated with self-esteem that varied across these studies might be responsible for this divergence. Findings from studies of manipulated self-esteem, reviewed above, portray a more consistent picture of raised self-esteem reducing or eliminating the effect of MS on defensive responses.

MS increases self-esteem striving. The vast majority of terror management research has been focused on variations of the MS hypothesis, which states that, to the extent that a psychological structure provides protection against fear, reminders of the source of that fear should increase one's need for that structure. Although most studies using this paradigm have been focused on the cultural worldview component of the theory, TMT also implies that MS should lead to increased need for self-esteem and thus increased efforts to live up (or at least believe that one is living up) to the standards of value from which one's self-esteem is derived. A summary of evidence relevant to this proposition is found in Table 3.

Several early studies investigated the effects of MS on self-reported self-esteem per se, with no opportunity for behavior that would support an enhanced self-evaluation (e.g., Koole, Dechesne, & van Knippenberg, 2001; Sowards, Moniz, & Harris, 1991; several studies in our own labs).[1] These studies led to inconsistent

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[1] In the Sowards et al. (1991) study that found no effect of MS on self-esteem, a measure of dispositional self-esteem was taken, MS was manipulated, and the same measure of dispositional self-esteem was then readministered. Besides the likelihood that the premeasure of self-esteem given moments before the postmeasure created some resistance to change in self-report and the difficulty of finding effects of situational manipulations on dispositional trait measures, this study did not include the delay and distraction that later research has shown to be necessary for reminders of mortality to affect behavior and judgments (Greenberg et al., 1994; Pyszczynski et al., 1999). Unpublished early studies that also failed to find consistent effects of MS on situational measures of self-esteem were also conducted by members of our TMT research group (Jeff Greenberg, Sheldon Solomon, & Tom Pyszczynski) before we discovered the critical role played by delay and distraction in producing these effects.

Table 2
Self-Esteem (SE) Reduces the Effect of Mortality Salience (MS) on Worldview Defense (WVD) and Death-Thought Accessibility

Report	Context	Dependent variable	Hypothesis	Statistical result
Harmon-Jones et al. (1997, Study 1)	Participants received bogus positive vs. neutral personality feedback, wrote about their mortality vs. a neutral topic (TV), and then evaluated a pro- vs. an anti-American essay author.	WVD (difference score reflecting preference for pro- vs. anti-American author)	Experimentally bolstered SE should reduce WVD in response to MS.	SE × MS interaction, $F = 4.29$, $p < .05$. *Key pairwise:* High SE reduced WVD following MS relative to neutral SE, $t = 2.93$, $p < .05$.
Harmon-Jones et al. (1997, Study 2)	Participants with high vs. moderate trait SE (Rosenberg, 1965) were solicited for study. Participants wrote about their mortality vs. a neutral topic (TV) and then evaluated a pro- vs. anti-American essay.	WVD (difference score reflecting preference for pro- vs. anti-American author)	Higher levels of trait SE should reduce WVD in response to MS.	SE × MS interaction, $F > 4.36$, $p < .05$. *Key pairwise:* High trait SE participants had lower WVD following MS than moderate SE participants, $ts < 1.00$, *ns.* Among moderate SE participants, MS led to higher WVD than control, $ts > 2.87$, $ps < .01$. Among high SE participants, there was no difference between MS vs. control, $ts < 1.00$.
Harmon-Jones et al. (1997, Study 3)	Participants received bogus positive vs. neutral personality feedback, wrote about their mortality vs. a neutral topic (TV) and then completed a death accessibility (DA) measure immediately vs. after a delay.	DA (word fragment completions)	Higher levels of bolstered SE should reduce the delayed increase in DA following MS.	SE × MS × Time interaction, $F = 7.55$, $p < .01$. *Key pairwise:* On the delayed DA measure, high SE reduced DA following MS relative to neutral SE, $t = 5.31$, $p < .01$. No pairwise comparisons on the immediate DA measure were significant, $ts < 1.00$.
Arndt & Greenberg (1999)	Participants received bogus positive vs. neutral personality feedback and bogus positive vs. neutral feedback about their college major. Participants were then reminded of their mortality vs. a control topic (dental pain) and then evaluated a target who criticized the United States and a target who criticized their major.	WVD#1: evaluation of anti-American target; WVD#2: evaluation of antimajor target	1. High SE boost should reduce WVD#1 following MS. 2. Major SE boost should raise WVD#2 following MS.	WVD#1: SE × MS interaction, $F = 14.66$, $p < .01$. *Key pairwise:* Neutral SE–MS participants had the highest WVD#1, $ts > 4.62$, $ps < .01$. WVD#2: Major Boost × MS interaction, $F = 5.32$, $p < .03$. *Key pairwise:* Major SE boost–MS participants had the highest WVD#2, $ts > 2.18$, $ps < .05$.
Arndt et al. (1997, Study 3)	Participants were reminded of their mortality vs. a control topic (taking an exam) and then evaluated pro vs. anti-American essays. An additional group of participants was reminded of their mortality and not allowed to evaluate the essays.	DA (word fragment completions)	MS should lead to high DA when participants are not allowed to engage in WVD.	*Planned contrasts:* MS–no defend participants had higher DA than MS–defend and control–defend participants, $t = 4.84$, $p < .01$. MS–defend vs. control–defend participants did not differ, $t < 1.00$, *ns.*
Greenberg et al. (2001)	Conceptual replication of Arndt et al. (1997, Study 3) using dental pain as the control topic. An additional condition was added: MS–defend under high cognitive load.	DA (word fragment completions)	MS should lead to high DA when participants are not allowed to engage in WVD.	Significant treatment effect, $F = 5.28$, $p < .01$. *Key pairwise:* MS–no defend participants had the highest DA, $ts > 2.61$, $ps < .05$.
Mikulincer & Florian (2002, Study 3)	Participants were reminded of their mortality vs. watching TV and then received failure feedback on a concept formation task. Participants then were given the opportunity to make SSA about their performance.	DA (word fragment completions)	MS should lead to higher DA when participants are not allowed to make SSA.	MS × Opportunity to Make SSA, $F = 5.14$, $p < .05$. *Simple effects:* When participants were not allowed to make SSA, MS led to higher DA than TV, $F = 6.63$, $p < .01$. When participants were allowed to make SSA, MS led to lower DA than TV, $F = 4.43$, $p < .05$.

Table 2 (*continued*)

Report	Context	Dependent variable	Hypothesis	Statistical result
Baldwin & Wesley (1996)	Canadian participants who were high vs. low on trait SE read passages that reminded them of their mortality and the meaninglessness of life vs. their mortality with no reference to meaninglessness vs. meaninglessness without reference to death vs. no passage (control). Participants then evaluated several targets that were worldview validators vs. transgressors.	Likeability and evaluations of the targets. A polarization score was computed by subtracting the ratings of the negative target from the positive target.	1. MS should lead to more polarized reactions to the targets for high SE participants. 2. MS should lead to less polarized reactions to the targets for low SE participants.	MS × SE interaction, $F = 7.70$, $p < .01$. *Simple effects:* MS led high SE participants to give more polarized ratings of the positive and negative targets, $F = 4.79$, $p < .05$. MS led low SE participants to marginally lower polarized ratings of the positive and negative targets, $F = 2.80$, $p < .10$. There was also a nonsignificant Meaninglessness × SE interaction, $F < 1.00$.

Note. Research reports are listed in the order they appear in the present article. Only the hypotheses and results that are relevant to the discussion in the present article are summarized in the table. Unless otherwise specified, the MS inductions in the above studies were composed of two open-ended questions about death (e.g., Greenberg, Simon, et al., 1992). SSA = self-serving attributions.

results. However, Pyszczynski and Greenberg (1987) have argued elsewhere (see also Festinger, 1957; Kruglanski, 1981; Kunda, 1990) that people are not free to believe just anything they wish but must be able to generate a plausible set of evidence that enables them to maintain an illusion of objectivity about their beliefs. This suggests that MS would lead to greater efforts to convince oneself of one's personal value, as reflected by greater efforts to live up to cultural standards, greater distress when violating them, or greater biases in one's interpretation of specific self-relevant information. The evidence to date strongly supports these propositions.

Greenberg, Simon, Pyszczynski, Solomon, and Chatel (1992) provided the first evidence suggesting that MS increases self-esteem striving by demonstrating that MS led political liberals, who are committed to the value of tolerance, to respond more favorably to someone who challenged their worldviews. A follow-up study demonstrated this effect among a general sample of students, but only after priming them with the value of tolerance. Thus MS led to increased efforts to live up to the value of tolerance both among those who dispositionally placed great importance on this value and among those for whom the salience of this value was temporarily increased. Conceptually similar research has found that whereas Australian participants with low self-esteem respond to reminders of mortality by becoming more individualistic in their behavior, Japanese participants with low self-esteem respond to MS by becoming less individualistic in their behavior (Kashima, Halloran, Yuki, & Kashima, 2003). This work shows that MS effects depend on the prescribed values of the particular culture and that these effects on self-esteem striving occur in collectivistic as well as individualistic cultures. Of course, in cultures, such as the United States, that emphasize individualism and capitalism, materialism and financial success are highly valued as reflections of worth. Accordingly, studies have found that MS increases the appeal of high-status items (e.g., a Lexus automobile vs. a Geo-Metro automobile; Mandel & Heine, 1999; see also Heine, Harihara, & Niiya, 2002), financial aspiration, and greed (Kasser & Sheldon, 2000).

More direct behavioral evidence of MS increasing self-esteem striving was subsequently provided by a series of studies by Taubman Ben-Ari, Florian, and Mikulincer (1999). In these studies conducted on Israeli soldiers, MS increased risky driving behavior (assessed through both self-reports and on a driving simulator) among those participants who valued their driving ability as a source of self-esteem. Taubman Ben-Ari et al. also hypothesized that after MS, a boost to self-esteem would eliminate the need to demonstrate driving skill through risky driving, and that is precisely what they found. In addition to providing evidence that MS increases self-esteem striving, this research provides evidence for an ironic effect: Even risky behavior, which could be a threat to one's continued existence, can be increased by reminders of death if that behavior is a source of self-esteem. More recent studies by Hirschberger, Florian, Mikulincer, Goldenberg, and Pyszczynski (2002) replicated these findings with a measure of the general appeal of a wide range of risky behavior.

Other research demonstrates that reminders of death can also promote self-esteem striving in health-related domains (see Arndt, Schimel, & Goldenberg, 2003) when such domains represent important contingencies of self-worth (cf. Crocker & Wolfe, 2001). This work is derived from the dual defense model of conscious and

Table 3

Mortality Salience (MS) Increases Self-Esteem Striving

Report	Context	Dependent variable (DV)	Hypothesis	Statistical result
Greenberg, Simon, et al. (1992, Study 1)	Highly conservative vs. highly liberal participants were reminded of their mortality vs. a neutral topic (TV). Participants then evaluated a liberal and conservative target.	Liking of the similar and dissimilar target	MS should lead conservatives to like similar over dissimilar targets. MS should not affect liberals' liking for similar and dissimilar targets.	MS × Political Orientation × Similarity of Target interaction, $F = 10.11$, $p < .01$. *Key pairwise:* Conservative participants liked the similar target and disliked the dissimilar target under MS, both $ts > 2.04$, $ps < .05$. Liberal participants liked the dissimilar target slightly more following MS, $t = 1.81$, $p < .08$.
Greenberg, Simon, et al. (1992, Study 2)	Participants were either primed with the value of tolerance or not and then were reminded of their mortality vs. a control topic (TV). Participants then evaluated a pro- and anti-American essay.	Evaluation of the pro- and anti-American essay	Priming tolerance should eliminate the usual MS effect of liking for the pro- vs. anti-American essay.	MS × Tolerance Prime × Target interaction, $F = 4.26$, $p < .05$. *Key pairwise:* Among no prime participants, MS decreased liking for the anti-American essay, $t = 4.49$, $p < .01$. Among MS participants, the tolerance prime increased liking of the anti-American essay relative to no prime, $t = 2.33$, $p < .05$.
Heine et al. (2002)	Japanese participants at the University of Tokyo were reminded of their mortality vs. taking an exam, evaluated an anti-Japan essay, and then rated several high- vs. low-status products after viewing ads for these products.	Evaluation of anti-Japan essay; intentions to purchase each product	MS should lead Japanese participants to less liking of the anti-Japan essay and increase purchase intentions of high-status products vs. low-status products.	Significant t test on anti-Japan essay, $t = 4.86$, $p < .04$, indicating that MS led to more negative evaluations of the essay. Nonsignificant t test on high-status products essay, $t < 1.00$, *ns*. Marginally significant t test on low-status products, $t = 3.49$, $p = .07$, indicating that MS led to lower purchase intentions for the low-status products.
Mandel & Heine (1999)	Participants were reminded of their mortality (using the Fear of Death Scale; Boyar, 1964) vs. similar questions about depressive symptoms and then rated high- and low-status products after viewing ads for these products.	Intentions to purchase each product	MS should lead participants to higher purchase intentions of the high-status products.	MS × Product Status interaction, $F = 5.54$, $p < .01$. *Cell means:* MS-high status = 4.09; MS-low status = 3.63; control-high status = 3.48; control-low status = 3.93.
Kasser & Sheldon (2000, Study 1)	Participants were reminded of their mortality vs. a neutral topic (listening to music) and then answered several questions about their expected financial success 15 years in the future.	3 DVs: (a) overall financial worth (dollar estimates of salary, worth of home, investments, and travel allowance); (b) pleasure spending (clothing, entertainment, & leisure activities); and (c) possessions (worth of vehicles and household goods)	MS should lead participants to overestimate their future financial worth.	Significant t test on overall financial worth, $t = 1.99$, $p = .05$, indicating that MS led participants to higher estimates of future worth. Significant t test on pleasure spending, $t = 2.30$, $p = .02$, indicating that MS led participants to higher ratings of pleasure spending. Nonsignificant t test on possessions, $t = -0.13$.
Kasser & Sheldon (2000, Study 2)	Participants were reminded of their mortality vs. a neutral topic (listening to music) and then participated in a forest management game in which they were to imagine competing against three other forestry companies to harvest timber. Participants were put in the commons dilemma in which higher bids could wipe out the forest.	3 DVs: (a) greed (rate their desire to profit over other companies), (b) fear (rate how much forest other companies would cut), and (c) actual bid (acreage of forest they would harvest)	MS should lead participants to bid to harvest a larger portion of the forest. No hypothesis regarding greed vs. fear.	Significant t test on participants actual bid, $t = 2.13$, $p = .04$, indicating that MS led participants to higher bids. Significant t test on greed, $t = 2.6$, $p = .01$, indicating that MS led participants to report higher greed. Nonsignificant t test on fear, $t = 0.83$, $p = .41$.

Table 3 (*continued*)

Report	Context	Dependent variable (DV)	Hypothesis	Statistical result
Taubman Ben-Ari et al. (1999, Studies 1, 2, & 3)	Participants with high vs. low DRS scores were reminded of their mortality vs. a control topic (eating dinner) and then completed a reckless driving scale (Studies 1 & 2) or drove a car simulator (Study 3).	Proneness to drive recklessly in 10 driving scenarios (Studies 1 & 2); driving velocity (Study 3)	MS should increase reckless driving among high DRS participants.	MS × DRS interaction, $Fs > 4.84$, $ps < .01$. *Simple effects:* For high DRS participants, MS led to increased reckless driving, $Fs > 3.94$, $p < .05$. For low DRS participants, MS led to decreased reckless driving, $Fs > 3.89$, $ps < .05$; this effect was not significant for Study 3).
Taubman Ben-Ari et al. (1999, Study 4)	Participants with high vs. low DRS scores were reminded of their mortality vs. a neutral control topic (food) and then received feedback that they were good drivers after driving a car simulator. Participants then drove the car simulator again.	Driving velocity on a driving simulator	MS should increase reckless driving among high DRS participants. Positive feedback should reduce this tendency.	MS × DRS × Feedback interaction, $F = 7.55$, $p < .01$. *Simple effects:* Among no feedback participants, those with high DRS drove faster after MS relative to control, $F = 13.49$, $p < .01$. There were no effects among positive feedback participants, $Fs < 1.00$.
Amdt et al. (2003, Study 2)	Participants with high vs. low fitness SE were reminded of their mortality or dental pain (DP) and then completed a fitness intentions questionnaire either immediately following MS or after a delay.	Estimates of one's physical fitness and intentions to engage in physical exercise	MS should increase all participants' fitness intentions immediately after MS. After the delay, MS should increase fitness intentions only for participants with high fitness SE.	MS × Fitness SE × Fitness Assessment interaction, $F = 4.78$, $p < .04$. Among immediate fitness assessment participants, there was a main effect of MS, $F = 5.31$, $p < .03$, showing that MS led to higher fitness intentions. Among delayed fitness assessment participants, there was a MS × Fitness SE interaction, $F = 7.33$, $p < .01$. *Key pairwise:* MS–high fitness SE participants had the highest fitness intentions, $ts > 3.29$, $ps < .01$.
Routledge et al. (in press, Study 1)	Female participants were recruited who indicated that being tanned was at least moderately important to SE. Participants were reminded of mortality vs. DP followed by a delay vs. no delay.	Participants rated their interest in buying different brands and strengths of sunscreen.	MS should increase interest in sun protection in the no delay condition (proximal) and reduce interest in the delay condition (distal) because being tanned boosts SE.	MS × Delay–No Delay interaction, $F = 12.80$, $p < .01$. *Key pairwise:* In the no delay condition, MS increased interest in sun-protective products compared with DP, $t = 2.14$, $p < .05$. In the delay condition, MS decreased interest in sun-protective products compared with DP, $t = 2.28$, $p < .05$.
Routledge et al. (in press, Study 2)	Female participants wrote about death or feelings of uncertainty and then exposed to a flier featuring a tanned attractive woman in a bathing suit or a beach ball.	Participants rated their liking for the company advertised in the flier and interests in using tanning services and products offered by the company	After MS, priming an attractive tanned woman should increase participants' overall evaluation of and interest in using tanning services and products provided by the company compared with priming a beach ball.	MS × Flier interaction, $F = 4.0$, $p < .05$. *Key pairwise:* After being primed with the attractive tanned woman, MS compared with uncertainty increased evaluation of and interest in tanning products, $t = 2.14$, $p < .05$.
Peters et al. (2003)	Participants with high vs. low investment in physical strength squeezed a hand dynamometer and then were reminded of their mortality vs. DP. Participants then squeezed the dynamometer again.	Amount of strength output measured by a hand dynamometer	MS should increase participants' strength output among those who are invested in physical strength.	MS × Strength Investment × Time interaction, $F = 6.16$, $p < .02$. *Simple effects:* Among high strength investment participants, MS led to increased strength output from Time 1 to Time 2 than DP, $F = 6.60$, $p < .01$.

(*table continues*)

Table 3 (*continued*)

Report	Context	Dependent variable (DV)	Hypothesis	Statistical result
Jonas et al. (2002, Study 1)	Participants completed a survey that assessed their evaluation of two charities in front of a funeral home (MS) vs. 100 m away (control).	Desirability of both charities	MS should increase participants' favorability toward charities.	Significant *t* test, *t* = 2.06, *p* < .05, indicating that MS led participants to higher ratings of the charities.
Jonas et al. (2002, Study 2)	Participants were given $1.50 for participating in the study (6 quarters). Participants were then reminded of their mortality vs. DP and then were asked if they wanted to donate any money to an American and a foreign charity.	Amount of money participants donated	MS should increase participants' donations to the American charity.	MS × Charity interaction, *F* = 7.06, *p* < .02. *Key pairwise:* MS increased participants' donations to the American charity only, *t*s > 2.52, *p* < .05.
Schimel et al. (2003, Study 2)	Participants high vs. low on trait empathy were reminded of their mortality vs. DP and were then asked how much they would forgive a moral transgressor who was an in-group vs. out-group member.	Self-reported forgiveness of moral transgressor	Among low empathy participants, MS should increase forgiveness of only the in-group member. Among high empathy participants, MS should increase forgiveness of the in-group and out-group member.	MS × Empathy × Group Member interaction, *F* = 5.99, *p* < .02. *Key pairwise:* Among low empathy participants, MS led to more forgiveness of the in-group than the out-group member, *t* = 5.50, *p* < .01. MS also led to more forgiveness of the in-group member than DP, *t* = 3.58, *p* < .01. Among high empathy participants, MS led to increased forgiveness for both in-group and out-group members, *t*s > 5.00, *p* < .01.
Greenberg, Porteus, et al. (1995)	American participants were reminded of the their mortality vs. a control topic (TV) and then engaged in problem solving tasks involving cultural icons (the American flag and a crucifix) or neutral objects that required them to treat the objects inappropriately. Participants then answered some questions about the tasks.	Amount of time participants took to complete the problem solving task, ratings of task difficulty, tension while solving the task	MS should increase amount of time, perception of task difficulty, and tension when having to use the cultural icons.	MS × Icon interaction on each DV, *F*s > 4.42, *p*s < .05. *Key pairwise:* MS–cultural icon participants took the most time, *t*s > 4.49, *p*s < .01; rated the task as most difficult, *t*s > 2.89, *p*s < .05; and experienced the most tension, *t*s > 3.48, *p*s < .01.
Goldenberg, McCoy, et al. (2000, Studies 1 & 2)	Participants with high vs. low BSE were reminded of their mortality vs. a control topic (TV) and then indicated their BI (Study 1) or enjoyment in aspects of PS (Study 2).	BI—importance of body parts (hair, skin, legs) to one's sense of self (Study 1); enjoyment in PS (Study 2)	MS should increase BI and enjoyment in PS for participants high in BSE and decrease BI and enjoyment in PS for participants low in BSE.	MS × BSE interactions, *F*s > 4.43, *p*s < .04. *Simple effects:* MS led high BSE participants to have higher BI and enjoyment in PS than TV, *F*s > 4.68, *p* < .05. MS led high BSE participants to have higher BI and enjoyment in PS than did low BSE participants, *F*s > 8.60, *p* < .01.
Goldenberg, McCoy, et al. (2000, Study 3)	Participants with high vs. low BSE and high vs. low appearance focus were reminded of their mortality vs. a control topic (TV) and then indicated the extent to which they monitor their appearance.	Objectified Body Consciousness Scale (McKinley & Hyde, 1996)	MS should decrease body consciousness for participants who are appearance focused and who are low in BSE.	MS × BSE × Appearance Focus interaction, *F* = 4.46, *p* < .04. Only a two-way MS × BSE interaction for high appearance focus participants, *F* = 3.99, *p* < .05. *Key pairwise:* Within high appearance focus participants, MS led low BSE participants to have lower body consciousness than TV, *t* = 6.32, *p* < .01.

Note. Research reports are listed in the order they appear in the present article. Only the hypotheses and results that are relevant to the discussion in the present article are summarized in the table. Unless otherwise specified, the MS inductions in the above studies were composed of two open-ended questions about death (e.g., Greenberg, Simon, et al., 1992). DRS = driving relevant to self-esteem (SE); BSE = body self-esteem; BI = body identification; PS = physical sex.

unconscious responses to death-related thought (Pyszczynski, Greenberg, & Solomon, 1999). Specifically, when thoughts of death are in current focal attention, the individual responds with proximal defenses that attempt to deal with the problem of death in a relatively rational way, by either distracting oneself from the issue or pushing the problem of death into the distant future by denying one's vulnerability. The more distal terror management defenses of bolstering one's self-esteem or faith in one's cultural worldview emerge primarily when thoughts of death are on the fringes of consciousness—that is, when they are highly accessible but not in current focal attention.

To investigate the application of the dual process defense model to health-related behavior, Arndt et al. (2003) recruited participants for whom fitness was either high or low in importance to their self-esteem, reminded them of their mortality or a control topic, and then assessed their fitness intentions either immediately after the manipulation or following a delay. Consistent with the dual defense model, immediately after the manipulation, when death concerns were likely to be conscious, there was only a main effect, with MS increasing fitness intentions relative to controls regardless of the ego-relevance of fitness concerns. However, after a delay, when death concerns have been shown to be outside of conscious awareness, MS increased fitness intentions only among those for whom fitness was important for self-esteem. The fact that participants for whom fitness was not an important contingency for self-esteem were affected by MS immediately but not after a delay suggests that the increased fitness intentions they exhibited reflect concerns about health and longevity, whereas the delayed increase reflects self-esteem bolstering on the part of those who base their self-worth on their fitness lifestyle.

In a similar vein, Routledge, Arndt, and Goldenberg (in press) recruited participants for whom tanning was at least moderately important to their self-esteem and, either immediately or after a delay following a MS or dental pain manipulation, asked them to rate their likelihood of purchasing a variety of commercially available sun lotion products. In accord with predictions, immediately after being explicitly reminded of their mortality (relative to dental pain), participants indicated higher intentions to purchase products with higher sun protection factors. However, when sunscreen preferences were assessed after a delay, MS participants actually increased their health risk by decreasing their intentions to purchase products that offered high sun protection. A follow-up study contrasted MS with the salience of uncertainty concerns and found that situational primes of the appeal of tanning also interacted with MS to increase tanning intentions among participants unselected for the relevance of tanning to self-esteem.

Along similar lines, Peters, Greenberg, Williams, and Schneider (2003) recently had participants high or low in personal investment in physical strength squeeze a hand dynamometer as hard as they could, then exposed them to a MS manipulation and a delay, and then had them squeeze the dynamometer again. MS led to increased strength output on the dynamometer for those participants highly invested in their physical strength.

Another direct way that people can bolster their self-worth is by doing good deeds. With this in mind, Jonas, Schimel, Greenberg, and Pyszczynski (2002) recently conducted two studies with American participants to examine the effects of MS on prosocial attitudes and behavior. Their hypothesis, which was anticipated by Charles Dickens in his widely cherished story, *A Christmas Carol*,

was that thinking of one's own death would bring out people's charitable side because charitable action is highly valued in most cultures. In one study, they found that after rank ordering favorite charities, people interviewed on the street and asked to evaluate two of their moderately favorably ranked charities rated them more positively if they were standing in front of a funeral home than if they were approximately 100 m away from the funeral home. In a second study, a typical laboratory MS induction led to increases in actual donations to a charity to help poor people in America. Interestingly, this increase in donations did not occur for a charity to help those in foreign countries, presumably because, as a follow-up survey of students from the same participant pool showed, these participants valued helping those at home more than those abroad. In a related vein, Schimel, Wohl, and Williams (2003, Study 2) recently found that among individuals who were highly invested in being compassionate to others, MS led to more forgiveness of a moral transgressor regardless of the wrongdoer's group affiliation. Thus, although much of the extant evidence has been focused on negative effects of reminders of mortality, this work shows that thoughts of death can also motivate prosocial actions to the extent that one's self-esteem is contingent on such behavior.

TMT implies that MS should not only increase people's efforts to assert their self-worth but also lead to distancing from behaviors or aspects of self which might be damaging to self-esteem. A variety of studies have examined this avoidance hypothesis. The first such study (Greenberg, Porteus, Simon, Pyszczynski, & Solomon, 1995) showed that MS led to increased discomfort and anxiety when using cultural icons, such as a flag or crucifix, in a disrespectful way. Goldenberg, McCoy, Pyszczynski, Greenberg, and Solomon (2000) examined both the striving and avoidance hypotheses in the context of a study of how people with high and low body self-esteem relate to their own bodies. They hypothesized that MS should increase identification with aspects of self on which one is successfully meeting cultural standards of value and decrease identification with aspects of self on which one is not. Consistent with this reasoning, Goldenberg et al. (2000) showed that MS increased identification with one's body as an important aspect of self among those high in body self-esteem and decreased monitoring of one's physical appearance among those low in body self-esteem who nonetheless put high value on their physical attractiveness.

Effects of MS on group affiliations depend on implications for self-esteem. TMT and a number of related theories (e.g., social identity theory; Tajfel & Turner, 1979) view relationships with others as particularly important sources of self-esteem. From this perspective, following a reminder of mortality, people do not simply want to affiliate with just anyone; it is the meaning of one's affiliations, especially their implications for self-esteem and one's cultural worldview, that determine whom we approach and whom we avoid. A growing body of literature, summarized in Table 4, supports this view.

Specifically, Dechesne, Greenberg, Arndt, and Schimel (2000) found that following MS, Dutch participants were more favorable to their local soccer team and espoused greater optimism regarding a future match between their team and a German squad. Similarly, in their second study, American participants tended to identify more strongly with their university football team after MS. However, after that team lost an important game, MS participants were

Table 4
Effects of Mortality Salience (MS) on Group Affiliations Depend on Implications for Self-Esteem (SE)

Report	Context	Dependent variable	Hypothesis	Statistical result
Dechesne, Greenberg, et al. (2000, Study 1)	Dutch participants were reminded of their mortality vs. a control topic (TV) and then indicated their optimism toward the Dutch vs. German soccer team.	Estimation of number of goals that the Netherlands vs. Germany will score in their next soccer match	MS should lead to more optimism toward the Dutch soccer team.	MS × Dutch vs. German interaction, $F = 3.34$, $p < .05$. *Simple effects:* MS participants were led to expect more goals for the Dutch team than were control participants, $F = 6.69$, $p < .05$.
Dechesne, Greenberg, et al. (2000, Study 2)	University of Arizona students were reminded of their mortality vs. a control topic (exam salience) and estimated their identification with the football university football and basketball team prior to or after the football team's first loss of the season.	Identification with the basketball team vs. football team (four fan loyalty questions)	MS should lead to a shift toward identification with the basketball team after the football team's first loss.	MS × Pre-postfootball Team Loss interaction, $F = 12.37$, $p < .01$. *Simple effects:* Within the MS condition, preloss participants were identified more with the football vs. basketball team than were postloss participants, $F = 15.58$, $p < .01$. Within preloss participants, MS led to more identification with the football vs. basketball team compared with control participants' identification, $F = 12.23$, $p < .01$. Within postloss participants, MS led to more identification with the basketball vs. football team compared with control participants' identification, $F = 2.71$, *ns*.
Arndt, Greenberg, et al. (2002, Study 1)	Female participants were placed under stereotype threat or not and were then reminded of their mortality vs. a control topic. Participants then completed a measure of social projection (SP) toward other women.	SP (Krueger & Clement, 1994); perceptions of similarity to other women	MS should increase women's social projection, however, stereotype threat should eliminate this tendency.	MS × Stereotype Threat interaction, $F = 5.80$, $p < .03$. *Key pairwise:* MS led no stereotype threat participants to increase SP relative to SP of control participants, $t = 3.01$, $p < .05$. Within MS conditions, stereotype threat led to less SP than no stereotype threat, $t = 2.09$, $p < .05$.
Arndt, Greenberg, et al. (2002, Study 2)	Anglo and Hispanic participants read a news article that described a Hispanic individual in a positive (charity work) vs. a negative (drug dealing) light and were then reminded of their mortality vs. dental pain (DP). Participants then indicated their preference for paintings that were purportedly created by Hispanic vs. Anglo artists.	Evaluation of abstract art paintings	MS should lead participants (both Anglo and Hispanic) to derogate the Hispanic art paintings when Hispanics are described negatively.	MS × Hispanic Frame × Artist Ethnicity, $F = 17.90$, $p < .01$. *Key pairwise:* MS–negative frame participants were more negative in their evaluation than all other participants, $ts > 5.90$, $ps < .01$. MS–positive frame participants were more positive in their evaluation than all other participants, $ts > 2.80$, $ps < .05$.
Arndt, Greenberg, et al. (2002, Study 3)	Anglo and Hispanic participants read a news article that described a Hispanic individual in a positive (charity work) vs. negative (dealing drugs) vs. neutral (observing ducks) light and were then reminded of their mortality vs. DP. Participants then completed a measure of psychological distancing from an Anglo and Hispanic target.	Psychological distancing from an Anglo vs. Hispanic target (dissimilarity on trait adjectives)	MS should only lead Hispanics to distance from the Hispanic target when Hispanic individuals are described negatively.	MS × Hispanic Frame × Target Ethnicity × Participant Ethnicity interaction, $F = 3.34$, $p < .04$. *Planned contrasts:* Within negative frame–Hispanic participants, MS led to more distancing than did DP, $t = 3.29$, $p < .05$. Within MS–Hispanic participants, the negative frame led to more distancing from the Hispanic target than the positive frame, $t = 3.22$, $p < .05$, and marginally more than the neutral prime, $t = 1.75$, $p < .10$. Within negative frame–MS conditions, Hispanic participants distanced more than Anglo participants, $t = 3.49$, $p < .05$. Hispanic–negative frame–MS participants distanced more from the Hispanic vs. the Anglo target, $t = 3.50$, $p < .05$.

Table 4 (*continued*)

Report	Context	Dependent variable	Hypothesis	Statistical result
Dechesne, Janssen, & van Knippenberg (2000a, Study 1)	Dutch participants high vs. low in PNS were subliminally primed with death vs. a nonword (xxxx) and then read an essay derogating their university (University of Nijmegen). Participants then answered various questions about the author of the essay and their affiliation with the university.	Distancing from the university; derogation of the essay author	1. MS should lead high PNS participants to derogate the essay author. 2. MS should lead low PNS participants to distance from the university.	Distancing: MS × PNS interaction, $F = 4.51$, $p < .04$. *Simple effects*: Within low PNS participants, MS led to more distancing than the control prime, $F = 14.54$, $p < .01$. Within MS conditions, low PNS participants distanced more than high PNS participants, $F = 5.44$, $p < .05$. Derogation: MS × PNS interaction, $F = 3.69$, $p < .06$. *Simple effects*: Within high PNS participants, MS led to more derogation than the control prime, $F = 5.77$, $p < .05$.
Dechesne, Janssen, & van Knippenberg (2000a, Study 2)	Dutch participants were primed to think about the permeability vs. impermeability of their university affiliation and were subliminally primed with death vs. a nonword (xxxx) and then read an essay derogating their university. Participants then answered various questions about the author of the essay and their affiliation with the university.	Distancing from the university; derogation of the essay author	1. MS should lead GIP participants to derogate the essay author. 2. MS should lead GPP participants to distance from the university.	Distancing: MS × Permeability interaction, $F = 6.51$, $p < .02$. *Simple effects*: Within only GPP participants, MS led to more distancing than the control prime, $F = 7.10$, $p < .05$. Within only MS conditions, GPP participants distanced more than GIP participants, $F = 8.93$, $p < .05$. Derogation: MS × Permeability interaction, $F = 3.46$, $p < .07$. *Simple effects*: Within only GIP participants, MS led to more derogation than the control prime, $F = 4.34$, $p < .05$. Within only MS conditions, the GIP prime led to more derogation than the GPP, $F = 8.93$, $p < .05$.
Simon et al. (1997)	Participants were given personality feedback that they were social deviants (i.e., socially independent of others) vs. conformists (i.e., socially dependent on others) or received neutral feedback. Participants were then reminded of their mortality vs. a control topic (exam salience) and then completed a measure of SP toward others.	SP (Krueger & Clement, 1994); perceptions of similarity to other people in general	MS should increase SP for those given social deviant feedback and decrease SP for those given conformist feedback.	MS × Feedback interaction, $F = 36$, $p < .01$. *Simple effects*: For social deviant feedback, MS led to more SP than did control, $F = 12.01$, $p < .01$. For conformist feedback, MS led to less SP did than control, $F = 47.93$, $p < .01$. Within MS conditions, conformist feedback led to less SP than did social deviant feedback, $F = 80.89$, $p < .01$, or neutral feedback, $F = 57.99$, $p < .01$. Social deviant feedback led to more SP than did neutral feedback, $F = 13.10$, $p < .01$.

Note. Research reports are listed in the order they appear in the present article. Only the hypotheses and results that are relevant to the discussion in the present article are summarized in the table. Unless otherwise specified, the MS inductions in the above studies were composed of two open-ended questions about death (e.g., Greenberg, Simon, et al., 1992). PNS = personal need for structure; GIP = group impermeable prime; GPP = group permeable prime.

less likely to affiliate with the team than were control participants and shifted their identification to the university basketball team.

Recent evidence also implicates death-related concerns in the activation of the tendency to affiliate with or distance from one's ethnicity or gender. In one study (Arndt, Greenberg, Schimel, Pyszczynski, & Solomon, 2002), after first reading about positive instances of Hispanic behavior (charity work), MS led Hispanic participants to evaluate paintings by Hispanic artists more positively. However, when Hispanic participants read about a negative instance of Hispanic behavior (drug dealing) before being reminded of their mortality, they were more negative in their evaluations of the Hispanic paintings. A follow-up study by Arndt, Greenberg, et al. (2002) replicated these effects with the more direct measure of psychological distancing developed by Pyszczynski, Greenberg, Solomon, Sideris, and Stubing (1993), in which participants rate themselves on a set of personality traits after seeing another person's ratings on the same set of traits; the absolute value of the difference between self-ratings and those of the targets is taken as a measure of psychological distancing. In this follow-up study, Arndt, Greenberg, et al. (2002) found that Hispanic participants viewed their personalities as more different from another Hispanic individual when primed with instances of negative in-group behavior and reminded of their mortality. In both of these studies, MS led Hispanic individuals to either increase or decrease their psychological affiliation with their ethnic group, depending on whether they were recently primed with positive or negative instances of Hispanic behavior.

Arndt, Greenberg, et al. (2002) found parallel effects with women's identification with their gender. Drawing from work on stereotype threat (e.g., Steele & Aronson, 1995), Arndt, Greenberg, et al. (2002) activated negative implications of group membership for some women by reminding them of their gender and telling them they would soon take a math test. Although women in the no stereotype threat condition were more likely to emphasize their similarity to other women on a social projection measure (Krueger & Clement, 1994) after being reminded of their mortality, activating stereotype threat by having them anticipate taking a challenging math test completely eliminated this effect. Thus, when participants have a particularly great need for the self-esteem-enhancing effects of group membership because of MS, a single exemplar of positive or negative behavior by a member of one's group or merely placing individuals in a situation in which positive or negative aspects of group membership are or are not brought to mind produces opposite effects on group affiliation. This suggests that it is the implications of group affiliation for self-esteem that is psychologically important rather than belongingness in its own right.

One question this work left unanswered concerns when MS leads people to defend their in-group rather than disidentify from it. Dechesne, Janssen, and van Knippenberg (2000a) provided answers to this question. Their first idea was that people with a high need for structure would tend to defend their group, whereas people with a low need for structure would be more likely to disidentify from their group. Thus, in a first study, Dechesne et al. (2000a) exposed University of Nijmegen students high or low in need for structure to subliminal death primes or neutral primes, had them read a scathing criticism of their university, and measured their assessment of the critic and their identification with the university. In support of their hypothesis, after subliminal death primes, participants high in need for structure derogated the critic and did not disidentify, whereas participants low in need for structure disidentified and did not derogate the critic. Dechesne et al.'s (2000a) second idea was that people would tend to disidentify if group identification was perceived to be permeable but defend if the group identification seemed to be impermeable. To test this idea, the authors replicated the first study, but instead of grouping participants according to dispositional need for structure, they had half the participants read an essay indicating that university identification stays with people their whole lives (impermeable) and the other half read that people jump from one university to another all the time (permeable). In support of their hypothesis, when the identity seemed to be impermeable, MS participants derogated the critic, but when the identity seemed permeable, MS participants disidentified with the university instead. This work suggests that both defending against criticisms of one's group and distancing from that group can serve the same function; reminders of mortality activate concerns with protecting self-esteem, which leads people to either staunchly defend their group affiliations or distance from them, depending on factors affecting their level of investment in those groups.

In a related vein, Brewer's (1993) optimal distinctiveness theory posits that people have opposing motives to fit in and stand out from social groups. A series of studies by Brewer and colleagues (e.g., Brewer, Manzi, & Shaw, 1993) has shown that whereas threats to one's inclusionary status produce increased attempts to fit in and conform, threats to one's individuality produce attempts to demonstrate how different one is from the rest of the group. Simon et al. (1997) have shown that such optimal distinctiveness striving is exacerbated by MS. Specifically, when given feedback that they were highly similar to other students at their school, MS led participants to distance themselves from fellow students on a measure of perceived similarity; when given feedback that they were highly different from other students, however, MS led participants to seek similarity to fellow students by increasing their perceived similarity to their fellow students. The point of optimal distinctiveness theory is that people want to both fit in and be unique and that their self-esteem depends on meeting these potentially contradictory goals. Again, it is the meaning of one's relationship to the group rather than simple inclusion that seems to affect behavior. The fact that the effects of MS on affiliation and identification with others depend on the implications of such affiliations for self-esteem provides additional evidence that death-related thought increases self-esteem striving.

Self-serving biases. Research has shown that in addition to intensifying self-esteem striving, MS leads to cognitive self-esteem bolstering in the form of self-serving bias. This research is summarized in Table 5. Specifically, Dechesne, Janssen, and van Knippenberg (2000b) found in two studies that participants given bogus positive feedback about themselves (from astrological charts or personality questionnaires) saw the feedback as especially valid after MS manipulations, but no such effect occurred when the feedback was neutral. In addition, Mikulincer and Florian (2002) recently found that MS increased the well-documented self-serving attribution bias after performance outcomes. One study found this effect in response to hypothetical scenarios, and another found that MS intensified internal and external attributions for actual success and failure on a test, respectively. As mentioned earlier, Mikulincer and Florian also found in a third study that the

Table 5
Evidence That Mortality Salience (MS) Increases Self-Serving Biases

Report	Context	Dependent variable	Hypothesis	Statistical result
Dechesne, Janssen, & van Knippenberg (2000b)	Dutch participants were reminded of their mortality vs. watching TV, read a personal horoscope that was either positive or negative, and then evaluated the horoscope.	Perceived accuracy of the horoscope	MS should lead to general acceptance of both horoscopes and more acceptance of the positive version.	Main effect of MS, $F = 4.29$, $p < .05$, indicating that MS led to more acceptance of the horoscopes. MS $\times$ Horoscope interaction, $F = 3.03$, $p < .09$. *Simple effects:* Within only positive horoscope conditions, MS led to higher accuracy ratings than did TV, $F = 9.37$, $p < .05$.
Mikulincer & Florian (2002, Study 1)	Participants were reminded of their mortality vs. watching TV and then completed an attributional style questionnaire (ASQ; Metalsky, Halberstadt, & Abramson, 1987) regarding several hypothetical positive and negative life events.	Participants completed the ASQ, which assessed their internal, stable, and global attributions to positive and negative events	MS should lead participants to report higher ASQ scores for positive than negative events.	MS $\times$ Event Valence interaction, $F = 13.27$, $p < .01$. *Simple effects:* MS led to lower ASQ scores for negative outcomes, $F = 4.55$, $p < .05$, and higher ASQ scores for positive outcomes, $F = 9.13$, $p < .01$, relative to TV salience.
Mikulincer & Florian (2002, Study 2)	Participants were reminded of their mortality vs. watching TV and then performed a concept formation task on which they received failure vs. successful feedback. Participants then rated their causal attributions for their performance.	Causal attributions (internal, stable, and global)	MS should lead participants to report higher dispositional attributions following success and less attributions following failure.	MS $\times$ Feedback interaction, $F = 13.17$, $p < .01$. *Simple effects:* MS led to less dispositional causal attributions for failure, $F = 5.65$, $p < .01$, and more dispositional causal attributions for success, $F = 8.39$, $p < .01$, relative to TV salience.

Note. Research reports are listed in the order they appear in the present article. Only the hypotheses and results that are relevant to the discussion in the present article are summarized in the table. Unless otherwise specified, the MS inductions in the above studies were composed of two open-ended questions about death (e.g., Greenberg, Simon, et al., 1992).

opportunity to engage in such self-serving attributions reduced death-thought accessibility in response to MS. Thus, this research adds to the corpus of evidence supporting the effect of MS on self-esteem striving by measuring a phenomenon that decades of research indicates serves a self-esteem maintenance function (e.g., M. L. Snyder, Stephan, & Rosenfield, 1976).

Specificity to the problem of death. An important question regarding these and other terror management findings is whether thoughts of death per se, as opposed to reminders of any aversive or anxiety-provoking thought, are responsible for the effects that have been observed. The MS induction was not originally intended to initiate terror management processes but rather to intensify the ongoing process of maintaining one's worldview and self-worth. Although it was clear that threats to worldviews or self-worth often motivate defense, we wondered whether subtle reminders of mortality would intensify these tendencies. The earliest MS studies simply compared the effect of reminders of mortality with neutral control conditions in which participants were asked questions about things like watching television or their favorite foods (e.g., Greenberg et al., 1990) or in which no alternative priming of any kind was conducted (e.g., Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). Because these neutral control conditions left open the possibility that the observed effects were the result of priming the more general category of aversive or anxiety-producing events and thus had nothing to do with the specific problem of death, we began comparing the effects of thoughts of death with various control conditions in which participants were asked parallel questions about other aversive topics, such as experiencing dental pain, failure, worries about the future, paralysis, meaninglessness, giving a public speech, and social exclusion (for a review, see Greenberg et al., 1997). Whereas these control treatments sometimes produced negative affect (e.g., Greenberg, Simon, Porteus, Pyszczynski, & Solomon, 1995), they did not yield effects parallel to MS. Furthermore, operationalizations of reminders of mortality have varied from subliminal death primes to questionnaire items to films of lethal automobile accidents to proximity to funeral homes and cemeteries; and MS effects have been tied specifically to the heightened accessibility of death-related thoughts (Pyszczynski et al., 1999). Thus, it would be implausible to argue that the effects of MS on self-esteem striving reflect a more general response to aversive thoughts or events per se.

Several recent studies have obtained effects similar to those produced by MS by inducing participants to consider other existentially relevant issues, such as uncertainty (e.g., van den Bos, 2001), difficult choices that put one in conflict over core values (McGregor, Zanna, Holmes, & Spencer, 2001, Studies 1 and 2), or temporal discontinuity, in which participants ponder how the setting of important life events will change over the next 30 years (McGregor et al., 2001, Studies 3 and 4). On the basis of this work, McGregor et al. (2001) and van den Bos (2001) suggested that perhaps death is problematic, primarily because it entails a great deal of uncertainty.

We do agree that uncertainty regarding when and how death will occur and what, if anything, will happen to them after they die is unsettling and may be part of what people fear in death. Thanatopsychologists argue that people fear death for a variety of reasons (cf. Florian & Kravetz, 1983), and uncertainty may be one of them. However, it seems highly unlikely that uncertainty, per se, is the only or most important reason that people fear death or that a fear of uncertainty lies at the root of the need for self-esteem and faith in one's cultural worldview. Clearly not all uncertainties are unsettling, and some are actively sought and savored (e.g., games of chance, new experiences of various sorts). TMT views the threat of absolute annihilation—nonexistence—as the central reason that the awareness of mortality is upsetting and motivating. On an empirical level, we wonder how an uncertainty explanation could account for the wide range of findings that the TMT literature has generated. For example, how would an uncertainty perspective explain why threats of animality (Goldenberg, Pyszczynski, McCoy, Greenberg, & Solomon, 1999) and relationship disruption (Mikulincer, Florian, Birnbaum, & Malishkevish, 2002) produce increased death-thought accessibility or why bolstering of one's worldview (e.g., Arndt et al., 1997) or self-worth (Mikulincer & Florian, 2002) reduce death-thought accessibility? Would the inevitability of death not be threatening if one knew for certain that one's death would occur at precisely 2 p.m. a month from today, after which, beyond any doubt, one's existence would be over? We believe the central problem would still be there, and this is the problem that is addressed by the specific death-denying contents of virtually all cultural worldviews that enable humans to believe they are special beings that stand out and apart from the rest of nature and that they will continue to exist after physical death. If the only real problem with death were the uncertainties that it entails, why then do cultures work so hard to deny its finality?

Evidence of literal immortality eliminates the effect of MS on self-esteem striving. Additional evidence for the specificity of these effects to the problem of death comes from recent studies of the effects of exposing participants to information supporting the existence of some form of life after death. TMT posits that people fear death because, regardless of what they profess to believe about the possibility of life after death, they are painfully aware of the possibility that death might entail absolute annihilation—the complete termination of one's existence of any kind. If this is the case, then increasing one's faith in the existence of life after death (in TMT terms, *literal immortality*) should reduce or eliminate the effect of MS on self-esteem striving. A summary of evidence relevant to this hypothesis is presented in Table 6.

In Dechesne et al.'s (2003) Study 1, participants were given one of two articles to read that were purportedly summaries of a recent scientific conference on the meaning of the highly publicized "near death experience." Half of the participants read an article that argued that the near death experience was an artifact of the biological processes involved in the shutting down of brain functioning; the other half read an article that argued that the near death experience cannot be explained as the simple by-product of biological processes and that many aspects of this experience can be explained only by concluding that some form of consciousness persists after biological death. After reading one of these articles, participants were induced to think about either their own death or dental pain and were then given the same positive personality feedback that Dechesne, Greenberg, et al. (2000) had previously demonstrated is seen as more credible after MS. Although participants who read the article arguing that death is the absolute end of life showed the same increased ratings of the validity of the positive personality feedback, those who read the article arguing that the near death experience provides irrefutable evidence of an afterlife were unaffected by the MS induction. A follow-up study

Table 6
Evidence That Literal Immortality Eliminates the Effect of Mortality Salience (MS) on Self-Esteem Striving

Report	Context	Dependent variable (DV)	Hypothesis	Statistical result
Dechesne et al. (2003, Studies 1 & 2)	Dutch participants read a newspaper article presenting good scientific evidence of and afterlife based on "near death experiences" vs. scientific evidence that near death experiences are not proof of an afterlife vs. a neutral article (Study 2). Participants were then reminded of their mortality vs. a control topic (TV in Study 1; dental pain [DP] in Study 2) and then read a favorable personality profile of themselves and evaluated its validity.	Perceived accuracy of the personality profile	MS should lead to higher accuracy ratings of the personality profile when there is no hope of an afterlife. However, priming hope of an afterlife should reduce this effect of MS.	MS × Afterlife interaction, Fs > 4.10, ps < .05. *Key pairwise:* MS led to more valid ratings of the profile than TV or DP in the no afterlife condition, ts > 3.87, ps < .05, and in the neutral article condition, t = 2.77, p < .05. MS led participants to rate the profile as less valid in the afterlife condition than in the no afterlife condition, ts > 2.61, ps < .05, or in the neutral article condition, t = 3.15, p < .05.
Dechesne et al. (2003, Study 3)	American participants read a newspaper article presenting good scientific evidence of an afterlife based on "near death experiences" vs. scientific evidence that near death experiences are not proof of an afterlife. Participants were then reminded of their mortality vs. DP and then completed a forestry management game (Kasser & Sheldon, 2000) and a measure of punishment toward moral transgressors (see Florian & Mikulincer, 1997).	DV#1: greed—bid on forestry acreage; DV#2: composite measure of punishment of several moral transgressors	MS should lead to higher greed and more punishment when there is no hope of an afterlife. However, priming hope of an afterlife should reduce these effects of MS.	DV#1: MS × Afterlife interaction, F = 4.10, p < .05 (for males only). *Key pairwise:* End-of-life–MS participants showed more greed than end-of-life–DP participants, t = 2.56, p < .05. MS–afterlife participants showed more greed than MS–end-of-life participants, t = 2.03, p < .05. DV#2: MS × Afterlife interaction, F = 4.24, p < .05. *Key pairwise:* MS–end-of-life participants showed harsher punishment than DP–end-of-life participants, t = 2.27, p < .05. MS–afterlife participants showed lower punishment than MS–end-of-life participants, t = 1.93, p < .06.

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that included a neutral article control condition demonstrated that, at least among this population of Dutch university students, the "no immortality" condition yielded the same result as a neutral article—an MS-induced increase in self-serving bias—and that the immortality condition produced an elimination of the effect of MS found in the other conditions. An additional study reported by Dechesne et al. (2003) that was conducted in the United States showed that although MS led men to behave more competitively in a resource-accumulation game, this effect was eliminated among participants who read the proof-of-an-afterlife essay used in the previous studies. The fact that providing supposed scientific evidence for the existence of life after death eliminated the effect of MS on self-esteem striving provides particularly strong evidence that the effect of MS on self-esteem striving reflects a use of self-esteem to deflect concerns about death and that a fear of absolute annihilation lies at the root of these defensive responses to MS.

Summary of empirical evidence for the terror management explanation of the need for self-esteem.   Taken together, these studies provide converging evidence that self-esteem functions as a buffer against the potential for anxiety inherent in the human knowledge of the inevitability of death. High levels of self-esteem lead to lower self-reports of anxiety, physiological arousal, and defensive distortions to deny one's vulnerability to an early death. Reminders of the central source of this anxiety, the inevitability of death, leads to increased self-esteem striving in the form of (a) increased adherence to the standards inherent in long-standing attitudes, especially when these attitudes have recently been primed; (b) increased discomfort when performing behavior that violates cultural norms; (c) increased identification with one's physical body among those high in body self-esteem; (d) decreased appearance monitoring among those low in body self-esteem who nonetheless put a high value on physical appearance; (e) increased optimal distinctiveness striving; and (f) increased or decreased affiliation with one's gender, ethnicity, university, or local sports teams, depending on the implications of such affiliations for self-esteem. High levels of self-esteem have also been shown to eliminate the effect of MS on worldview defense, self-esteem striving, and the accessibility of death-related thoughts. And finally, providing people with convincing evidence for the existence of life after death eliminates the effect of MS on striving for self-esteem. Although self-esteem may also provide other useful benefits for the individual and society at large, we believe that this body of work provides compelling evidence that self-esteem functions as a buffer against the potential for anxiety that results from awareness of the inevitability of death.

Other Explanations for the Function of Self-Esteem

Although TMT was the first empirically oriented theory to address the question of why people need self-esteem, Leary and Baumeister (2000) recently articulated five other explanations that might plausibly provide an answer to this question. On the basis of a review of the self-esteem literature, they suggested that people may need self-esteem because it (a) maintains well-being and positive affect; (b) provides feedback about the adequacy of one's coping efforts; (c) reflects an individual's status in a dominance hierarchy; (d) facilitates self-determination; and their own expla-

nation, (e) provides people with vital information about their eligibility for social inclusion and exclusion.

Self-Esteem, Positive Affect, Well-Being, and Coping

Some alternative explanations for the function of self-esteem have not been sufficiently developed, either theoretically or empirically, to warrant much serious attention. For example, we agree with Leary and Baumeister's (2000) argument that a well-being explanation does not fully explain why people need self-esteem, in that "it cannot be an accident of nature that self-esteem is strongly associated with human emotion if self-esteem otherwise has no pragmatic value" (p. 6). Similarly, we concur with Leary and Baumeister that a coping feedback explanation fails to account for much of what is known about the antecedents and consequences of self-esteem and that it proposes a rather dysfunctional system, in which difficulties in coping would lower self-esteem, thus leading to further difficulties in coping. Moreover, both of these perspectives beg the most basic question: Why does self-esteem facilitate well-being, positive affect, and successful coping? From a TMT perspective, self-esteem maintains positive affect and psychological well-being and facilitates coping because it provides a buffer against anxiety. Although these are not isomorphic psychological constructs, positive affect, psychological well-being, and effective coping are all adversely affected by anxiety. Indeed, a large literature supports this supposition, showing that anxiety is associated with an extensive variety of psychological difficulties and interferes with effective performance and coping in a wide range of domains (Barlow, 1988; Last & Hersen, 1988; Tuma & Maser, 1985). TMT simply suggests that when self-esteem is high and anxiety thereby controlled, people are more able to experience positive affect and feel "psychologically well" and consequently are better able to act effectively in most life domains and cope with stresses and challenges that arise.

Self-Esteem and Dominance Hierarchies

The idea that people need self-esteem because it reflects an individual's status in a dominance hierarchy implies that the self-esteem motive is ultimately rooted in a need for a valued place within the social group that evolved out of the more primitive dominance hierarchies that presumably existed in our prehuman ancestors and continues to exist in our primate cousins today (Barkow, 1989). Consistent with this view are findings from Leary, Cottrell, and Phillips (2001), which indicate that positive feedback on leadership qualities (which presumably speaks to status in a dominance hierarchy) increases self-esteem and that self-esteem is positively correlated with self-perceptions of social dominance status. We have no major quarrel with the dominance hierarchy idea as a starting point for an analysis of the function of the self-esteem motive (indeed, this is where Becker, 1962, began his original formulation of the notion of self-esteem as a buffer against anxiety) and agree that complex forms of human social behavior probably did evolve from simpler forms of related behavior in our prehuman ancestors. Evolutionary changes are far more likely to build on previously evolved adaptations than to start wholly independent of existing adaptations from earlier eras (i.e., random mutations producing radically novel and completely unprecedented variation). We agree that it is likely that the self-

esteem system evolved on the heels of more primitive dominance hierarchies that emerged to regulate access to mating and resources and to provide social stability within the group (what Becker, 1971, called "an *ordered simplification of the interindividual environment*" p. 11).

However, the human self-esteem motive is far more subtle, sophisticated, and differentiated than the dominance hierarchies that exist in other primates. There are a number of fundamental differences between the human need for self-esteem and the dominance hierarchies found in other primates. The first is the vastly superior human capacity to reflect on the self. It is because of this capacity that self-evaluation is of central importance to humans; for animals without this strong capacity to reflect on the self and compare the self with internalized standards of value, the focus must be more on how one is treated by present others. The second is obviously the awareness of mortality that results from human self-reflective abilities. As TMT proposes, this opens up a tremendous capacity for anxiety that goes far beyond short-term concerns about mates and resources. As a result of this larger problem and the cognitive capacities that contributed to it, the human self-esteem system became highly verbal in nature and based on an internalized abstract system of meaning that assigns positive or negative value to almost all human behaviors and attributes. This requires investment in and concern with largely verbal cultural systems of meaning and value. As Greenberg et al. (1986) put it in their earliest presentation of the TMT analysis of the function of self-esteem, "Humans are not unique because they are social animals, but because they are *cultural animals*" (p. 196). The literature on the many diverse strategies for self-esteem maintenance and defense that has emerged over the past 50 years attests to the highly verbal and symbolic nature of the human self-system.

Although the contemporary system of using self-esteem as a mechanism for terror management, self-regulation, and behavior control (for a more thorough discussion, see Pyszczynski, Greenberg, & Solomon, 1998; Pyszczynski, Solomon, & Greenberg, 1996) may have been built on more primitive dominance structures, its verbal symbolic nature makes it much more flexible and amenable to distortion and manipulation on the part of the individual. Indeed, humans in modern cultures can choose an amazingly wide variety of paths to high self-esteem and high social status, and these paths can also vary widely between cultures. As our earlier example of American versus Japanese urbanites illustrates, the paths can even be opposite ones, suggesting that humans have to have tremendous flexibility in the specifics of how they strive for self-worth. TMT suggests that the need for self-esteem evolved in response to the emergence of the awareness of death which in turn resulted from the emergence of sophisticated intellectual abilities that increased the flexibility of our species' behavior to facilitate survival and reproduction in a complex and changing environment. Thus, unlike many current evolutionary accounts (e.g., Pinker, 1997), TMT proposes that the contents of human consciousness (rather than strictly external environmental forces), exerted selective pressure on the way the human mind evolved (Roheim, 1943; Solomon, Pyszczynski, & Greenberg, in press). In other words, the recognition that we will all die some day, an idea that appears to correspond very well with the nature of reality, exerted selective pressures shaping the evolution of the human self-esteem motive (cf. Langer, 1982).

Note that from the TMT perspective it is the idea that death is inevitable rather than the ultimate physical reality of death that played a central role in the evolution of culture and the need for self-esteem. Although all animals die, verbally based death-denying conceptions of reality or efforts to live up to the verbally based standards of value that follow from these conceptions are not observed among chimpanzees, bonobos, or gorillas, but one does see clear signs of their being socially organized into dominance hierarchies. Although it is true that other animals seek social status to secure mates and resources in a similar manner that humans seem to seek and use fame and fortune, humans differ in that they also seek self-esteem to solve existential problems. The converging lines of evidence reviewed in the previous section clearly suggest a death-denying function for self-esteem striving; these data would be extremely difficult to account for in terms of preserving one's position in a dominance hierarchy to serve a simple need for mates and other resources.

This is not to say that self-esteem striving plays no role in social, material, or reproductive success. Following Becker (1971), we have argued that by serving as an executive control system through which the individual compares his or her current state with culturally derived abstract linguistic standards of value (cf. Carver & Scheier, 1981; Duval & Wicklund, 1972), the self provides a more flexible mode of self-regulation and behavior control that lessens (but certainly does not eliminate) the need for genetically transmitted inborn behavior programming (Pyszczynski et al., 1996). Such increased flexibility was highly adaptive for an animal evolving in a complex environment that was prone to long-distance migrations through varying ecosystems in the pursuit of improved resources. However, TMT suggests that the dawning awareness of the inevitability of death provided the adaptive pressure that led to the emergence of death-denying conceptions of reality and the anxiety-buffering system of self-esteem that made possible such flexible regulation of behavior relative to the standards of value of one's local culture. Put simply, the uniquely human awareness of death led to the emergence of death-transcending cultural belief systems and the security-providing sense of self-esteem, which had the additional adaptive benefit of providing a more flexible mode of self-regulation and behavior control (for a discussion of how these evolutionary developments led to the emergence of the potential for free will, see Solomon et al., in press).

Self-Esteem and Self-Determination

Self-determination theory argues that "true" self-esteem functions largely as part of the human striving for organismic integration—a process that is facilitated by satisfying what Deci and Ryan (1991, 2000) referred to as *innate organismic needs* for autonomy, relatedness, and competence. Although self-determination theory offers many useful insights into self-related behavior, it does not directly address the question of why people need self-esteem. When self-determination theory has focused on self-esteem it has been with an eye toward understanding how an autonomous integration of personal goals facilitates a relatively self-determined form of self-esteem whereas a more externally controlled introjection of goals leads to a more driven, contingent form of self-esteem. Consistent with this reasoning, several recent studies have shown that intrinsic self-esteem, which presumably results from this more thorough and autonomous integration of external influ-

ences into the self, leads to less of a need to defend self-esteem than extrinsic self-esteem, that is more dependent on the introjection of externally imposed values (Arndt, Schimel, Greenberg, & Pyszczynski, 2002; Schimel, Arndt, Banko, & Cook, 2004; Schimel et al., 2001). For a discussion of these views on the relationship between TMT and self-determination theory and an attempt to integrate these perspectives, see Pyszczynski, Greenberg, and Goldenberg (2003).

Sociometer Theory

The only alternative account of the self-esteem motive advanced by its proponents as an explanation for the nature and function of self-esteem is Leary and colleagues' (Leary & Baumeister, 2000; Leary et al., 1995) sociometer theory, which was developed with this explicit goal in mind. Moreover, whereas little or no discussion of how these other perspectives explain the need for self-esteem have appeared in the literature (by their proponents or others), the sociometer model has garnered considerable attention (e.g., Brehm et al., 2002; Gazzaniga & Heatherton, 2003; Myers, 2002) and has also generated some empirical research designed to test its validity. Therefore we consider the sociometer explanation for the self-esteem motive in some detail. It is a serious attempt to address an important question that merits serious attention by other theorists seeking to address the same question. We begin with a brief overview of sociometer theory and note some of the similarities and differences with TMT.

Sociometer theory (Leary et al., 1995; see also Leary & Baumeister, 2000) argues that self-esteem is not needed for its own sake but rather functions to reflect the extent of one's inclusion or fitness for inclusion in social groups. The theory likens self-esteem to a gas gauge in a car: People are concerned about what the gas gauge reads, not for its own sake, but rather, for what it tells them about the amount of fuel in the gas tank. Similarly, people are motivated to maintain high levels of self-esteem, not because of an inherent need for positive self-evaluations, but rather, because positive self-evaluations "serve as a subjective monitor of one's relational evaluation—the degree to which other people regard their relationships with the individual to be valuable, important, or close" (Leary & Baumeister, 2000, p. 9). Because of this monitoring function, "self-esteem will be based on whatever criteria those important groups use to include or exclude individuals" (Leary & Baumeister, 2000, p. 24). This is a rather radical departure from most other views of the self-esteem motive that view it as a basic motive in its own right rather than as an indicator of some other abstract psychological entity.

Sociometer theory views self-esteem as a primarily affective state that provides information regarding the individual's fitness for inclusion in important relationships. It is based on the notion that members of our species have evolved an inherent need to belong to "a certain number of primary groups and relationships" (Leary & Baumeister, 2000, p. 25) because being part of a group facilitated survival and reproduction in our distant evolutionary past and continues to do so today. The theory goes on to posit that because

> most people have some social ties most of the time, the danger of losing attachments is more urgent than the appeal of forming new ones, and so the sociometer should be especially attuned to cues that

connote devaluation, rejection, exclusion, or any broadly undesirable aspect of the self. (Leary & Baumeister, 2000, p. 25)

Similarities and Differences Between Sociometer Theory and TMT

Although TMT and sociometer theory provide very different answers to the question of why people need self-esteem, they do converge on several key points. These points of convergence lead directly to the most important ways in which the two theories differ.

First, both theories agree that self-esteem is not needed for its own sake per se but instead serves a more basic function. Rather than being a necessary and intrinsic feature of the human organism, self-esteem is viewed by both theories as a means toward an even more basic end. TMT views self-esteem as serving the function of protecting the individual from the potential for anxiety that results from awareness of the inevitability of death in an animal with a strong desire for life. Sociometer theory views self-esteem as serving the function of providing vitally important information regarding one's fitness for inclusion in important social groups.

Second, both theories also view the need for self-esteem as rooted in a desire for attachment to others. Taking an evolutionary perspective, sociometer theory posits that the need to belong is an instinctive motive that evolved because belonging to groups helped our ancestors survive and reproduce. Consistent with the theories of Bowlby (1969/1982), Sullivan (1953), Rank (1929/1973), and others, TMT views the need for attachments as driven by the contemporary need to alleviate distress and fear. The child seeks the love and protection of the parents to ward off distress and fear and thereby feel safe and secure. The need for self-esteem emerges out of the desire to be a good little boy or girl and thus maintain the parents' love and protection. However, as the child internalizes a culturally derived conception of reality and the standards to be used in evaluating his or her worth, one's sense of the extent to which one is meeting those standards of value (self-esteem) rather than any particular social relationship or set of social relationships becomes the primary basis of psychological equanimity. Sociometer theory views people as seeking self-esteem to minimize exclusions and maximize inclusion. In contrast, TMT views people as seeking self-esteem to feel they are valuable—enduringly significant contributors to a meaningful world. For sociometer theory, self-esteem is about belonging, whereas for TMT, it is about being significant.

The two theories agree that other people and the evaluations they provide can be a vitally important determinant of self-esteem. However, sociometer theory posits that other people affect self-esteem because self-esteem is simply a monitor of how well one is being accepted by others. From this perspective, social inclusion is the raison d'etre of self-esteem. TMT posits that other people affect self-esteem because both self-esteem and cultural worldviews are social constructions that depend on consensual validation from others for effective functioning. Positive evaluations and agreement with one's beliefs and values can bolster self-esteem and faith in one's cultural worldviews; this, in turn, increases their effectiveness as defensive structures. Negative evaluations from others and disagreements with one's beliefs and values often

threaten to undermine the consensus upon which they rest, thus decreasing their effectiveness for mitigating anxiety.

Evaluating the Terror Management and Sociometer Theory Explanations for the Self-Esteem Motive

We turn now to a critical comparison of the sociometer and terror management explanations for the need for self-esteem.[2] Epistemologically, Laudan (1984), Harris (1979), and a host of other philosophers of science have argued that theories can be evaluated in terms of (a) degree of conceptual coherence and internal consistency, (b) how well they can explain what is currently known about a given area of empirical inquiry (with minimal theoretical backpedaling and conceptual gymnastics), and (c) how effectively they can generate unique (and ideally surprising) hypotheses that do not follow readily (if at all) from other competing conceptual frameworks and that are then supported by empirical evidence. Using these criteria, we believe that the TMT of self-esteem fares quite well, whereas the sociometer theory of self-esteem does not. In considering the evidence for the sociometer theory, we relied heavily on those studies reviewed by Leary and Baumeister (2000). In an effort to attend to recent developments in support of sociometer theory since Leary and Baumeister's review, we also searched PsycINFO for references to the terms *sociometer*, *self-esteem and social rejection*, *self-esteem and social exclusion*, *self-esteem and belongingness*, and *self-esteem and acceptance*.

Does Any Evidence Uniquely Support Either Theory?

Science is a cumulative enterprise. If a new theory is to be viable, it is essential that it be able to account for the existing evidence relevant to the conceptual domain that it intends to explain. Similarly, to remain viable, an existing theory must be able to account for new findings generated by new theories. A series of research findings that provide converging support for the TMT analysis of the self-esteem motive was reviewed in a previous section of this article. This evidence supporting the anxiety-buffering function of self-esteem, the effect of MS on self-esteem striving, the effect of credible evidence of life after death on self-esteem striving in response to MS, and the relationship between self-esteem and the accessibility of death-related thought are all inexplicable if, as Leary and Baumeister (2000) claimed, self-esteem serves no function except as a barometer of social acceptance and rejection. To our knowledge, proponents of the sociometer model have not attempted to account for any of the relevant TMT findings with their analysis. Perhaps sociometer theorists might claim that self-esteem-enhancing feedback or dispositionally high levels of self-esteem insulate people from anxiety in response to threat because they indicate increased inclusive fitness; this, of course would require adding the proposition that inclusive fitness (or the perception thereof) provides protection against anxiety. Similarly, a revised sociometer theory might propose that reminders of mortality arouse an increased need to belong, thereby increasing concern with bolstering one's self-esteem. However, such a reconstructed sociometer model that respectively explains the findings of MS and subliminal death prime studies would begin to look very much like TMT itself. In addition, a number of already reviewed studies document self-esteem strategies unlikely

to enhance inclusion, and others to be discussed later in this article on self-esteem and inclusion demonstrate self-esteem protecting strategies antithetical to enhancing inclusionary status.

Turning to evidence proposed as support for sociometer theory, in their recent review, Leary and Baumeister (2000) discussed

> empirical evidence relevant to seven predictions of Sociometer Theory: (1) Self-esteem responds strongly to inclusion and exclusion outcomes, (2) public events affect self-esteem more strongly than private events, (3) the primary dimensions of self-esteem reflect attributes that are relevant to being valued as a relational partner, (4) the importance people place on dimensions of self-esteem is interpersonally determined, (5) trait self-esteem is related to perceived relational appreciation and devaluation, (6) changes in self-esteem are accompanied by changes in affect, and (7) the sociometer is calibrated to efficiently detect relational devaluation. (p. 25)

In the following sections we critically examine each of these lines of evidence with an eye to the support it provides for sociometer theory. Although we agree that there is indeed some evidence supporting each of these propositions, we note important exceptions. More important, we consider how TMT and other theories of self-esteem would account for these findings and whether some of the findings claimed as support for sociometer theory really follow as logical deductions from the theory or, rather, are simply not inconsistent with it. Based on these considerations, we argue that none of these predictions are unique to sociometer theory, all could be derived from TMT and other theories of self-esteem, and therefore, that none of these lines of evidence provide unique support for sociometer theory.

Self-esteem responds strongly to inclusion and exclusion outcomes. Leary and Baumeister (2000) presented this statement as "the fundamental prediction of Sociometer Theory" (p. 25) and reviewed several studies in support of it. More recently, a number of additional studies have documented that social feedback conveying acceptance or rejection impact self-esteem (Leary et al., 2001), even among those who maintain that their self-esteem is not contingent on social acceptance (Leary et al., 2003). Although we have no quarrels with the evidence on this point and agree that it does indeed follow from the theory, it also follows quite directly from TMT and other theories of self-esteem, and we doubt that most self-esteem theorists, past or present, would have difficulty explaining it. Self-esteem may be affected by inclusion and exclusion outcomes for a variety of reasons. First, as TMT, social comparison theory (Festinger, 1954), symbolic self-completion theory (Wicklund & Gollwitzer, 1982), self-verification theory (Swann, 1987), and many other theories explicitly state, people's confidence that their perceptions of themselves and the world are correct depend heavily on consensual validation from others. When others include, positively evaluate, like, or accept a person,

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[2] It is important for us to note that criticisms have been raised with regard to various aspects of TMT and research (see, e.g., Muraven & Baumeister, 1997; Vallacher, 1997; Wicklund, 1997). Prominent issues include the role of affect in MS effects, the explanations for suicide and risky behavior, and the feasibility of assuming a broad desire for self-preservation. However, these issues take us beyond the scope of this particular article; we refer readers interested in the TMT position on these matters to Greenberg et al. (1997); Greenberg et al. (2003); Solomon, Greenberg, and Pyszczynski (1997); and Solomon et al. (in press).

it provides consensual validation for a positive self-concept, thus implying that a positive self-concept is an accurate reflection of reality rather than the result of one's own biased perceptions. Consequently, self-esteem often increases when one is accepted or included by others and decreases when one is rejected or excluded by others.

Second, as TMT and all theories that conceptualize self-esteem as being contingent on meeting particular standards (e.g., Crocker & Wolfe, 2001; James, 1890) imply, being liked, accepted, or included by others is an extremely common contingency for self-esteem that probably exists within all cultures. Although Ellis (1962) may have referred to the belief that "I am valuable only to the extent that I am liked and accepted by others" as irrational, he recognized that this is an extremely common belief, internalized to a greater or lesser extent by virtually all people, regardless of whether they are aware of it. The fact that even participants who claim that their self-esteem is not affected by social acceptance show this esteem-enhancing effect of social approval simply suggests that these people are not able or willing to report their self-esteem contingencies accurately. The belief that one's self-esteem is independent of approval from others is an ideal that many people within North American culture have internalized (probably as a result of exposure to psychological theorizing) that simply does not reflect the actual contingencies on which self-esteem depends. Leary et al.'s (2001) finding that these people's self-esteem is affected by social feedback clearly demonstrates this lack of self-knowledge. To the extent that being liked by others is a contingency for self-esteem, all contingency-based theories of self-esteem predict that inclusion–exclusion outcomes will affect self-esteem. To the extent that virtually all theories of self-esteem make this prediction, data supporting it do not establish the validity or utility of sociometer theory. The critical question is not whether inclusion outcomes affect self-esteem but why it does so.

From the sociometer perspective, inclusion affects self-esteem because self-esteem functions as a barometer of social inclusion fitness. However, even the findings of Leary et al. (1995) and Baumeister, Wotman, and Stillwell (1993), which Leary and Baumeister (2000) reviewed in support of the idea that self-esteem responds to inclusion outcomes, cast doubt on the primacy of inclusion over self-esteem concerns. Leary et al. (1995, Study 3) found that being excluded from a group affected self-esteem when it occurred on some meaningful basis but not when it was done randomly. This suggests that it is the meaning of the exclusion (presumably for self-esteem) that is the critical determinant of its impact on self-esteem, not the occurrence of exclusion per se. Perhaps sociometer theorists could argue that it is the meaning of the exclusion for future inclusive fitness that is the important factor, but if inclusion concerns were really the determining factor, it is hard to understand why a current exclusion would have no effect on self-esteem whatsoever. Baumeister et al. (1993) found that unrequited love (which constitutes a threat to self-esteem or inclusion concerns, depending on one's perspective) was associated with reduced confidence in approaching other potential partners and was also associated with higher frequencies of peripherally self-enhancing statements. Thus, participants seemed to respond to unrequited love not with increased motivation for inclusion but with, as Leary and Baumeister (2000) noted, "ways of restoring their self-esteem" (p. 27). But if self-esteem is merely a barometer of inclusionary status, then such a response would

make little sense. To continue their analogy, it would be like running out of gas and, rather than getting gas, preferring to simply manually adjust the gas gauge. If self-esteem were primarily a gauge of social inclusion–exclusion, then when the gauge reads low, the focus would be on making social relations as positive as possible, not on propping up self-esteem (the gauge) in non-inclusion-enhancing ways. Obviously, this is not going to get you where you want to go.

Similarly, Twenge, Baumeister, Tice, and Stucke (2001) reported five studies in which participants who were given social exclusion feedback (either in the form of bogus personality feedback that they were likely to end up alone or in the form of meaningful social rejections) responded with increased aggression toward others who had previously derogated them or treated them in a neutral manner but not toward others who had complimented them. In offering an explanation for these findings, the authors drew from Freud (1930) and suggested that belongingness and the socialization that comes from such relations serve to quell instinctual aggressive impulses, and when lacking such belongingness, these aggressive impulses surface more strongly. Of course, one could also view these findings as consistent with the idea that the social rejection threatened self-esteem, which led participants to compensate by trying to demonstrate their value by exerting power over others (i.e., ability to injure). Such an interpretation fits with the subsequent findings of Twenge and Campbell (2003), wherein these aggressive responses were most pronounced among those high in narcissism, whose self-esteem is presumably more unstable.

In fact, although these very interesting findings make a good deal of sense from a number of perspectives, the one perspective that seems to have particular difficulty explaining them is sociometer theory. As Twenge et al. (2001) noted, if a fundamental need to belong is what primarily directs social behavior, one might think that social exclusion should heighten this need and thus direct behavior toward reconnecting with others and establishing the potential for social relationships. However, in the Twenge et al. studies, social exclusion increased aggressiveness toward neutral others—a rather odd response if one's primary goal is to be included. We want to emphasize that we think that social exclusion does indeed have a number of very interesting effects. However, we fail to see how these effects in any way establish that the function of self-esteem is to simply monitor inclusive fitness.

Leary and Baumeister (2000) also reviewed a variety of other observations under this general heading that they take as support for sociometer theory. For example, they noted that, "being valued by one's peers may be more critical to self-esteem than the acceptance of close friends and family members" (Leary & Baumeister, 2000, p. 26). This is purportedly due to the fact that people are more certain of a minimal level of acceptance from their close friends and family members than they are of acceptance from those with whom they are less familiar. Although we see this as a reasonable interpretation, it is in no way unique to sociometer theory and is not a logical deduction from its primary propositions. Why would a gauge of social inclusion that evolved to facilitate survival and reproduction be more reflective of inclusion regarding less important relationships than it is regarding more important ones? From an evolutionary perspective, would not staying in the good graces of family members and close friends (with whom one shares genes and greater likelihood of reciprocal altruism, respec-

tively; Dawkins, 1976) be more important for survival and gene perpetuation than casual acquaintances? At the minimum, this issue highlights an important question that the sociometer theory lacks the conceptual apparatus to effectively address: Which inclusions matter most and why?

Public events affect self-esteem more strongly than private events. Leary and Baumeister (2000) stated, "If self-esteem were primarily a mechanism for personal *self*-evaluation, as most theorists have assumed, there would be no particular reason that public events would affect self-esteem differently than private ones" (p. 29). But this statement ignores a great deal of prior theory and research on the self. As we have argued in the preceding section and elsewhere (e.g., Greenberg et al., 1986), and as others have argued (e.g., Festinger, 1954; Mead, 1934; Swann, 1987; Wicklund & Gollwitzer, 1982), other people's evaluations are of vital importance for an individual's private self-concepts because they provide consensual validation or invalidation of that person's privately held evaluations and beliefs. As Festinger (1954) observed, people are not free to believe just anything they wish, but rather must keep their beliefs within the realm of shared social reality. Public events are, in many cases, more impactful on private self-esteem because the opinions of others validate or challenge the beliefs people privately hold about themselves. Contradicting their earlier statement, Leary and Baumeister (2000) later acknowledged that "several researchers have suggested reasons that threats to inner self-esteem are more pronounced in public" (p. 30) but then argued that "such explanations are unneeded if we assume that self-esteem is involved in monitoring others' reactions to the individual [because] . . . the sociometer *naturally* responds to changes in others' perceived reactions to the individual" (p. 30).

We do not think the consensual validation concept should be swept away quite so easily. The idea that people rely on others to validate their conceptions of reality is central to a wide variety of psychological theories, has been empirically supported (see, e.g., Swann, 1987), and has proven to be useful in accounting for a variety of findings across diverse literatures. A new theory that attempts to explain the same conceptual domain as a long-standing successful theory (or in this case, set of theories) should attempt to explicate the conceptual advantages of the new perspective, and hopefully propose hypotheses that could be used to distinguish between the approaches, followed by evidence in support of the novel alternative. Although Leary and Baumeister (2000) appear to be appealing to the value of parsimony, the notion that the sociometer naturally responds to changes in others' perceived reactions requires a host of additional assumptions that undermine any such claim of simplicity and elegance. And as will soon be apparent, the lack of evidence uniquely supporting their core proposition that self-esteem functions as a barometer of social approval makes such appeals dubious.

An additional problem for the sociometer model is that public events often do not lead to more self-esteem seeking than private ones. In an earlier study, Greenberg, Pyszczynski, and Solomon (1982) demonstrated that self-serving attributions are sometimes stronger in private and avoided in public because of what their presentation might negatively imply to others. In this study, participants received either success or failure feedback on a supposed test of verbal intelligence in either a public or private manner and were asked to make attributions for their performance. Contrary to the view that a self-serving pattern of internal attributions for

success and external attributions for failure reflects attempts to manage the impression of an audience rather than one's own self-esteem, a clear pattern of self-serving attributions was observed in both public and private and was actually somewhat stronger in private than in public. Thus, concerns about public acceptance tended to reduce the self-esteem-seeking behavior that participants exhibited in private. It has also been shown that, under other circumstances, people sometimes defend their self-esteem with self-serving attributions even at the risk of making a negative impression on others. For example, Riess, Rosenfeld, Melburg, and Tedeschi (1981) found that participants engaged in self-serving attributions for success and failure even when they were attached to a bogus pipeline that they believed conveyed their true attitudes. Clearly, this instance of self-esteem defense reflects private cognitions and not merely a self-presentational ploy. Similarly, Tesser and Paulhus (1983) have shown that private failure leads to compensatory defenses even when the only others aware of the participant's performance falsely believe that the participant had succeeded. Taken together, this research demonstrates that it is not a simple matter of public or private events producing stronger effects but a complex interaction of the impact of the event on self-esteem and the resulting social and intrapsychic forces that such threats set in motion.

As additional support for the sociometer analysis, Leary and Baumeister (2000) discussed three variations on the theme of the previous two lines of evidence, specifically research purported to show that (a) the primary dimensions of self-esteem reflect attributes that are relevant to being valued as a relational partner, (b) the importance people place on dimensions of self-esteem is interpersonally determined, and (c) trait self-esteem is related to perceived relational appreciation and devaluation. Although Leary and Baumeister reviewed a number of findings consistent with these claims (and more have appeared in the literature since—e.g., MacDonald, Saltzman, & Leary, 2003), all three hypotheses could readily be generated from any theory that posits that people's contingencies for self-esteem are socially and culturally determined. This would, of course include TMT, as well as the analyses offered by James (1890), Mead (1934), Horney (1937, 1950), Sullivan (1953), Wicklund and Gollwitzer (1982), and Crocker and Wolfe (2001), among others. To the extent that individuals within a culture subscribe to the same general worldview or set of values, it follows that the same values that determine individuals' evaluations of others would also determine their evaluations of themselves.

Changes in self-esteem are accompanied by changes in affect. Threats to self-esteem often produce affective reactions, and they also increase the physiological arousal that is often assumed to underlie these subjective reports (see Arndt & Goldenberg, 2002, for a review). However, these findings in no way uniquely follow from the sociometer analysis. Virtually all theories of self-esteem assume that self-esteem has affective components or consequences and that self-esteem defenses are engaged in response to, and for the purpose of controlling, negative affect that results from threats to self-esteem (e.g., Fries & Frey, 1980; Mehlman & Snyder, 1985; Stephan & Gollwitzer, 1981; Tesser, 1988; Weary, 1979). From a TMT standpoint, events that compromise the effectiveness of one's anxiety buffer expose the individual to increased anxiety and negative affect. Tesser and colleagues (Tesser, Crepaz, Beach, Cornell, & Collins, 2000; Tesser, Martin, & Cornell, 1996) argued

that affect regulation is the common currency underlying all forms of self-esteem defense. Indeed, it is on this basis that Tesser and colleagues argued for the interchangeable nature of most forms of self-esteem defenses. Thus, again, because so many theories predict relationships between self-esteem and affect, evidence supporting this relationship is largely irrelevant to the validity of sociometer theory.

The sociometer perspective posits that threats to self-esteem create affect because such events threaten one's potential for inclusion. It would therefore seem reasonable to expect that events that threaten inclusion more directly would be especially likely to lead to changes in affect. However, although there is certainly evidence for this proposition (e.g., Bourgeois & Leary, 2001; Leary et al., 2003; see also Leary & Baumeister, 2000) several studies that have directly manipulated inclusionary status have failed to support this hypothesis. For example, Nezlek, Kowalski, Leary, Blevins, and Holgate (1997, two studies); Gardner, Pickett, and Brewer (2000, one study); Twenge et al. (2001, two studies); and Baumeister, Twenge, and Nuss (2002) found no effects of inclusion–exclusion feedback on affective reactions. Although there are always a variety of possible explanations for null effects, these findings do not bode well for the sociometer analysis.

The sociometer is calibrated to efficiently detect relational devaluation. In support of their claim that the sociometer is calibrated efficiently, Leary and Baumeister (2000) argued that self-esteem is more responsive to exclusion than inclusion because "except in extreme cases (such as when we exile or retaliate against someone), rejection carries no greater interpersonal penalty than indifference. As a result, people tend to regard ambivalence or neutrality as rejection" (p. 41). But there are many cases in which indifference from others is responded to in kind with indifference. We seriously doubt that many people respond to the many strangers or out-group members they encounter everyday who ignore them with feelings of rejection and negative affect. Few people are upset when members of a proselytizing religious or ideological group passes them by. Nor is a neutral reaction from those one sees every day upsetting in many, if not most, situations. Perhaps there are some cases in which being ignored is experienced as a sign of rejection, but this seems likely primarily in cases in which social norms dictate, or one's behavior is expected to elicit, a positive response from the other. If people really were responding with distress on a regular basis to neutral responses from others, this would seem to run counter to the notion that the sociometer is efficiently calibrated, in that most neutral responses have little or no implication for how others view the self. Moreover, the idea that the sociometer is often "fooled or deceived" (as Leary & Baumeister 2000, discussed, p. 22) and evidence that exclusion feedback and primes can under some circumstances increase self-esteem (Nezlek et al., 1997; Sommer & Baumeister, 2002) and that people sometimes disidentify themselves from groups to protect self-esteem (e.g., Dechesne et al., 2000a) all seem to suggest that if self-esteem were a sociometer, it would be a very inefficiently calibrated one indeed.

The bottom line with the evidence reviewed in support of sociometer theory is that this perspective does not uniquely predict these effects nor does it uniquely explain them. Virtually all theories of self-esteem can account for the evidence reviewed by Leary and Baumeister (2000) as support for sociometer theory. Moreover, although much of the existing evidence is loosely consistent with sociometer theory, there are important exceptions in even the evidence presented by Leary and Baumeister. More recent studies also attest to the inefficient calibration of the sociometer. Consider Sommer and Baumeister's (2002) finding that after being rejected, high self-esteem people view themselves more positively and less negatively.

Can Sociometer and Terror Management Theories Explain Existing Findings Regarding Self-Esteem and Social Inclusion?

The self-esteem literature is one of the largest in all of psychology and a thorough comparison of the sociometer and TMT explanations for all of these findings would be beyond the scope of this article. For presentations of these theories' explanations for many of the findings from this literature, see Greenberg et al. (1986, 1997); Leary and Baumeister (2000); Leary et al. (1995); and Pyszczynski, Solomon, and Greenberg (2003). In the following section we focus on several sets of findings regarding self-esteem striving and group affiliations that we believe most clearly differentiate the two theories' explanatory power. These findings follow rather directly from TMT but would be extremely difficult to reconcile with sociometer theory without the addition of numerous ad hoc assumptions.

To which groups do people want to belong and why? Although it is clear that people want to belong to some groups, it is just as clear they do not want to belong to others. Although Leary and Baumeister (2000) acknowledged that people do not want to be included in all groups and need only a certain amount of social inclusion, they made no specific predictions regarding what makes some groups attractive and others repulsive, nor, as far as we can tell, is there a conceptual basis in their theorizing to generate such predictions without ad hoc extratheoretical assumptions. This is a critically important issue because, without propositions that specify what makes groups attractive and why, it is impossible to generate predictions about when social exclusion should affect self-esteem a little, a lot, or not at all and about when social inclusion should be actively avoided.

At times Leary and Baumeister (2000) alluded to people wanting to be included in a sufficient number of important groups. But what determines what is a sufficient number (of course we are not asking what that number is) and, more important, what determines what makes a particular group important? Although they suggested a variety of contextual factors that are expected to influence the importance of belonging that we see as quite reasonable (e.g., belonging to one group is more important after exclusion from another group and less important when one assesses one's general level of inclusive fitness to be high), they failed to specify features of groups or individuals themselves that determine either the strength of the need to belong or when this supposed need is actively reversed. The one exception might be their claim that those who are sufficiently included (i.e., who possess high self-esteem) need not seek other inclusion because, using their metaphor, the meter registers a full tank. However, the literature on self-esteem and sociability does not support this view of high self-esteem individuals as disinclined to seek social or group contact. Indeed, it is often those who are low in self-esteem who withdraw from social relationships in the face of problems (Murray, Rose, Bellavia, Holmes, & Kusche, 2002) and who are most

likely to use interpersonal strategies such as the "silent treatment" that would seem to threaten their social relationships (Sommer, Williams, Ciarocco, & Baumeister, 2001). This latter finding in fact led Sommer et al. (2001) to acknowledge that "the link between self-esteem and interpersonal rejection is more complicated than previously recognized" (p. 238). Part of this complexity is being able to address the question of which groups bestow a sufficient level of inclusion or why people sometimes actively resist affiliations with particular groups.

From a TMT perspective, the importance of group membership varies directly with the implications of membership for self-esteem and faith in one's internalized worldview. People are attracted to groups for which inclusion would enhance self-esteem and increase faith in their cultural worldview and repulsed by groups for which inclusion would damage self-esteem or decrease faith in their cultural worldview. To the extent that self-esteem depends on living up to internalized cultural standards of value, people are thus attracted to groups that exemplify beliefs and values that their worldview specifies as correct and good, and they are repulsed by groups that exemplify beliefs and values that their worldview specifies as incorrect or bad, because association with such groups can either validate or undermine their view of reality and their sense of themselves as valuable and decent people.

The key point is that it is not membership or inclusion in a group per se that is sought, but the psychological implications of that membership or inclusion. Indeed, the one study reported by Leary et al. (1995) that investigated the effects of actual rather than imagined exclusion from a group showed that exclusion led to a loss of self-esteem when it was based on meaningful judgment by the group but not when it was randomly determined; simply excluding people from a group did not affect self-esteem. Although Leary et al. (1995) interpreted this as consistent with their theory, presumably because the meaningful exclusion has more implications for one's general inclusive fitness and future outcomes than random exclusion, this finding is not to be taken lightly and underscores what we believe to be a critically important point: Exclusion affects self-esteem when it is based on something meaningful.

Other research by Leary and colleagues also seems to indicate that inclusion and exclusion do not simply increase or decrease self-esteem, respectively. In two studies by Nezlek et al. (1997), exclusion or inclusion feedback based on personal reasons had no effect on self-esteem ratings for nondepressed or high self-esteem participants. That is, the significant effects of these manipulations were obtained only among those troubled by depression or low self-esteem. Among these participants, meaningful exclusion led to lower self-esteem ratings than did meaningful inclusion. However, random inclusion led participants who were high in depression or low in self-esteem to report lower self-esteem scores than did random exclusion. Nezlek et al. gave these latter results brief attention and suggested that for some individuals being randomly included may be more troubling than being randomly excluded. Yet we wonder—from a sociometer perspective, why would any inclusion lead persons, particularly those who according to Leary and Baumeister (2000) need inclusion the most, to feel worse about themselves? It is difficult to provide an explanation for this finding if one assumes that the primary goal driving such behavior is social inclusion. TMT and other theories suggest that people sometimes actively avoid inclusion because what is important is

what belonging implies about the self. Groups and individuals make decisions about whom to affiliate with and whom to avoid on the basis of the same standards of value on which individual self-esteem is based. Random inclusion may make low self-esteem and depressed people, who have serious doubts about themselves, feel like the inclusion is based on pity or is unjustified, and this may be taken as further evidence that they do not live up to their standards of value. Again, people seem to feel good about inclusion and bad about exclusion primarily as a function of its implications for their self-esteem (for more research on this topic, see Pool, Wood, & Leck, 1998).

Interestingly, sociometer theory seems related to Bowlby's (1969/1982) attachment theory, but it explicitly divorces itself from the functional analysis of attachment upon which Bowlby and other attachment theorists base their analysis (e.g., Mikulincer & Shaver, 2001). By combining ideas from evolutionary theory and more psychoanalytically oriented perspectives, Bowlby reasoned that the fundamental impetus for the development of attachment is distress or anxiety and the need to reduce it. But for sociometer theory, belonging is the sought-after instinctual end-state in and of itself (and as many have argued, such a conception of instinct is circular and devoid of explanatory value). If sociometer theory were to draw further from attachment ideas and posit that a critical function of belonging is to protect the individual from anxiety, we would take no issue with their theoretical position. It would then however become difficult to see how the sociometer theory offers anything beyond what Bowlby, TMT, or other like-minded approaches have already argued.

Why do people distance themselves from important individuals and groups? Of course, it is undeniably true that people often actively strive to affiliate with others, to become part of groups, and to have a certain number of social relationships. One could go so far as to say that this fact is the core truth that makes social psychology necessary as a scientific discipline. However, it seems to us that people often go further than seeking mere inclusion in groups. Consider a Catholic American female associate professor in psychology with a spouse and two children. Her inclusion in the social categories of professor, woman, faculty at her particular school, Catholic, psychologist, American, and family member are virtually entirely secure. Yet, we would predict that she would still strive to sustain and build her sense of significance by contributing as much as she can to the field of psychology and to being the best scientist, teacher, wife, and mother she can be. If people were really striving just for inclusion, why would they strive beyond being an average member? We would argue it is because many people do not just want to be members, they want to be the best. Similarly, many children do not want to just be a singer, actor, or sports participant, they want to be superstars and heroes. As Becker (1973) noted, "Sibling rivalry . . . is too all-absorbing and relentless to be an aberration, it expresses the heart of the creature: the desire to stand out, to be the *one* in creation" (p. 3).

It is noteworthy that Leary et al. (2001) made a concerted effort to tease apart the contribution of motives for social acceptance and social dominance to self-esteem. In this research they found in two studies that positive (vs. negative) feedback on both social acceptability and potential for leadership and influence increased self-esteem, with perceptions of acceptance and influence mediating these respective effects. A third study found that while both

perceived acceptance and perceived dominance accounted for significant variance in self-esteem, perceived acceptance accounted for more unique variance. Yet given the correlational design of the study it is unclear whether self-esteem might affect perceptions of acceptance more so than perceptions of dominance. More generally, the operationalizations of dominance in this study (e.g., leadership, assertiveness) may have been a bit more restrictive than how the construct is often viewed (cf. Barkow, 1989). However, even if one grants that social acceptance can exert a stronger effect on self-esteem than dominance, it is clear that sometimes people strive for more than just blending in with the herd.

By focusing on the importance of personal significance based on individualized internal standards of value, TMT can explain why people don't just strive to be average members of the flock. Although self-esteem is generally served by actions that will garner broad social approval, there are also many examples in which personal standards of value lead the individual to do something that is likely to lead to social rejection. Political examples were documented in John F. Kennedy's (1961) *Profiles in Courage,* and many examples can be found in science and the arts as well (e.g., Copernicus, Darwin, Freud, Robert Fulton, Galileo, van Gogh, Stravinsky, Picasso). Van Gogh found very limited social approval for his paintings and was quite contemptuous toward many fellow painters (De Leeuw, 1996). He was certainly bothered by this for monetary and other reasons, but he was also quite firm in his belief in the quality of his own work, helped by the validation of his brother and a few artist colleagues such as Gauguin; his internal standards of value were far different from those of the prevailing social milieu. He believed in the greatness of what he was doing, but his view of his own value did not correspond at all with the broad indicators of inclusion in his life. And he did of course posthumously achieve great significance and the immortality for which he strove.

Whereas the sociometer approach to human motivation views human beings as fundamentally social animals wanting to be accepted within the herd, TMT recognizes the critical role that abstract linguistic culturally based systems of meaning and value play in transforming this creature into a cultural animal seeking special significance. In the above examples, people reached for greatness at clear risk of social rejection; why would people take such risks, if inclusion were all that self-esteem was about? In a less grand sense, there is substantial evidence that people often seek to distinguish themselves from others (e.g., Brewer, 1991; Simon et al., 1997; C. R. Snyder & Fromkin, 1980) and deliberately seek to distance themselves from certain groups and individuals—even those groups with which one is highly identified and thus would be expected to be of great importance. Why do people actively seek to cut ties, reduce their sense of belonging, or minimize the extent of their association with individuals and groups? Research suggests that such distancing depends on the meaning of the individual's affiliation, what it implies for the individual's self-esteem and faith in his or her cultural worldview, all of which follow directly from TMT.

A variety of studies from a number of different research traditions document this tendency to disidentify with even highly important groups under certain conditions. Doosje, Branscombe, Spears, and Manstead (1998) have shown that belonging to a group with a history of prejudice and violence can lead to guilt and other negative emotions when one is reminded of one's group member-

ship. Specifically, Doosje et al. reminded Dutch participants of their country's colonization of Indonesia. When the information reminded them of the brutality and exploitation that were part of the colonization, participants reported increased collective guilt. Again, it appears to be the implications of group membership for one's self-esteem that produce affective reactions to one's inclusionary status. Note that these studies used one's national identity as the focal group membership, a source of identity that would likely be highly important to most individuals. Although sociometer theorists might argue that being a citizen of a particular nation might threaten one's general inclusionary status in the eyes of other groups, one has to think that this would not be the case among one's countrymen (e.g., being a German would not lead to ostracism among fellow Germans), and that acceptance in the eyes of one's in-group is most likely to be important for procuring the various commodities for which group membership is purportedly sought.

A similar point can also be made with some recent research by Hummert, Garstka, O'Brien, Greenwald, and Mellott (2002) using the Implicit Associations Test to study how attitudes toward one's in-group relate to the self-esteem of individuals. In these studies, Hummert et al. found interesting connections among self-identity in a particular domain, attitudes toward that identity, and self-esteem. For example, among women who strongly identified with being a woman, their self-esteem was high only to the extent that they viewed the female stereotype positively (see also Carpenter & Johnson, 2001, who found that the self-esteem women derive from being a woman depends on the valuation placed on their gender group). Similar effects were obtained with regard to racial identity. However, for older individuals, they found that higher self-esteem was associated not with seeing the self as old and old as positive; rather, among older individuals, high self-esteem was associated with seeing old as negative but not identifying with old (Hummert et al., 2002). These findings are telling because they indicate that it is not a simple picture of group inclusion increasing self-esteem—but that the implications of group identifications for self-esteem are critical and that these implications depend on the evaluative valence of the group.

Consider also the findings from Pool et al. (1998). In this study, participants learned that a valued majority group with which they previously identified supported an attitude that contrasted with the participants' own attitude, or that a minority group from which they intentionally disidentified advocated attitudes consonant with the participants' own. In both cases, these participants reported a subsequent decrease in self-esteem. Those participants who were indifferent to these group identifications, however, evidenced no such effects. As with the research reviewed above, this study clearly shows that it is not a simple matter of identifying with a group (even in some cases, a highly valued majority group) that determines self-esteem but how that group reflects (and thus validates) the values that the individual views as important. In other words, many people have no desire to be associated with groups that undermine the values that they view as meaningful, and belonging to such groups can actually decrease self-esteem. Further, in light of Leary and Baumeister's (2000) claims that public events affect self-esteem more strongly than do private events, it is interesting to note that Pool et al. also manipulated whether the attitude expressions were public or private and found

these effects were just as strong when the information was conveyed in private as when it was conveyed in public.

Another line of research that poses difficulties for theories that view the pursuit of self-esteem as subservient to a need to belong or be socially included is work by Gollwitzer and colleagues (Gollwitzer & Wicklund, 1985; Gollwitzer, Wicklund, & Hilton, 1982) that shows that people ignore what they know is most likely to make another person like and accept them to prove that they possess a valued self-attribute that was threatened in another context. For example, in one study, Gollwitzer et al. (1982) threatened male participants' belief that they possessed an indicator of an identity that they personally valued (e.g., journalist, photographer). Participants then expected to meet an attractive woman who made it clear that she preferred men with certain characteristics (i.e., that she liked self-effacing men and disliked self-aggrandizing men; for the other half of the participants this was reversed). This information therefore provided a cue for a particular self-presentational strategy that would facilitate inclusion. However, participants did not behave in a way that would increase acceptance. When participants had their identity threatened, they self-presented in a way that would affirm (or, *self-complete*, in Gollwitzer & Wicklund's, 1985, terms) their self even though such efforts were expected to lead to rejection by an attractive female.

This particular study further highlights the recurring deficiency in sociometer theory's ability to predict when belonging will matter. On the basis of the sociometer's evolutionarily adaptive backbone, it would seem reasonable to predict that acceptance would be particularly important when it more directly confers the possibility of a reproductive advantage (i.e., impressing an attractive member of the opposite sex). Leary and Baumeister (2000) seem to concur, suggesting that "romantic relationships undoubtedly provide some of the most impactful experiences of rejection and acceptance" (p. 27). However, Gollwitzer et al.'s (1982) research indicates that not only did participants fail to seek acceptance when their self-esteem was threatened as sociometer theory would predict but that participants were more motivated to attend to self-esteem needs and even did so in a manner that would increase the likelihood of rejection by a person whose acceptance one would expect to be especially promising for enhancing reproductive fitness.

In a related vein, Tesser and colleagues (for a review, see Tesser, 1988) have shown that people distance themselves from others who outperform them on a self-relevant dimension, and that this distancing occurs primarily when they are already psychologically close to the other. Similarly, as noted earlier, Brewer's work on optimal distinctiveness theory indicates that people often actively seek a sense of uniqueness and dissimilarity from groups, as well as connections to them (see, e.g., Brewer, 1991). Simon et al. (1997) demonstrated that MS intensifies both of these tendencies. From a terror management perspective, this work suggests that self-worth is sometimes served by one's connections to groups but at other times is served by seeing oneself as distinct from groups. This runs directly contrary to the notion that the pursuit of self-esteem is ultimately rooted in a need to belong, as are findings by Cialdini et al. (1976) and by C. R. Snyder, Lassegard, and Ford (1986). In this latter, classic work, after experiencing a self-esteem threat, participants were more likely to affiliate with their group (e.g., use the word *we* when describing their university football team, wear university apparel, rate their school or group posi-

tively) when that group's positive performance provided for positive self-reflection and were less likely to do so when the group's negative performance could reflect negatively on the self. Indeed, in C. R. Snyder et al.'s (1986) research, this "cutting off reflected failure" was the stronger effect. Moreover, in addition to being increased by self-esteem threats, this pattern of affiliation can also be exaggerated by MS, as the research we reviewed earlier indicates (Arndt, Greenberg, et al., 2002; Dechesne, Greenberg, et al., 2000). Taken together, this work indicates that when group affiliations are likely to reflect negatively on the self, people are prone to avoid such identifications, and that this is especially likely to occur after reminders of their mortality.

Perhaps it could be argued that privately perceiving similarity to a negatively valued individual or group undermines one's private perception of one's value, which then produces a fear of future social exclusion that leads one to distance. Unfortunately, this reasoning does not explain the impact of reminders of mortality. In addition, to use this reasoning to account for the Doosje et al. (1998) finding of culture guilt or the Arndt, Greenberg, et al. (2002) finding of distancing from members of one's own ethnic group would imply that people are more concerned with the possible rejection of out-group members than their sense of belonging to the in-group, a rather dubious assumption. If this were the case, people would be performing fairly subtle psychological gymnastics to protect their self-esteem to avoid possible future social exclusions, but by doing so, they would be distancing themselves from the groups most likely to be important to them. A much simpler interpretation is that they are distancing themselves to protect self-esteem because self-esteem performs some function other than monitoring inclusion. The fact that MS increases this distancing suggests that self-esteem is sought in these studies to quell existential anxiety.

Why do people deceive themselves about their value and inclusive fitness?   Large bodies of evidence document the multifarious ways in which people distort their perceptions and judgments, alter their behavior, and even decrease their closeness with those with whom they have close relationships (see Greenberg et al., 1986; Murray et al., 2002; Taylor & Brown, 1988; Tesser, 1988). With few exceptions these findings have been interpreted as evidence that people are strongly motivated to maintain high levels of self-esteem. If self-esteem functions to provide much needed information about one's inclusionary status, why then do people deceive themselves to maintain self-esteem, even in ways that are diametrically opposed to attaining social inclusion? If the function of the self-esteem system were to provide useful information about one's eligibility for belonging, such behavior would seem horribly maladaptive because it flies directly in the face of this underlying function.

There is even evidence that people are sometimes motivated to distort their perceptions of the favorability with which others view them. For example, Lewinsohn, Mischel, Chaplin, and Barton (1980) have shown that people typically judge their own performance more favorably than do outside observers. As another example, work by Murray and colleagues has shown that low self-esteem people substantially underestimate how positively they are regarded by relationship partners (e.g., Murray, Holmes, & Griffin, 2000). If the function of self-esteem is to be an early warning signal for threats of social exclusion, distorting the very information that self-esteem is designed to provide seems antithet-

ical to this function, akin to intentionally sabotaging the accuracy of the gas gauge of one's car.

In their recent restatement of sociometer theory, Leary and Baumeister (2000) referred to such self-deception as "fooling the sociometer" and argued that this occurs because self-esteem is more than simply "a direct and immediate measure of social inclusion" but also "an appraisal of one's eligibility for attachment," which purportedly provides "much greater room for distortion" (p. 22). They likened self-deception to taking drugs, which provide pleasure in the absence of the events to which the body's pleasure centers were designed to respond: "In the same way, cognitively inflating one's self-image is a way of fooling the natural sociometer mechanism into thinking that one is a valued relational partner" (Leary & Baumeister, 2000, p. 23). But we ask, why would one do this if the function of self-esteem is to provide information about inclusionary status? And moreover, what does this imply about the efficient calibration of the sociometer?

Of course people sometimes do maladaptive things and doing things that appear on the surface counter to their underlying motives is not all that uncommon. But explaining such behavior requires that one identify another less obvious function that it serves—and then, hopefully, provide empirical evidence to support this supposition. No such reasoning or evidence is presented in Leary and Baumeister's (2000) argument. Presumably they are implying that attaining the pleasure of a positive self-concept is what leads people astray from their pursuit of what the self-concept ultimately functions to do. But to the extent that one forgoes the purported primary function in order to achieve this pleasure, this implies that the primary function is not the only function and is probably not really the primary one. If people choose self-esteem enhancement over useful information about their inclusionary potential, does it make sense to claim that the pursuit of inclusion-relevant information is really the core underlying motive?

Why are people's assessments of their worth typically more positive than their perceptions of how much they are valued by others? Another well-documented tendency that seems counter to the gist of the sociometer analysis of self-esteem is that people's self-assessments are typically more positive than the assessments of them made by others (cf. Taylor & Brown, 1988). In this sense, most people resonate to comedian Rodney Dangerfield's perpetual complaint, "I don't get no respect," feeling that their true value is not quite fully appreciated by the world at large. This, of course, is probably a specific example of the more general case of self-deception raised above, but we feel it is a particularly important one.

To return to the gas gauge metaphor, having a discrepancy between how highly we as individuals think of ourselves and how highly we believe other people think of us would be like thinking that the gas gauge indicates that the tank is full and simultaneously thinking that the tank is near empty. Which perception should we use to determine whether we need gas? If one had a separate perception of what the gauge says and the actual resource the gauge supposedly assesses, why would anyone need the gauge? If self-esteem were purely, or even largely, a reflection of people's perception of how well they were doing regarding social inclusion, then their perceptions of their own self-worth would be the same as their perceptions of how positively they think they are viewed by others. This is clearly often not the case. Why would people

need to use self-esteem to assess this anyway? Don't people have both a sense of how included they are in specific relations, such as their marriage, bowling team, and profession, and a general sense of how well liked and respected they are? Of course, these perceptions may affect individuals' self-worth, but they are separate perceptions and would seem more accurate and useful than their private general sense of self-worth for monitoring and, when necessary, adjusting their actions to sustain desired relationships.

Indeed, there is evidence that perceptions of one's relationships may be independent of self-esteem. In contrast to what sociometer theory would seem to predict, Endo, Heine, and Lehman (2000) found in two studies using European Canadian, Asian Canadian, and Japanese samples that the positivity of people's perceptions of their significant relationships (e.g., romantic, family, and best friend) were uncorrelated with levels of self-esteem. Although evaluations of self on relationship-relevant traits (e.g., trustworthiness) were correlated with self-esteem, as Endo et al. noted, this may simply reflect general positivity in self-perception. These and other studies (e.g., Kwan, Bond, & Singelis, 1997) led Endo et al. (2000) to conclude that "those people who report having the strongest sense of belongingness do not report feeling any better about their individual self-regard" (p. 1577). If self-esteem is a barometer of belongingness, why does it at times bear little or no relationship with how positively a person views his or her relationships?

The Heuristic Utility of Sociometer and Terror Management Theories

Conceptual coherence and explanatory power. We feel that taken individually, and even more compelling when taken together, the work reviewed above (on inclusion and exclusion, psychological distancing, culture guilt, group influence, optimal distinctiveness strivings, the various terror management findings, symbolic self-completion, basking in reflected glory and cutting off reflected failure, self-evaluation maintenance, positive illusions, self-deception, discrepancies between self-worth and perceptions of social approval) converge to raise serious questions about the utility of the sociometer theory. On the other hand, these and other findings either follow quite directly from the central propositions of TMT or fit well with these propositions. This is not to say that TMT explains everything there is to be known about self-esteem but rather that the theory sheds light on important questions that have emerged from this literature and is highly compatible with the vast majority of research regarding self-esteem-related processes and dynamics. Consistent with our claim that the function of self-esteem is to provide a buffer against death-related anxiety, many findings regarding self-esteem dynamics have been shown to be exaggerated or increased in magnitude when death-related thoughts are made accessible (e.g., Arndt, Greenberg, et al., 2002; Dechesne, Greenberg, et al., 2000; Mikulincer & Florian, 2002; Simon et al., 1997; Taubman Ben-Ari et al., 1999).

Sociometer theory appears unable to explain the corpus of work that we have presented in this article that follows directly from the self-esteem as anxiety buffer hypotheses derived from TMT. As we have argued above on epistemological grounds, a viable replacement for an existing theory must account for the empirical results generated by that theory. Beyond its inability to explain the

empirical findings pertaining to self-esteem generated by TMT, sociometer theory simultaneously suffers from the even more daunting difficulty: If people pursue self-esteem because it provides information about inclusionary status but sometimes pursue self-esteem at serious cost to their inclusionary status, we fail to see how the sociometer theory could direct us to viable predictions and explanations for phenomena central to what the theory purports to elucidate. As far as we can tell, the theory lacks the conceptual machinery to specify variables that might moderate these opposing tendencies.

Specifically, Leary and Baumeister (2000) acknowledged that

> people sometimes experience changes in self-esteem even when events appear to have no important, long-term consequences for acceptance. On the surface, this fact would seem to contradict the claim that the self-esteem/sociometer system serves to maintain a sufficient level of belongingness. On closer inspection, however, such events are consistent with the theory. (p. 20)

They provided three explanations for why self-esteem is often affected in the absence of real implications of one's behavior for inclusionary status: (a) because the sociometer is designed to detect one's long-term potential for inclusion in diverse groups, (b) because of the possibility that one's private self-knowledge might be discovered by others and thus lead to exclusion, and (c) because the system needs to be very sensitive and thus sometimes registers "false positives" (loss of self-esteem in the absence of real threat of exclusion). Stated differently, their first reason posits that events threaten self-esteem when they undermine inclusion, except when they apparently do not undermine inclusion, in which case they affect self-esteem because of concerns about longer term inclusion that are not yet apparent. Similarly, with the second reason, they argued that events threaten self-esteem when such events lead to relational devaluation from others, except when others do not know about the events, in which case the events do so because one fears that others will know about them. Finally, with their third reason, they are claiming that events threaten self-esteem when such events undermine inclusion but that the system sometimes makes mistakes so that events that do not undermine inclusion undermine self-esteem. These seem like a lot of exceptions—exceptions that make it difficult to see how the theory can be usefully applied to understanding social behavior.

Perhaps most troubling is that Leary and Baumeister (2000) went on to suggest that sometimes self-esteem becomes functionally autonomous and is pursued in its own right independently of its implications for social inclusion. Thus, although the function of self-esteem is to provide a signal regarding one's fitness for social inclusion, sometimes it is sought for its own sake. Although we admit that it is plausible that a system that evolved for one purpose could later assume other functions or attain its own motivational properties, this threatens to take the theory outside of the realm of science because any and all findings can be "explained." It also suggests that what the model is really saying is that self-esteem originally evolved to serve a sociometer function but now serves other purposes. In that case, how useful is the sociometer model for explaining self-esteem and social behavior in contemporary humans?

Another question raised by the sociometer view is why specifically it is one's inclusionary status that self-esteem reflects and not other features of one's interaction with the environment that also facilitate reproductive success. That is, whereas a persons' inclusive fitness can indeed contribute to their reproductive success, there are many other qualities that would seem to be equally critical (e.g., effectively guarding one's mate, detecting cheating behavior, being able to procure resources) that are only indirectly related, at best, to how much other people like a person (see, e.g., Geary, 1998). If these other attributes are equally important, why was there not severe selective pressure to base our self-evaluation on these other traits? This would suggest that it might be more accurate to conceptualize self-esteem as a more generic "skillometer" rather than an exclusively sociometer.[3]

As Lakatos (1976; see also Greenwald, Pratkanis, Leippe, & Baumgardner, 1986) argued, at some point all theories are forced to invent ad hoc assumptions to account for observations that appear, at first blush, inconsistent with their premises. From this perspective, one sign of a scientifically useful theory is minimal use of this "negative heuristic." We would add that such theoretical backpedaling demands that those advocating the theory then move forward to provide empirical support for the ad hoc assumptions and evidence that the seemingly paradoxical functions posited by the theory are indeed operating. To date we know of no evidence that supports the ad hoc explanations offered by Leary and Baumeister (2000) for findings and observations that contradict the basic tenets of sociometer theory.

Generativity. Philosophers of science emphasize that useful theories generate novel hypotheses that lead to new knowledge and ideas (Laudan, 1984). We believe that the large body of terror management research we have reviewed here (and elsewhere) attests to the generative value of TMT. The theory has generated a rather large literature, reviewed earlier in this article, on the nature and function of self-esteem. It seems highly unlikely that any of these hypotheses could be generated from any other extant theory. TMT also has been applied to a diverse array of social psychological phenomena, including altruism, empathy, aggression, attachment, attitude change, attributional biases, anxiety disorders, conformity, creativity, cultural pride and guilt, depression, deviance, disgust, false consensus effects, health-related beliefs and behavior, in-group favoritism, moral and legal judgments, objectification of women, prejudice, reverence toward cultural icons, obedience to authority, romantic relationships, risk taking, sexual ambivalence, and sports team affiliations. Furthermore, TMT has been used to address questions previously neglected in social psychological discourse, such as why self-awareness leads to self-evaluative comparisons with standards (Pyszczynski, Greenberg, Solomon, & Hamilton, 1990), why cultures must regulate and ritualize human sexuality (Goldenberg et al., 1999), why women are objectified more than men (Goldenberg, Pyszczynski, Greenberg, & Solomon, 2000), and why creative behavior sometimes leads to feelings of guilt and anxiety (Arndt, Greenberg, Solomon, Pyszczynski, & Schimel, 1999). Thus, TMT has been useful for integrating a wide array of social psychological phenomena, generating a variety of new directions for research, and most relevant to present concerns, illuminating the role of self-esteem in diverse social psychological phenomena.

Sociometer theory has also garnered considerable attention and has been used to address a variety of issues regarding the relation-

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[3] We thank Mark Landau for bringing this issue to our attention.

ship between belonging, rejection, interpersonal relationships, and self-esteem. However, it has generated considerably less research assessing hypotheses that could not be readily generated from various other theories, and it seems unable to explain a host of existing findings we have reviewed without the use of numerous additional assumptions.

Conclusion

We have reviewed diverse lines of converging evidence that self-esteem serves an anxiety-buffering terror management function. We have also discussed conceptual and empirical problems with other extant explanations for the function of the self-esteem motive and argued that TMT is currently the only account for why this motive exists that is supported by the existing empirical evidence. TMT also provides insight into why self-esteem leads to various other useful psychological consequences, like promoting more effective behavioral functioning, coping with emotional stressors, and the growth and expansion of one's capacities (cf. Pyszczynski, Greenberg, & Goldenberg, 2003). Although TMT is compatible with views of the self-esteem motive that conceptualize it as phylogenetically rooted in the more primitive dominance hierarchies found in other primates, it offers an explanation for how these primitive social devices evolved into the abstract linguistically based system of living up to culturally prescribed values as a means of controlling a fear that only humans seem capable of experiencing. It is this transition from being a social animal to a linguistically oriented self-determining cultural animal that distinguishes human behavior and self-regulation from that of nonhuman primates and distant prehuman ancestors.

The relationship between the need for self-esteem and the need for interpersonal connections is a complex one. Rather than viewing self-esteem simply as a barometer of one's potential for social inclusion, TMT views social relationships as providing much-needed validation of both the worldview and self-esteem components of the individual's anxiety-buffering system. Mikulincer, Florian, and Hirschberger (2003) have recently proposed an integration of TMT and attachment theory (Bowlby, 1969/1982) that fits well with our view that self-esteem develops its anxiety-buffering properties out of the affect control provided by early attachments to primary caregivers. Mikulincer et al. (2003) have amassed a considerable body of evidence suggesting that close interpersonal relations serve an anxiety-buffering function that may be in addition to the consensual validation of worldview and self-esteem that they provide. This work shows that whatever other functions they may serve, close relationships serve an important terror management function. Both TMT and attachment theory suggest that the security that close relationships provides plays an important role in motivating people to seek and maintain connections with others.

The pursuit of self-esteem can encourage a wide range of prosocial behaviors and creative accomplishments. However, because self-esteem is predicated on the beliefs and values of the meaning-providing worldview to which the individual subscribes, it can also contribute to horrible antisocial behavior, such as prejudice and aggression, as the horrific efforts to achieve heroic martyrdom by the terrorists who attacked the World Trade Center on September 11, 2001, made all too vividly clear (Pyszczynski, Solomon, & Greenberg, 2003). The pursuit of self-esteem is thus

neither a good thing nor a bad thing but rather, a part of the system that human beings use to both regulate their behavior and cope with their existential situation. By explicating the nature and function of this very basic human motive and emphasizing the culture's role in providing durable sources of self-worth, TMT raises the hope of developing ways to channel people's security-driven pursuit of meaning and value in the direction of its more positive manifestations.

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