A Function of Form: Terror Management and Structuring the Social World

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Drawing on lay epistemology theory (A. W. Kruglanski, 1980, 1989), the authors assessed a terror management analysis (J. Greenberg, S. Solomon, & T. Pyszczynski, 1997) of the psychological function of structuring social information. Seven studies tested variations of the hypothesis that simple, benign interpretations of social information function, in part, to manage death-related anxiety. In Studies 1–4, mortality salience (MS) exaggerated primacy effects and reliance on representative information, decreased preference for a behaviorally inconsistent target among those high in personal need for structure (PNS), and increased high-PNS participants' preference for interpersonal balance. In Studies 5–7, MS increased high-PNS participants' preference for interpretations that suggest a just world and a benevolent causal order of events in the social world.

World, world, I am scared
and waver in awe before the wilderness
of raw consciousness, because it is
all dark and formlessness; and it is real
this passion that we feel for forms.
But the forms are never real.
Are not really there. Are not.

—William Bronk, *Light and Dark*

Does the unbounded world present an overwhelming and potentially frightening reality, as Bronk suggests? It is widely accepted among social scientists that people are strongly disposed to organize what would otherwise be an ungainly amount of information into simplified, coherent cognitive models (e.g., Kahneman, Slovic, & Tversky, 1982; Simon, 1979). From a motivated social cognition perspective, limited attentional capacities and active goals compel people to selectively and schematically structure social information (e.g., by means of selective attention, heuristics) in the service of increasingly orderly, predictable, and controllable models of others and social events. Although research has documented many ways in which this penchant for structure influences social cognition and behavior (Fiske & Neuberg, 1990; Kahneman & Tversky, 1973; Kruglanski, 1996; Thompson, Naccarato, Parker, & Moskowitz, 2001), less attention has been devoted to understanding *why* people are so motivated to impose structure on the social world. From a utilitarian perspective, structuring enables one to efficiently extract useful information in the pursuit of basic needs. Terror management theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986; Solomon, Greenberg, & Pyszczynski, 1991) provides a complementary perspective on the functional significance of epistemic structure by positing that simple, orderly, and benign representations of social information are important for maintaining a buffer against deeply rooted fears about death. This article uses TMT as a framework for exploring the motivational underpinnings of social structuring. We present evidence from seven studies that keeping mortality concerns at bay is one significant motivation for structuring across a number of different social judgment phenomena—impressional primacy, use of the representative heuristic, preference for behavioral consistency and interpersonal balance, just world beliefs, and preference for benevolent causation of events.

Structuring the Social World

Attending to the immense complexity of information available in the social world would be unwieldy, and theorists and researchers have identified a wide variety of structuring strategies that people use to derive simplified, coherent cognitive models of that information (see, e.g., Fiske & Neuberg, 1990; Rosch, 1978). For

example, perceivers tend to ascribe stable dispositional characteristics to others (Jones & Davis, 1965) and to interpret ambiguous behavior using primed or chronically accessible constructs (Higgins, Bargh, & Lombardi, 1985; Higgins, Rholes, & Jones, 1977). People use similar strategies in interpreting more complex and abstract social events (Heider, 1958). For example, Pennington and Hastie (1986) found that people spontaneously create structured stories that organize bits of information into a temporally and causally coherent sequence, and they differentially emphasize those bits that maintain the constructed narrative. These and many other findings provide compelling support for the now uncontroversial claim that people actively impose structure on social information (see, e.g., Nisbett & Ross, 1980; Read & Marcus-Newhall, 1993).

Why Do People Structure?

From a cognitive economy perspective, people seek structure because they are unable to exhaustively consider all possible interpretations of available information. Consequently, they use a "satisficing" strategy for selecting plausible interpretations that are reasonably consistent with extant evidence (e.g., Kahneman et al., 1982; Simon, 1983). From this perspective, social perceivers automatically use heuristics, scripts, schemas, and other organizing tools to reduce complex and ambiguous information to coherent and consistent models of others while minimizing processing effort, in spite of the fact that doing so yields systematic biases and errors (Allport, 1954; Fiske & Taylor, 1991; Jones & Davis, 1965; Srull & Wyer, 1989; Tajfel, 1969). Despite the parsimony of the cognitive economy view, it has become clear that there is variability, across both persons and situations, in how extensively social information is processed. Sometimes people go to great lengths to understand their social world; other times they readily accept the outcome of automatic interpretive processes with little or no effort, conscious or otherwise. Furthermore, some people apply more effort than others. To explain this variability, theorists and researchers have begun to identify motivational states (e.g., current goals, moods, needs) and dispositional propensities (e.g., personal need for structure [PNS], need for cognition) that influence information-structuring strategies (for review, see Dunning & Beauregard, 2000; Higgins & Bargh, 1987; Kruglanski, 1996; Kunda, 1990; Snyder & Swann, 1978).

The Lay Epistemic Account of Social Structuring

Perhaps the most comprehensive and widely researched perspective on the role of motivational forces in social cognitive processes is Kruglanski's theory of lay epistemology (Kruglanski, 1989, 1990; Kruglanski & Webster, 1996). In depicting how one arrives at subjective knowledge, Kruglanski and colleagues proposed a process of hypothesis generation and validation whereby the individual entertains plausible hypotheses about reality and evaluates them with respect to available evidence. Because deliberation could continue indefinitely, cessation mechanisms are necessary to enable the perceiver to reach conclusions. Although the lay epistemic framework acknowledges the role of processing limitations in terminating hypothesis testing, it posits three independent but interacting epistemic motives. The need for *nonspecific structure* refers to people's desire for "*an* answer on a given topic, *any* answer, as compared to confusion and ambiguity" (Kruglanski, 1989, p. 14), whereas the need for *specific structure* reflects desires for particular conclusions that meet specific needs of the individual. Activation of the needs for either nonspecific or specific structure motivates the individual to bring the inferential process to a close, leading to a "freezing" on the conclusion that best fits the information that has been accessed up to that point. The theory also suggests that a need to avoid closure may become active when prematurely foreclosing on a judgment or being inaccurate is likely to result in undesired outcomes.

According to lay epistemology theory, these epistemic needs are affected by a variety of situational variables. Time pressure, cognitive load, fatigue, and other factors that render processing effortful or aversive (Ford & Kruglanski, 1995; Kruglanski & Freund, 1983) are among the variables that lead to quicker freezing on and greater preference for well-structured information. For example, Webster (1993) found that time pressure led to an increased correspondence bias such that a target who expressed an opinion he or she did not privately endorse was assumed to subscribe to that view. There is also ample evidence for chronic individual differences in the preference for simple structure. For example, individuals classified as dispositionally high in need for closure tend to exhibit an especially strong correspondence bias (Webster, 1993) and to rely more on primed trait constructs when interpreting target information (Ford & Kruglanski, 1995). In a related conceptualization, Neuberg and Newsome (1993) focused on individual differences in PNS and found that high-PNS individuals are especially prone to simplify social information. In sum, the need for clear and consistent knowledge, conceptualized as either a situationally induced motive or a dispositional tendency, has been shown to inhibit open information processing and encourage early closure on simple interpretations of social information.

Distal Motivational Roots of Structuring

Aside from its breadth and empirical corroboration, the lay epistemic framework is of particular relevance for our purposes because it emphasizes how, under certain conditions, people are motivated to organize information in ways that are consistent with preexisting knowledge structures. The purpose of the present research is to ask *why* confirming these knowledge structures is inherently rewarding and *why* epistemic ambiguity and incongruity are often inherently aversive. Lay epistemology and related literatures emphasize the pragmatic advantages of simple cognitive structures. For example, Kruglanski and Freund (1983) have suggested that cognitive consistency is valued for its adaptive role in the regulation of uncertainty when decisive action, control, and precise predictions are needed (see also Fiske & Taylor, 1991; Sorrentino & Short, 1986; Swann, 1987; Webster & Kruglanski, 1994).

We fully agree that maintaining stable representations of the world enhances one's ability to interpret, explain, predict, and control the social environment for practical benefit. However, pragmatic concerns may not fully account for why people prefer simple, well-structured models of the world. There are important instances of structuring that afford no straightforward practical advantage. One example is the imputation of meaning, intention, and purpose onto adaptively neutral events in the social and physical world (Deacon, 1997). The existence of individual dif-

ferences in the tendency to seek certainty and order also suggests other, nonpractical functions of structure, as does the rigid adherence to and defense of clear, certain, and unambiguous social knowledge that people often display. In what follows, we use TMT to provide a unique existential perspective on the motivational underpinnings of epistemic clarity and then present seven studies in support of it.

TMT

TMT is based on the assumption that although humans share with all living organisms systems serving the goal of continued existence, they are unique in their sophisticated symbolic cognitive capabilities, including self-consciousness. As a by-product of self-consciousness, humans are burdened with the knowledge that their existence will inevitably end and the recognition that potentially lethal events can never be fully anticipated or controlled. This knowledge, juxtaposed with a predisposition for survival, creates the potential for debilitating terror. Humankind mitigated the potential for terror that results from the knowledge of their mortality by developing and subscribing to *cultural worldviews*—humanly created symbolic conceptions shared by members of a group that present a credible and security-providing depiction of reality to the acculturated individual. Cultural worldviews serve an anxiety-buffering function, in part, by providing a meaningful explanation of reality that imbues people's lives with order, permanence, and stability. Worldviews also prescribe standards of worth that confer personal significance (i.e., self-esteem) when satisfied. Investing in a meaningful account of reality (cultural worldview) and viewing the self as a valuable contributor to that reality (self-esteem) function in concert to enable people to maintain a buffer against the potential for terror that results from awareness of personal frailty and mortality. People are highly motivated to maintain and defend these structures because they play a central role in controlling anxiety.

The most prominent line of empirical support for TMT has been obtained from tests of the mortality salience (MS) hypothesis, which states that if cultural worldviews and the self-worth derived from them function to quell death-related concerns, then heightening the salience of mortality should intensify diverse cognitive and behavioral efforts to defend or bolster central aspects of the individual's worldview and self-worth (Greenberg, Solomon, & Pyszczynski, 1997; Solomon, Greenberg, Schimel, Arndt, & Pyszczynski, 2004). Prior TMT research has repeatedly supported this claim by demonstrating that various defensive strategies geared toward worldview maintenance and self-esteem bolstering are intensified by MS (for reviews, see Greenberg et al., 1997; Pyszczynski, Solomon, & Greenberg, 2003). This research has operationalized MS in a variety of ways and has included a wide range of controls in which participants are induced to think about aversive topics other than death, such as physical pain, academic failure, or social rejection. Despite the fact that these control topics sometimes produce more negative affect than MS inductions, they have consistently failed to produce effects parallel to MS on the primary measures of worldview defense. Previous research has also shown that effects parallel to MS are not produced by heightened self-awareness, the salience of cultural values, meaninglessness, or high cognitive load (e.g., Greenberg, Simon, Harmon-Jones, et al., 1995). Research also indicates that MS has no appreciable effect on physiological arousal (Arndt, Allen, & Greenberg, 2001; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). This large body of evidence strongly suggests that MS effects result specifically from activating thoughts of death.

According to the dual-process model of TMT (see, e.g., Pyszczynski, Greenberg, & Solomon, 1999), symbolic terror management defenses function to manage the potential for anxiety engendered by an increase in the accessibility of implicit death-related thought. Greenberg, Martens, and Jonas (2003) have recently used a placebo paradigm to provide relatively direct evidence that it is the potential for anxiety rather than the conscious experience of anxiety that instigates such defenses. They found that convincing participants they could not experience anxiety eliminated the effects of an MS induction. This line of work has also demonstrated a specific sequence of processes leading to MS effects. Conscious thoughts of death initially lead to suppression of further death-related thought and defensive responses that deny one's vulnerability in a more logical and rational manner (e.g., promising to get more exercise; Arndt, Schimel, & Goldenberg, 2003). Once death-related thoughts are no longer in focal attention, but are still high in accessibility (a state that Wegner and Smart [1997] refer to as "deep activation"), defense of the worldview and self-esteem striving are increased. As examples of research supporting this analysis, studies have shown that subtle reminders of mortality produce larger effects than more blatant ones and that increases in symbolic worldview defense occur when participants are distracted from the problem of death but not when they are forced to dwell on it (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994). Consequently, the effects of MS on the pursuit of meaning and personal value (symbolic defenses) are expected to be strongest after a delay and distraction.

Terror Management and Lay Epistemology

TMT posits that to buffer the potential for anxiety inherent in the awareness of the inevitability of death, the individual subscribes to a worldview that imbues nature with meaning, order, predictability, and permanence by means of stable cognitive frameworks or narratives (e.g., calendars, schedules, folklore, myths, norms) and benign concepts that explain and organize the world and one's place within it (see, e.g., Greenberg, Simon, Porteus, Pyszczynski, & Solomon, 1995). TMT thus suggests that, aside from practical ends, one important distal motivation for the maintenance of scripts, schemas, and other devices designed to minimize ambiguity and approach subjective consistency is the need to maintain the epistemic clarity necessary to sustain faith in one's terror-assuaging conception of reality as orderly and meaningful.

The foregoing analysis supplements lay epistemology theory by providing an account of one distal motive for seeking closure on confident and coherent judgments. Specifically, the lay epistemic perspective argues that a tendency to freeze on hypotheses functions to limit the amount of inconsistent information that is processed. In this view, entertaining an alternative hypothesis implies questioning the faith one invests in his or her currently held beliefs. We add that considering alternative hypotheses also potentially undermines the management of death-related anxiety by conflicting with the central, but often implicit, beliefs and expectations of the worldview. Thus, the pursuit of closure on existing social

knowledge structures may satisfy a distal terror management need to sustain the stable, anxiety-buffering conceptions that investment in a worldview provides. This set of studies therefore investigates the effects of MS on preference for simple, consistent, and meaningful views of the social world.

It is important to note, however, that we are not claiming that a preference for simple structures is a universally adopted terror management strategy. People certainly differ in the extent to which they value simple, unambiguous knowledge structures in lending meaning and permanence to experience. Some people, for example, may be quite comfortable with uncertainty and put more value on novelty, accuracy, tolerance, and diversity (e.g., Kruglanski & Freund, 1983). This idea is consistent with the TMT notion that every individual derives his or her own personalized version of the worldview by integrating the diverse ideas and experiences to which that person has been exposed. Therefore, we would expect individual differences in the need for structure to moderate the effect of MS on promoting simplified ways of organizing social information. Evidence along these lines would enhance the understanding of chronic structuring tendencies (e.g., Neuberg & Newsome, 1993) as well as extend prior demonstrations that individual factors, such as neuroticism and political orientation, moderate reliance on particular modes of terror management (e.g., Goldenberg, Pyszczynski, McCoy, Greenberg, & Solomon, 1999; Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992).

To the extent that concerns about mortality underlie the need to structure social information, MS should exaggerate the tendency to perceive others in schema-consistent ways that confirm one's expectations. Consistent with this prediction, prior TMT research suggests that one form of structuring—stereotyping—that has also been examined in light of closure and related motives (e.g., see Kruglanski, 1996, for review) is exacerbated by MS. For example, Schimel et al. (1999) found that MS led to more favorable impressions of out-group targets when they behaved in a stereotype-consistent manner and to more negative evaluations when they behaved in a stereotype-inconsistent manner. Schimel et al. also found that this effect held most strongly for participants high in dispositional need for closure.

According to our current conceptualization, the effects of MS should extend beyond the desire to maintain specific stereotypes to the need to view people as coherent and consistent and social events as benevolently ordered. The first four studies focus on interpersonal perception by using four basic social cognitive phenomena: primacy effects, use of the representativeness heuristic, preference for intrapersonal consistency, and preference for interpersonal balance. The last three studies focus on benevolent structuring of social events by assessing preferences for a just world and for benevolent causal connections between bad and good events.

Study 1: Impressional Primacy

Basing judgments on an initial evaluative expectancy while discounting inconsistent information is one strategy for structuring social information (Carlston, 1980; Stangor & Ruble, 1989). The primacy effect in impression formation (Asch, 1946; Luchins, 1957), whereby initial information is disproportionately influential in shaping social judgments, is well recognized as an example of

how people seize on accessible trait constructs in forming a coherent and stable representation of another individual at the expense of fully utilizing all available information. In accord with the lay epistemic analysis, research demonstrates that diverse closure-instigating manipulations (e.g., time pressure) result in a more pronounced primacy effect (Freund, Kruglanski, & Shpitzajzen, 1985; Kruglanski & Freund, 1983; Webster, Richter, & Kruglanski, 1996).

From a TMT perspective, the closure gained by freezing on an initial evaluation and ignoring later conflicting information contributes to one's faith in an orderly and stable reality. We therefore hypothesized that MS would intensify closure on an initial impression and create a corresponding insensitivity to later conflicting information when forming impressions of others. To test this hypothesis, we first asked participants to consider either their own death or another aversive topic. After a delay, they were asked to read a description of a target that presented conflicting sets of information about his level of introversion and extroversion. In one condition, information suggesting introversion was presented first, followed by information suggesting extroversion; in a second condition the order of information was reversed. Participants were then asked to judge the target's sociability. We predicted that MS would lead to higher ratings of sociability when extroversion was presented first and lower ratings of sociability when introversion information was presented first.

Method

Participants

Participants were 43 (15 male and 28 female) introductory psychology students from a Rocky Mountain-region state university who participated as part of a class exercise. Gender did not exert any reliable main or interaction effects in this or the other experiments, so those analyses are not reported.

Materials and Procedure

The study was run in a classroom setting, and participants were told they were taking part in an experiment on personality and social judgments. After giving their consent, participants were given a packet of written materials, the contents and order of which are described subsequently.

MS manipulation. The typical MS manipulation followed two filler personality questionnaires and was described as an innovative projective personality measure (e.g., Greenberg, Simon, Harmon-Jones, et al., 1995; Rosenblatt et al., 1989). The MS treatment involved participants responding to two open-ended items: "Please briefly describe the thoughts and emotions that the thought of your own death arouses in you" and "jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead." To control for the possibility that the effect of this induction is merely a generalized reaction to reminders of any aversive experience, participants in the control condition were given parallel questions with regard to their feelings concerning dental pain.

Delay and distraction. The state version of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is a 20-item mood measure, which immediately followed the MS or dental pain primes to assess possible affective consequences of the manipulations and serve as

a delay and distraction following the mortality prime.[1] We also included a short word-search puzzle following the PANAS because MS effects have been found to be strongest after a short period of delay when death-related thoughts are out of focal attention (Greenberg et al., 1994). The total delay was approximately 5 min.

Target descriptions. Participants were then instructed to read a brief description of a target individual and answer related questions. Two paragraphs were adapted from Luchins's (1957) materials, one of which depicted "Jim" as relatively introverted, reserved, and independent and the other of which depicted him as extroverted, popular, and social. The manipulation, like that in Luchins's original study, was simply the order of the paragraphs. If a primacy effect is occurring, information in the first paragraph exerts more influence on participants' impressions of Jim as either introverted or extroverted. Following the descriptions, participants were asked to evaluate Jim on Eysenck and Eysenck's (1964) Introversion/Extroversion Scale adapted for target evaluation (e.g., "in your opinion, to what extent do you think Jim prefers reading to meeting people?") on a 5-point scale (1 = *extremely uncharacteristic* and 5 = *extremely characteristic*). Following Eysenck and Eysenck's procedure, scores on the introversion items were reversed and added to the summed extroversion items to yield a total extroversion score (α = .92). The packets were identical for all participants with the exception of the death priming and target information order manipulations. Participants completed the materials at their own pace and were fully debriefed on completion.

Results and Discussion

Impressional primacy as a function of MS and informational sequence was assessed using a 2 (MS vs. dental pain) $\times$ 2 (introvert vs. extrovert information first) ANOVA on the Eysenck and Eysenck Extroversion scores. The results yielded a main effect for information order, such that the target was rated as significantly more extroverted when the extrovert paragraph was presented first or rated as more introverted when the introvert paragraph was presented first, $F(1, 39)$ = 9.74, p = .003, thus replicating the classic primacy effect. This main effect was qualified by a significant two-way interaction (see Table 1 for means), $F(1, 39)$ = 7.63, p = .01. Pairwise comparisons revealed that although the means were in the appropriate direction, there was no significant difference in extroversion ratings in the control condition. In contrast, a significant primacy effect was found in the MS condition: Participants who read the extrovert description first rated the target as significantly more extroverted than those who read the introvert paragraph first (p < .001). Pairwise comparisons also revealed that MS significantly increased this primacy effect among participants who read the extrovert paragraph first (p = .02) and marginally increased it among those who read the introvert paragraph first (p = .10).

Table 1
Study 1: Mean Target Extroversion Ratings as a Function of Informational Order and Mortality Salience

	Prime condition	
Initial description	Mortality salience M (SD)	Control M (SD)
Introverted	39.85 (8.46)	45.80 (8.01)
Extroverted	56.56 (12.01)	46.82 (8.54)

Note. Higher scores indicate greater extroversion.

These results provide initial evidence that MS leads to more rapid freezing of social judgments and discounting of inconsistent information. Specifically, when asked to form an impression of a person based on two conflicting accounts, one depicting him as an introvert and one depicting him as an extrovert, mortality salient participants were more likely to freeze on initial-judgment-relevant information and to subsequently ignore inconsistent information. Although there was an overall primacy main effect, it was significant in the MS condition but not in the dental pain control condition. The weakness of the primacy effect in the control condition was unanticipated, but the effects of MS do support the idea that freezing on initial impressions of others serves a terror management function. To further assess the role of mortality concerns in social structuring, in Study 2 we examined the effect of MS on another tendency toward structuring social judgments—use of the representativeness heuristic.

Study 2: Representativeness Heuristic

Expecting an individual to belong to a particular social group when they possess characteristics associated with that group can be viewed as another form of social structuring. Consistent with this reasoning, Kahneman and Tversky (1973, 1996) proposed that people tend to overlook objective statistical evidence in forming group membership judgments and rely more on representative information, such that others are assumed to belong to certain categories to the extent that they represent the category stereotype. Of particular interest is the associated tendency to focus on qualitative information that confirms an expectation while ignoring more diagnostic base-rate information when estimating group membership. To demonstrate this judgmental heuristic, Kahneman and Tversky (1973) presented participants with thumbnail character sketches that resembled the stereotype of either lawyers or engineers and asked them to estimate the probability that the person belonged to each category. Kahneman and Tversky also manipulated the prior probabilities in such a way that some participants were informed that the thumbnails were randomly selected from a pool of 70 engineers and 30 lawyers, whereas others were informed that the sample comprised 70 lawyers and 30 engineers. They found that the thumbnail sketch exerted a disproportionate influence on group membership judgments; even if the base-rate probability dictated that the sketch was likely to describe a lawyer 70% of the time, participants were more likely to identify

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[1] To assess whether the effects of MS were mediated by mood, we subjected the Positive and Negative Affect subscales of the PANAS administered in Studies 1 and 4 to a one-way (priming condition) multivariate analysis of variance (MANOVA). Neither of these analyses revealed a significant effect for condition (ps > .7). Similarly, for Studies 3, 5, and 7, we submitted the 11 subscales plus the Positive and Negative Affect subscales of the PANAS–X to one-way MANOVAs. As expected, these analyses did not approximate significance (ps > .25). One-way (condition) analyses of variance (ANOVAs) on positive and negative mood revealed no significant effects (ps > .3). Also, internal analyses revealed that affect did not mediate the effect of MS on structuring (the pattern of significant results for all studies remained the same when positive and negative affect were covaried out). Consistent with prior research, these results indicate that MS did not influence affect relative to pain and uncertainty salience controls, and affect did not mediate any of the present results.

the target as an engineer to the extent that the description appeared representative of a member of that occupational category. Although ideally rational categorization of the target individual should have included a consideration of the statistical base-rates, participants tended to rely on the representativeness of the information in the character sketch to determine whether the thumbnail described a lawyer or an engineer.

From a lay epistemic perspective, social judgments based on representativeness rather than statistical information (e.g., base rates) afford a clear and consistent consolidation of social information. From the TMT perspective, representative information functions much like stereotypes (Locksley, Borgida, Brekke, & Hepburn, 1980) in allowing the categorization of others into neat and stable groups, thereby reinforcing the categories that partially constitute one's worldview. We therefore hypothesized that in a group membership judgment task, MS would increase the reliance on representative information to the neglect of base-rate information when the description comported with preexisting views of others. In their research, Kahneman and Tversky (1973) also found that base rates were appropriately used when no representative information was available. We similarly hypothesized that when descriptive information is nonexistent or does not feed into preexisting cultural conceptions, MS should not affect the tendency to overlook the base-rate information. Support for these hypotheses would provide further evidence that MS encourages reliance on simple ways to structure the social world.

To test this hypothesis, we asked participants to write about either death or another aversive topic, read descriptions of various individuals, and then estimate the probability that the individuals described belong to certain socially recognized groups. We varied the type of information provided in the description and measured estimates of group membership. Specifically, MS or control primes were followed by a likelihood judgment task in which participants were instructed to gauge how likely it is that a target individual belongs to a particular social group. A third of the participants were given representative information as well as base rates, a third were given neutral (nonrepresentative) information and base rates, and a third were given only base-rate information. Our primary prediction was that MS would increase reliance on representative information (and neglect of base rates) compared with the control condition.

Method

Participants

Participants were 77 (69 women and 8 men) introductory psychology students at a medium-sized Rocky Mountain-region community college who received extra credit for completing the questionnaire packets during their regularly scheduled class session.

Materials and Procedure

Participants were randomly assigned to one of six groups in a 2 (MS vs. dental pain) × 3 (information type: representative + base rate, nonrepresentative + base rate, base rate only) between-subjects factorial design. The study was run in a classroom, and participants were randomly assigned a materials packet that was described as a questionnaire related to personality and impression formation. The contents of the packets were identical except for the forms that served as the MS and information-type manipu-

lations. The packets took approximately 20 min to complete. Participants were then debriefed and thanked for their participation. The content and order of the materials in the packets are described subsequently.

MS manipulation and delay. We used the same MS or pain control primes as those used in Study 1. Participants then completed a word-search puzzle consisting of 18 neutral words as a delay and distraction before the dependent measure. The puzzle took approximately 5 min to complete.

Group membership judgment task. The group membership judgment task was closely adapted from that used by Kahneman and Tversky (1973; Tversky & Kahnemann, 1974) to study the representative heuristic and base-rate fallacy and included information about three target persons. In this procedure, participants are presented with varying amounts of descriptive information about an individual who is a member of a larger group that is composed of two subgroups. Base-rate information about the number of subgroup members in the larger group was included in all conditions. The first page of the group membership judgment task provided the rationale and instructions for the task. The instructions described the judgment task as part of a national study on personality conducted by a group of research psychologists who had interviewed and administered personality measures to people from across the country. On the basis of this information, the researchers had written thumbnail descriptions of some of the people. Participants were informed that the descriptions they would be reading had been randomly sampled from various populations in the national study. Participants were instructed to read each description and then indicate their estimate of the likelihood (in percentages) that the person described is a member of one of two subgroups identified. The thumbnails were counterbalanced to control for order effects.

The first line of each description provided the base-rate information. The base rate for the target group of interest (African American, female, elderly) was held constant at 30 of 100 across the descriptions in each information-type condition. The thumbnail description of each individual followed the base-rate information. In the stereotype-relevant information condition, the descriptions contained information that could be construed as representative of members of different social and/or demographic groups. For the race thumbnail, the critical information was that the individual was athletic, interested in social justice issues, and was the first person in his family to go to college. For gender, the critical information was that the individual was experiencing a conflict between career aspirations and family obligations. For the age thumbnail, the critical information was that the individual was unemployed, was mildly depressed, and enjoyed playing cards and tending his garden. This information was removed to create the neutral-information thumbnails. For example, the race thumbnail described only the individual's age, relationship status, and general temperament (e.g., "he is reserved in social settings but more outspoken around his friends"). Participants in the control condition received only the base-rate information.

For the race thumbnail, participants were asked to indicate the likelihood that the person being described was African American. For gender, participants were asked to indicate the likelihood that the person being described was a woman. For age, participants were asked to indicate the likelihood that the person being described was over the age of 65. Participants recorded their estimates using a 20-point percentage scale divided into 5% increments. The scale ranged from 5% to 100%.

Results and Discussion

Before performing the primary analysis, we submitted the data to a 2 (MS vs. dental pain) × 3 (information type) × 3 (target group) mixed-factor ANOVA, with the three target group member descriptions (race, age, gender) serving as a repeated factor. There were no effects involving target group; consequently, percentage estimates were analyzed by averaging across the percentage estimates for the three target groups.

A 2 (MS vs. dental pain) × 3 (information type) ANOVA performed on the average percentage estimates for the three target groups revealed a main effect for the amount of information, $F(2, 71) = 39.14$, $p < .01$. Percentage likelihood estimates were higher for the group provided stereotype-relevant information ($M = 60.00$) as compared with the neutral ($M = 36.28$) and no-information groups ($M = 33.46$), $F(2, 71) = 39.14$, $p < .01$. The analysis also revealed a main effect of MS, $F(1, 71) = 14.74$, $p < .01$. Participants assigned higher percentage likelihood estimates in the MS condition ($M = 47.79$) as compared with the control condition ($M = 37.88$).

These main effects were qualified by the predicted significant MS × Information Type interaction, $F(2, 71) = 4.80$, $p = .01$. The means and standard deviations are displayed in Table 2. Separate weighted-contrast analyses within the MS and pain salience conditions computed to compare the representative information with the neutral and no-information conditions revealed that representative information led to higher group membership estimates in both the MS, $t(37) = 9.41$, $p < .001$, and pain control, $t(34) = 3.65$, $p = .001$, conditions. This, of course, replicates Kahneman and Tversky's (1973) classic representativeness effect finding. Most relevant to the present hypothesis, comparing MS and dental pain groups within each information type condition revealed that MS increased percentage estimates in the representativeness information condition, $F(1, 71) = 21.94$, $p < .001$, but had no effect in either the neutral or no-information conditions ($Fs < 1$).

These findings support the hypothesis that MS can exaggerate reliance on representative information when categorizing others. Although we replicated the basic representativeness effect in the dental pain control condition, MS increased the use of representative information and the neglect of prior probabilities, but only when the available information was stereotype relevant. These results provide further evidence that MS increases reliance on simple, expectancy-confirming judgment strategies, thereby strengthening our general claim that interpreting social events in ways that fit preexisting knowledge structures functions, at least in part, to help manage existential fear. Even when it comes to relatively mundane judgments, thoughts of death increased the inclination to rigidly cling to preconceived conceptions of the world. It is important to note that MS did not increase the tendency to rely on individuating information when it was irrelevant to common stereotypes but only when it was stereotype consistent. The fact that MS had no effect in the neutral or no-information conditions makes these findings very difficult to account for in

terms of a simple reduction in cognitive resources produced by thoughts of death.

Study 3: Behavioral Consistency

Studies 1 and 2 indicate that MS exaggerates one's tendency to rely on simple strategies to categorize others while overlooking competing information. In Study 3, we were interested in another manifestation of structuring, namely a preference for stable, dispositional interpretations of others' behavior. Making sense of social reality often entails interpreting others' behavior as reflecting invariant dispositions (Heider, 1958; Jones & Davis, 1965). Heider (1958) argued that people search for invariance in behavior and integrate even conflicting traits into a single, integrated impression of others (Asch, 1946). However, when others behave in a manner that is inconsistent, fickle, or complex, they prevent us from inferring stable, unitary dispositions and thus undermine our structured, meaningful understanding of social reality. If part of the motivation for maintaining coherent, organized representations of others is to minimize mortality concerns, then MS should decrease liking for a target whose inconsistent behavior renders them dispositionally ambiguous.

In this study, we also wanted to examine the influence of individual differences in structuring by measuring participants' chronic PNS. As noted earlier, the tendency to impose and prefer structure and closure appears to vary among individuals in significant ways (Neuberg & Newsome, 1993; Webster & Kruglanski, 1994). For example, Thompson et al. (2001) and Neuberg and Newsome (1993) have shown that individuals high in PNS are especially given to categorizing others in oversimplified ways. In a similar vein, Kruglanski's individual difference construct—need for closure—has been associated with overattribution and primacy effects (e.g., Sorrentino, Bobocel, Gitta, Olson, & Hewett, 1988). With regard to individual differences in terror management, Solomon et al. (1991) argued that each individual abstracts an individualized cultural worldview that can vary widely as a function of different genetic predispositions and developmental experiences. Individual differences in PNS may thus reflect variations in how central maintaining simple structures is to one's worldview. In support of this view, Schimel et al. (1999, Study 5) found that the MS-induced preference for stereotypic over counterstereotypic out-group members was particularly high among those high in need for closure. Similarly, Dechesne, Janssen, and van Knippenberg (2000) found that MS, in combination with a criticism of their university, led high-PNS participants to defend their school, whereas low-PNS participants opted to disidentify with their school. These findings led us to predict that those high in PNS would be especially likely to respond to MS with decreased liking for a behaviorally inconsistent other.

We also took this opportunity to consider an alternative explanation of MS effects recently proposed by McGregor, Zanna, Holmes, and Spencer (2001) and van den Bos (2001; van den Bos & Miedema, 2000). McGregor et al. suggested that mortality primes may be functionally equivalent to uncertainty primes and reported one study showing similar effects of MS and thoughts likely to arouse uncertainty. In a similar vein, van den Bos (2001) has proposed that some effects of MS may be special cases of the general impact of uncertainty and reported three studies showing that uncertainty salience primes affect perceived procedural fair-

Table 2

Study 2: Mean Percentage Likelihood Estimates as a Function of Information Type and Mortality Salience

	Information type		
Prime condition	Base rate/representative M (SD)	Base rate/neutral M (SD)	Base rate only M (SD)
Mortality salience	70.38 (11.32)	39.10 (11.39)	34.88 (8.70)
Control	48.75 (15.68)	33.46 (14.14)	31.81 (4.94)

Note. Higher scores indicate a greater reliance on representative information in categorizing targets.

ness in ways that are parallel to the effects of MS reported in van den Bos and Miedema (2000). Although feelings of uncertainty can undoubtedly be existentially disconcerting, a considerable body of evidence utilizing uncertainty-related control conditions and death accessibility measures (see, e.g., Goldenberg et al., 2001; Greenberg et al., 1997; Mikulincer, Florian, & Hirschberger, 2003) suggests that MS effects are generally not the result of uncertainty concerns and are specific to thoughts of death. To further examine this issue, Study 4 replaced the pain control prime with an uncertainty salience comparison (US) condition. We predicted that reminders of uncertainty would not function like MS in exaggerating people's desire for structure.

To test these hypotheses, we primed high- and low-PNS participants with either death or uncertainty. In an ostensibly separate study, we had them read a transcript of a conversation between three people speaking about a target. We varied whether the conversation depicted the target as consistently introverted or extroverted or inconsistent (sometimes introverted, other times extroverted). Participants were then asked to rate their liking for the target. Again, MS should lead high-PNS participants to report less liking for the inconsistent target.

Method

Participants

A total of 83 introductory psychology students (61 women and 22 men) at a Southwestern university participated in the study as partial fulfillment of a course requirement.

Materials and Procedure

This study used a Prime (MS vs. US) × Target (consistent vs. inconsistent) × PNS (high vs. low) between-subjects design. The study was run in a laboratory setting that used small groups of 3 to 5 persons. On arrival, participants were told they would be taking part in two short, unrelated studies that have been combined to allow for full participation credit. The experimenter described the first study as a survey of student personality characteristics and explained that participation would involve completing a short packet of standard personality questionnaires. He assured them that all their responses would remain confidential. After signing informed consents, participants were ushered into separate cubicles for privacy. The experimenter (blind to priming condition) administered a packet and instructed the participants to respond honestly and naturally. The contents of the packet are described subsequently.

PNS. Following two filler personality questionnaires, Thompson et al.'s (2001) 12-item Personal Need for Structure Scale (PNS Scale) was included to measure individual differences in preference for order, certainty, and definite knowledge. Participants were asked to indicate their agreement with each of 12 statements (e.g., "I enjoy having a clear and structured mode of life") on a 6-point scale (1 = *strongly disagree* and 6 = *strongly agree).* Responses on 4 items were reversed and summed with the remaining items to yield a composite PNS Scale score. The scale has been demonstrated to be sufficiently reliable and empirically valid (Neuberg & Newsome, 1993; Thompson et al., 2001).

MS–US manipulation and delay. Participants were then randomly assigned to write about either death (using the same open-ended questions described in earlier studies) or parallel questions pertaining to uncertainty. Specifically, we used van den Bos's (2001) US induction, whereby participants respond to the following open-ended questions: "please briefly describe the emotions that the thought of your being uncertain arouse in you" and "please write down, as specifically as you can, what you think

physically will happen to you as you feel uncertain." The formats for the two primes were identical. As in previous studies, the required delay was ensured by having participants complete the 60-item PANAS-X (Watson et al., 1988) and a short word search task.

On completion of the personality survey, the experimenter introduced the second study as an investigation of how people form impressions of others on the basis of overheard conversations. Participants were told that they would receive a packet of materials including a transcript of a conversation between three students speaking about another student and some questions about the person being spoken about. They were then administered a second packet, the contents of which are described subsequently.

Transcripts and evaluation questions. Participants were randomly assigned one of three transcribed conversations (fabricated by the experimenter) between three students discussing a fourth student. They were instructed to read through the transcript completely and then answer some questions concerning their impression of the target. The content of these conversations was adapted from those used by Wyer, Budesheim, and Lambert (1990). In the conversation, three students are greeted by an experimenter, who explains that his laboratory is collecting data for future research on how people form impressions. The students are then asked to discuss a mutual acquaintance, "Don." Specifically, they are asked to recall specific behaviors of Don's that they have either witnessed or heard about, regardless of their importance. In the course of the conversation, the students report approximately 14 anecdotal accounts of Don's behaviors. To lend credibility to the conversation, many of the behaviors were fairly neutral (e.g., working out). Depending on the version, however, conversants noted behaviors that indicate that Don is (a) consistently extroverted (e.g., "yeah, when I've seen him working out he's talking to everyone"), (b) consistently introverted ("I met Don in my statistics course... I remember he would smile a lot but he hardly ever spoke in class"), or (c) inconsistently introverted and extroverted (we constructed this conversation by combining equal numbers of extroverted and introverted items from the other two conversations). We chose to vary the target's introversion–extroversion, as it is a highly identifiable personality dimension that is somewhat neutral in social desirability. However, because an introverted target may be construed as aloof or even depressed, we were careful to write the introversion transcript in a way that did not portray the target as standoffish or antisocial but rather as soft-spoken and contemplative.

After reading the conversation, participants were asked to rate their liking for the target on three questions: "How much do you like the person being spoken about?" (−3 = *dislike very much*, 0 = *like somewhat*, 3 = *like very much*); "how much could you see yourself being close, personal friends with this person?" (−3 = *not at all*, 0 = *perhaps*, 3 = *definitely so*); "how interested would you be in hearing more about this person?" (−3 = *not at all*, 0 = *somewhat*, 3 = *very much*). There were also four manipulation check and/or control questions: "How easy was it to understand the conversation?" (−3 = *not at all*, 0 = *somewhat*, 3 = *very easy*); "how much did the speakers agree with each other about the other person?" (−3 = *not at all*, 0 = *somewhat*, 3 = *completely*); "how introverted do you think the person being talked about is?" (−3 = *not at all*, 0 = *somewhat*, 3 = *very much*); and "how extroverted do you think the person being talked about is?" (−3 = *not at all*, 0 = *somewhat*, 3 = *very much*).

Once participants had completed these questions, they were debriefed and thanked for their time. None of the participants expressed any suspicion regarding the transcripts' authenticity.

Results and Discussion

Manipulation Checks

Before conducting our primary analysis of liking within the critical experimental conditions, we wanted to see if there was an effect of consistent target type (introverted vs. extroverted) on

Table 3
Study 3: Liking for Target as a Function of Mortality Salience, Personal Need for Structure (PNS), and Target Consistency

	Low PNS		High PNS	
Prime condition	Inconsistent *M* (*SD*)	Consistent *M* (*SD*)	Inconsistent *M* (*SD*)	Consistent *M* (*SD*)
Mortality salience	1.39 (4.59)	0.88 (2.87)	−3.69 (3.89)	2.50 (4.44)
Uncertainty salience	0.48 (3.66)	1.17 (2.52)	1.87 (2.37)	1.11 (3.02)

Note. Higher scores indicate a greater liking.

liking. Because the three liking questions revealed acceptable reliability ($\alpha = .83$), we summed them to create a total liking score. We submitted this composite liking score to a one-way ANOVA comparing all three target types (introverted, extroverted, mixed). The omnibus F was not significant ($p > .09$), and post hoc tests revealed that although the mean liking was highest for the extroverted target, it was not significantly higher than it was for the introverted target ($p > .12$) or the mixed target ($p > .14$). Overall, liking for the introverted and mixed target was almost identical ($p > .9$).

We also wanted to confirm that the target type did not affect the comprehensibility of the transcript. As expected, a one-way ANOVA on the ease of understanding did not approach significance ($p > .18$). Next, we wanted to confirm that the conversants were perceived as agreeing less when discussing the mixed (i.e., introverted and extroverted) as opposed to consistently introverted or extroverted targets. As expected, a one-way ANOVA on speaker agreement was significant, $F(2, 81) = 141.45, p < .001$. Post hoc comparisons revealed that although participants did not judge the discussants of the introverted or extroverted targets as differing in agreement ($p > .64$), they perceived the discussants of the mixed target as significantly more in disagreement (both $ps < .001$).

Finally, we wanted to confirm that the introverted target was perceived as more introverted than the extroverted target and that the mixed target was perceived as in-between. A one-way ANOVA on target introversion was significant, $F(2) = 60.18, p < .001$, with post hoc comparisons revealing that the introverted target was rated as more introverted than the mixed target, who was, in turn, rated as more introverted than the extroverted target, all $ps < .001$. A similar pattern was revealed with extroversion ratings, such that the extroverted target was rated as more extroverted than the mixed target, who was rated as more extroverted than the introverted target, all $ps < .001$. These preliminary analyses indicate that the target disposition manipulation was successful (i.e., relative to introverted and extroverted targets, the mixed target was rated as in-between) and that target consistency as indexed by speaker agreement was the same for the introverted and extroverted targets but lower for the mixed target. We thus felt justified in combining the introverted and extroverted target conditions to form a single consistent target condition.

Primary Analysis

Our main analysis focused on how the MS–US manipulation and PNS influenced liking for a target that acted consistently (clearly extroverted or introverted) or inconsistently (sometimes introverted, other times extroverted). We hypothesized that high-PNS participants would respond to MS with decreased liking for the inconsistent target. For the main analysis, a tertile split was performed on the PNS scale scores to yield high and low need for structure groups.[2] We submitted the composite liking scores to a 2 (MS vs. US) × 2 (high vs. low PNS) × 2 (consistent vs. inconsistent target) ANOVA. Only the predicted three-way interaction emerged as significant, $F(1, 67) = 4.45, p = .04$ (see means in Table 3).[3] Pairwise comparisons revealed that high-PNS participants who were primed with mortality liked the inconsistent target significantly less compared with (a) uncertainty-salient high-PNS participants rating the inconsistent target ($p = .02$); (b) mortality-salient high-PNS participants rating the consistent target ($p = .01$); and (c) mortality-salient low-PNS participants rating the inconsistent target ($p = .03$). No other pairwise comparisons approached significance (all $ps > .4$).

The results confirm our prediction that high-PNS participants would respond to MS, but not to US, with especially unfavorable reactions to a dispositionally ambiguous other (sometimes introverted, sometimes extroverted) but not to a dispositionally consistent other. Again, the core social motive of understanding others depends in part on the expectation that their behavior be an index of an invariant and predictable disposition, and therefore inconsistent behavior undermines that structure. These results provide further evidence that the inconsistency of others can be aversive not only because of its practical implications for navigating social interactions but also because of its existential implications for understanding the nature of social reality. That these results only occurred among high-PNS participants suggests that not everyone pursues a simple, well-structured social world as a way of man-

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[2] In Studies 3 through 7 we intended from the start to examine the upper and lower third of participants to maximize spread on the conceptual variables while saving the time of recruiting participants by telephone. In keeping with previous investigations of PNS (e.g., Moskowitz, 1993; Neuberg & Newsome, 1993; Schaller, Boyd, Yohannes, & O'Brien, 1995), analyses using median splits also yielded the same patterns of significant results.

[3] We also analyzed the data without collapsing the introverted and extroverted target impressions. As predicted, pairwise comparisons revealed that high-PNS participants in the MS condition evaluated the mixed target significantly less favorably than both the introverted and extroverted target, both $ps < .03$.

aging existential terror and that high levels of PNS may reflect the tendency to manage existential concerns in this way. These findings also suggest that concerns about mortality are distinct from general concerns about uncertainty, in that heightening the salience of uncertainty does not result in the same preference for stable and coherent impressions of others among high-PNS individuals.

Study 4: Interpersonal Balance

In Study 4, we were interested in how PNS and MS affect a fourth manifestation of structuring, namely people's preference for interpersonal balance. Heider (1958) originally discussed balance within the context of configurations involving three independent elements and three interdependent relations and proposed that people both expect and prefer balanced interpersonal relationships over imbalanced ones. Elaborations on this model (Cartwright & Harary, 1956) posit that when all three of the interelement relations are positive, or when two of the three are negative, there is a balanced state and the interrelationship is hypothesized to be psychologically comfortable. When two of the three are positive, the violation of the assumption that the third will also be positive typically arouses tension (Jordan, 1953) and efforts to resolve the imbalance—what Newcomb (1953) referred to as a "strain toward symmetry." Kruglanski and Klar (1987) have proposed that the uneasiness aroused by imbalance is the result of a perceived contradiction that undermines subjective knowledge (see Klar & Pol, 1980, for supporting evidence).

From our perspective, if stable and consistent knowledge functions in part to manage the potential for death-related anxiety, then MS will increase this preference for balanced scenarios over imbalanced scenarios. Given the finding in Study 3, that high- but not low-PNS participants respond to MS with an increased aversion to inconsistency, we expected that this effect of MS on preference for balance would manifest primarily among high-PNS participants. To test this hypothesis, high- and low-PNS participants were reminded of their mortality (or another aversive topic), presented with balanced and imbalanced scenarios, and asked to rate the scenarios on various dimensions.

Method

Participants

A total of 55 (19 male and 36 female) introductory psychology students from a Rocky Mountain-region state university participated in partial fulfillment of their course requirement.

Materials and Procedure

Students completed a packet of written materials introduced as a standard personality assessment in a regular classroom setting. The experimenter instructed everyone to complete the materials at their own pace and assured the confidentiality of responses. The contents of the packets are described subsequently.

PNS. As in Study 3, we included Thompson et al.'s PNS Scale after two filler questionnaires to measure individual differences in preference for order, certainty, and definite knowledge.

MS manipulation and delay. As in the three previous studies, MS was manipulated by having participants complete two open-ended questions assessing their thoughts and emotions regarding their own death or parallel questions regarding dental pain. The PANAS and a crossword puzzle were included following the primes to provide the necessary delay and distraction after the MS manipulation.

Interpersonal scenarios and ratings. Participants were then presented with two brief interpersonal scenarios, one balanced and one imbalanced, and asked to respond to four questions accompanying each. Each scenario had a balanced and imbalanced version, consistent with Cartwright and Harary's (1956) product rule (i.e., a system is balanced if the product of its signs are positive; imbalanced if negative). For example, one scenario (balanced version) read: "Jim thinks that Bob is quite obnoxious and difficult to be around. One day, Sara, one of Jim's closest friends, tells Jim about her impression of Bob. She also found him to be rude and annoying." In the imbalanced version, the last sentence read: "Unlike Jim, however, she thinks that Bob is a really nice person." These versions were counterbalanced between subjects so that the balance manipulation was not confounded with the particular scenario. This was followed by a completely different scenario in which the other type of relationship (imbalanced or balanced) was depicted with different actors and issues. The order of presenting balanced versus imbalanced scenarios was counterbalanced to control for order effects.

To assess participants' evaluation of the scenarios, prior balance researchers (e.g., Klar & Pol, 1980) have asked them to rate scenarios on three dimensions: pleasant, stable, and reasonable. Pilot studies suggested, however, that many participants found "reasonable" to be an ambiguous dimension, so this item was not included. On the basis of prior theorizing and research (Heider, 1958; Jordan, 1953), we hypothesized that participants would be especially motivated to expect imbalanced scenarios to eventually harmonize and that they would consider an imbalanced scenario to be personally discomforting. Thus, we assessed reactions to the scenarios with the following four items presented immediately after each scenario (in which P and O represent two individuals and X is a third object of the triadic relation. The actual items contained scenario-specific information): "How pleasant is the above scenario?," "how stable do you think P and O's relationship will be in the future?," "how likely is it that P will change her opinion of X?," and "how uncomfortable would you be if you were P in this scenario?" All responses were recorded on an 11-point scale. The packets were identical except for the MS treatment, the balanced–imbalanced scenario versions, and the balanced–imbalanced scenario order.

Results and Discussion

Because preliminary analyses revealed that the version and order counterbalancing variables revealed no effects (all $Fs < 1$), they were excluded from subsequent analyses. Prior to the main analyses, we examined the main effects for balanced–imbalanced versions on individual items as a manipulation check. Consistent with balance theory, ratings on all dimensions revealed main effects for every scenario, such that balanced scenarios were always rated more favorably than imbalanced scenarios (all $ps < .05$). For the main analysis, a tertile split was performed on the composite PNS scores to yield high- and low-PNS groups. The third and fourth items on the scenario ratings were reverse scored (as high scores indicate negative reactions to the scenarios) and summed with the first two to yield a composite evaluation score for each of the two scenarios (as a composite rating of pleasantness, stability, low likelihood of change, and personal comfort for the balanced and imbalanced scenarios). The four items yielded

acceptable internal consistency (α = .67).[4] A difference score (balanced minus imbalanced) was then computed on the two, such that higher scores indicate higher relative preference for the balanced scenario, and these scores were submitted to a 2 (MS vs. dental pain) $\times$ 2 (high vs. low PNS) ANOVA. A significant MS $\times$ PNS interaction emerged, $F(1, 51) = 5.13$, $p = .03$ (see Table 4 for relevant means). Pairwise comparisons confirmed that high-PNS participants in the MS condition favored balanced scenarios over imbalanced scenarios significantly more than high-PNS participants in the control condition ($p = .01$). Low-PNS participants, however, exhibited no such increase following MS ($p > .50$). Pairwise comparisons also revealed that although high- and low-PNS participants did not differ in their preference for balanced scenarios in the dental pain condition, high-PNS participants reported significantly higher preference for balanced scenarios compared with low-PNS participants in the MS condition ($p = .02$).

The results support the hypothesis that MS results in a heightened preference for balanced or harmonious interpersonal relations among high- but not low-PNS participants. Combined with the results of Study 3, these results suggest that whereas high-PNS individuals rely on well-structured social information for protection against existential terror, low-PNS individuals apparently do not, or at least they do so to a lesser extent. These individuals appear to have less need for orderly and structured models of reality, and this need is not apparently influenced by reminders of their mortality. Because different people use different psychological defenses to guard against anxiety, MS does not invariably exacerbate preference for structure for all people in all situations.

Terror Management and Structuring Social Events

The studies presented so far have shown that reminders of mortality increase people's tendency to impose and prefer structure in interpreting relatively simple information in their social world. These findings suggest that at least part of the distal motivation to impose and prefer structure involves terror management concerns. Studies 3 and 4 suggest that the use of such simple structuring strategies as a means of coping with existential concerns is not universal. Whereas individuals high in PNS responded to MS by preferring interpersonal balance and behavioral consistency, those low in PNS did not. The next set of studies investigated whether individual differences in PNS also moderate the influence of MS on structuring significant events in the social world, in contexts in which beliefs about how events in the world are organized provide benign structure. Specifically, Studies 5–7

Table 4

Study 4: Relative Liking for Balanced Scenarios as a Function of Personal Need for Structure (PNS) and Mortality Salience

	Prime condition	
PNS group	Mortality salience M (SD)	Control M (SD)
High PNS	8.67 (6.25)	2.20 (4.47)
Low PNS	2.27 (7.76)	3.73 (6.54)

Note. Higher scores indicate higher relative preference for balanced scenarios.

investigated the role of terror management processes in people's tendency to impose schemas of justice and purpose on threatening events to reduce the threat that unjust or meaningless events imply.

A long tradition of theory and research suggests that people rely on the belief that the world is a just and orderly place in which things happen for a reason (e.g., Lerner, 1978; for a review, see Lerner, 1980). Lerner's just world hypothesis posits that we are strongly motivated to believe that people generally get what they deserve in life (i.e., they do not suffer unjustifiably, nor do they usually meet with undeserved success). This largely implicit conviction that life's outcomes are contingent on one's behavior and character is valued because it obscures the unsettling prospect that we live in an indeterminate and unsympathetic universe. Consequently, encountering instances of injustice instigates a variety of defensive responses to restore one's preferred belief that the world is just and that we ourselves are safe as long as we are good, valuable, and deserving people. In support of these notions, research has demonstrated that encounters with injustice instigate compensatory efforts to maintain a belief in justice. For example, people confronted with instances of undeserved suffering and unable to do something to remediate the suffering tend to negatively alter their perceptions of the victims to make the event appear more just (Lerner & Simmons, 1966). As with perceiving others, it seems that people must bring order to experience by relying on fundamental, largely implicit expectations and beliefs about the nature of social reality that guide their perceptions of events. To the extent that death concerns play a role in the imposition of structure through just world beliefs, we would expect that reminders of mortality would lead high-PNS individuals to increase motivation to derogate an innocent victim of severe misfortune. Study 5 was designed to test this claim.

In addition to just world beliefs, structure may be provided to social events by ascribing clear and predictable causal histories to them (Chaiken & Darley, 1973). When people are told about another's life-threatening tragedy or death, for example, they seem eager to link that event to a clear set of antecedent causes that unfold in a reliable way. Independent of the apparent justice of who experiences good and bad outcomes, the belief that causal forces are identifiable and reliably related to the outcome may help satisfy people's general need for mastery over social events (Fiske & Neuberg, 1990). Although somewhat more exploratory, we therefore also examined the possibility that for high-PNS individuals, MS would encourage seeking of causal explanations of an unfortunate event.

Study 5: Victim Derogation

Most studies examining reactions to just world threats present participants with descriptions of innocent people who have suffered severe misfortunes and then assess evaluations of the victim. For example, MacDonald (1972) found that participants who read an account of a stabbing derogated the victim more when he was portrayed as innocent than culpable. The stabbing of an innocent

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[4] This alpha is low because of one item. A factor analysis showed that the item about P changing opinion had a factor loading of only .29. Without this item, the alpha is .77. When we take this item out of the composite, however, the critical two-way interaction is still significant.

victim threatens belief in a just world; if the person can be seen in a negative light, and thus somehow deserving of such a fate, this reduces the threat implied by an unjust world—that horrible events could happen even to good people like ourselves.

The present study took a slightly different approach to assessing the motivation to derogate victims. Rather than assessing evaluations of the victim, we provided participants with the opportunity to choose among information that cast the victim in either a positive or negative light. As many have argued (Kruglanski, 1980; Kunda, 1990; Pyszczynski & Greenberg, 1987), people are not free to believe just anything they desire but rather must derive their biased evaluations in a way that enables them to maintain an illusion of objectivity regarding the way they came to their conclusions. The preference for information supporting one's desired beliefs, or indeed, for any unambiguous judgment, is another manifestation of the need for our attitudes and beliefs to be consistent with available information (Mayseless & Kruglanski, 1987). Thus, examining the seeking of information consistent with a desired negative evaluation of victims provides another link to the desire for cognitive structure. To this end, we assessed participants' levels of PNS and predicted that MS would lead high- but not low-PNS participants to restore their conviction in a just world by seeking out evidence of characterological faults in an innocent victim. We also predicted that MS would lead the high-PNS participants to seek evidence for a clear causal history to make some sense of the tragedy.

We tested these hypotheses by threatening participants' just world beliefs with a written account of a seemingly senseless tragedy incurred by an innocent victim. We then provided participants with the opportunity to seek information regarding positive or negative characteristics of the victim, as well as with the opportunity to seek information that provided clear causal knowledge about the event or that suggested that the causes were unknown.

Method

Participants

A total of 49 (12 male and 37 female) students from introductory psychology classes at a Southwestern state university participated as part of their course requirement.

Materials and Procedure

The study was run in a laboratory setting. All participants were told that they were participating in an experiment on personality and news media preferences. They were asked to complete a packet containing some personality forms and then asked to read a photocopied newspaper clipping describing a recent tragic event. After reading the clipping, participants were instructed to complete an information request form, on which they were asked to select from the available items what further information related to the article immediately appealed to them and what they would be interested in reading more about. Participants were instructed to respond to all items with their first, gut-level response. On completion, the experimenter collected the information request form and ostensibly went to retrieve the desired information. After all forms were collected, participants were informed that the experiment was complete and debriefed. The contents of the packet are described subsequently.

PNS. As in Studies 3 and 4, the PNS Scale was included in the packet following two filler questionnaires.

MS–US–pain salience and delay. Participants were then randomly assigned to write about either death or parallel questions pertaining to dental pain or uncertainty (using van den Bos's [2001] US manipulation). The formats for the three primes were identical. Use of two control conditions allowed us to assess whether the dental pain and uncertainty control conditions led to different effects. As in previous studies, the required delay was ensured by having participants complete the PANAS-X and a short word search.

Target article. Participants were then asked to read an article ostensibly selected at random from a larger set of recent news stories. In actuality, all participants received the same article, entitled "NYU Student Disfigured in Senseless Tragedy," that described a recent and apparently random shooting of an undergraduate dormitory resident—Jeff Tremlet—on the New York University campus. The assailant was described as forcefully entering the victim's dormitory room and firing three shots. The victim was described as having sustained some irremediable facial disfigurement and mild cognitive deficits. The article repeatedly made explicit the apparently random nature of the incident, that is, that it resulted through no apparent fault of the victim. By all objective criteria, the victim was clearly innocent; there was no indication that he knew and was known by the assailant. There was also no indication that the perpetrator had been brought to justice. The article was created for this study and presented on paper darkened to newsprint tint to maximize its credibility. None of the participants expressed any suspicion regarding the article's authenticity. We are also confident that mundane similarities between the victim and a 1st-year college student (e.g., living in a dormitory) were sufficient to involve the participants in the story. Some students later reported experiencing distress while reading the article.

Information request form. Following the article was a form containing two sets of 10 sentences that were described as summary statements collected from law enforcement officials, witnesses, and acquaintances of the victim. These statements were presented as giving a flavor for the more complete descriptions ostensibly filed in the laboratory database. Half of the statements in the first set portrayed this particular incident as having some type of identifiable causes (e.g., "if gun laws in this state were more stringent, this wouldn't have happened"), whereas the other half reiterated the utterly chaotic nature of the event (e.g., "we're not sure what's behind the recent wave of dormitory assaults around the country"). These statements were randomly distributed within the set. The second set of statements followed a similar format, although they either described the victim in generally negative terms (e.g., "Jeff often had mean things to say about others") or positive terms (e.g., "Tremlet was actively involved in community service"). Within each set, participants were instructed to read over all the items and then circle five statements that immediately appealed to them and that they would be interested in reading more about. It was made explicit that participants would actually receive the requested information.

Results and Discussion

After reversing the appropriate PNS items, we computed an aggregate score and performed a tertile split to yield high- and low-PNS groups, as in Studies 3 and 4. On the information request form, the total number of items devaluing the victim and implying a clear causal history of the incident were separately computed and each submitted to a 3 (MS, pain, or uncertainty prime) $\times$ 2 (high vs. low PNS) ANOVA. No significant effects were found on the measure of preference for information suggesting that the incident resulted from a clear causal history. Results on the negativity of victim dimension revealed a significant main effect for PNS, $F(2, 43) = 6.23$, $p = .02$, such that high-PNS individuals were overall more interested in information devaluing the victim ($M = 2.5$, $SD = 1.50$) than low-PNS individuals ($M = 1.66$, $SD = 1.43$). This was qualified, however, by a significant two-way interaction, $F(2, 43) = 7.49$, $p = .002$ (see Table 5 for relevant means).

Table 5

Study 5: Total Number of Disparaging Items Requested as a Function of Personal Need for Structure (PNS) and Priming Condition

	Prime condition		
PNS group	Mortality salience M (SD)	Dental pain M (SD)	Uncertainty M (SD)
High PNS	3.44 (1.24)	2.12 (1.55)	1.87 (1.36)
Low PNS	0.33 (0.82)	2.09 (1.14)	2.14 (1.67)

Note. Higher scores indicate higher preference for information disparaging the victim.

Pairwise comparisons revealed that high-PNS participants in the uncertainty condition were no more interested in disparaging information about the victim than those in the dental pain condition. However, as predicted, reminders of death made high-PNS participants significantly more interested in disparaging information about the victim than were participants in both the dental pain ($p = .05$) and uncertainty conditions ($p = .02$). A different pattern emerged, however, for low-PNS participants. Pairwise comparisons revealed no difference among low-PNS participants in the dental pain and US conditions in the amount of disparaging information sought, but low-PNS participants in the MS condition requested less disparaging information than those in both the dental pain condition ($p = .01$) and the uncertainty condition ($p = .02$). Thus low-PNS participants' responses to MS were opposite to those of high-PNS participants, showing less apparent desire to find information that supported a negative evaluation of the victim. Pairwise comparisons also revealed that although high- and low-PNS participants did not significantly differ in their search preferences in the dental pain or uncertainty salience conditions, high-PNS participants requested significantly more disparaging information than low-PNS participants in the MS condition ($p < .001$).

Study 5 was concerned with whether, following MS, people high in need for structure would interpret a random tragedy in such a way as to confirm their needs for justice and causal order. The findings revealed that high-PNS participants responded to MS but not uncertainty or dental pain primes with an especially strong interest in disparaging information about the victim. Low-PNS participants did not exhibit this pattern; indeed they showed the exact opposite, responding to MS with reduced interest in negative information about the victim. Although further investigation will be needed to fully explain this pattern, we suspect that, in line with previous TMT research (Greenberg et al., 1992), MS encouraged those low in PNS to conform to the more socially desirable practice of honoring those who have incurred serious tragedies by opting to view them in a positive light; we return to this issue in the General Discussion.

We did not find the predicted patterns of results for the causal knowledge dimension. It may be that, as prior terror management research has shown, many conclusions that people seek are specific conclusions associated with their worldview. Imposing justice on the world reflects the need for a particular answer to why things happen, whereas the need for orderly causal relations in the world reflects a need for any conclusion. However, it is also possible that the causal knowledge measure did not work because it came directly after the incident description. It may be that the incident rearoused some conscious thoughts of death (see, e.g., Greenberg et al., 1994), so that terror management defenses were not activated until the participants got to the later items regarding the victim's character. Other possibilities are that the motive to perceive the victim as deserving his fate overwhelmed concerns with understanding the cause or that depicting the event as random and senseless undermined participants' hope of finding a compelling explanation in the information we intended to be causally relevant.

Study 6: Just World and Death Thought Accessibility

The results from Study 5 suggest that concerns about death make high-PNS individuals more interested in discovering negative information about the victim of a senseless tragedy, presumably because such information helps them restore their belief in a just world. Thus, a just conception of the world appears to be a cognitive structure that high-PNS people use to control death-related concerns. Research on the dual-process model of terror management defenses has shown that heightened death thought accessibility leads to bolstering of defensive structures and that such bolstering then facilitates the reduction of death accessibility to baseline levels (Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997; Greenberg, Arndt, Schimel, Pyszczynski, & Solomon, 2001). Thus, strong faith in the worldview and one's self-worth function to keep death thought accessibility low. It follows from this that threats to these defensive structures will lead to an increase in death thought accessibility; in fact, a number of studies have found just that (see, e.g., Goldenberg et al., 1999; Mikulincer et al., 2003). If belief in a just world is part of the worldview of high-PNS people, then exposure to instances of injustice should increase the accessibility of death related thoughts among such individuals. Such a finding would provide converging evidence for the terror management function of just world beliefs.

To test this hypothesis, we exposed high- and low-PNS individuals to information about a tragic event occurring to a victim who was portrayed in either a positive or negative manner. We then measured the accessibility of death-related thoughts using a word-stem completion measure that has been used in previous terror management studies (e.g., Arndt, Greenberg, Pyszczynski, & Solomon, 1997; Arndt, Greenberg, Solomon, et al., 1997). To the extent that just world beliefs provide protection from death-related concerns for high-PNS but not low-PNS persons, we predicted that high- but not low-PNS participants would respond with heightened death thought accessibility to a tragedy in which the victim is positively portrayed but that the identical tragedy occurring to a negatively portrayed victim would not produce this effect.

Method

Participants

A total of 46 (31 female) introductory psychology undergraduates participated in partial fulfillment of their course requirement.

Materials and Procedure

We measured participants' PNS levels with the PNS Scale prior to the experimental session with a mass-testing session held at the beginning of

the semester. Approximately 4 weeks later, groups of 3 to 5 participants were recruited to participate in a study of personality and media preferences. Once the participants arrived, the experimenter explained that participation entailed completing some standard personality questionnaires and a media preferences exercise. After giving their consent, participants were ushered into separate cubicles, administered a packet, and instructed to respond with their first, natural response. The contents of the packet (described subsequently) were identical for all participants with the exception of the valence of the quotes used to manipulate the description of the victim.

Target article and quotes. Following two fillers, participants received the same newspaper article used in Study 5. As in Study 5, the article was ostensibly selected from a larger database and depicted a dormitory shooting that from all objective standards was completely unanticipated and senseless. The instructions stated that we were interested in how people organize information in the news and that, following the article, participants would receive quotes and facts from eyewitness testimonies, neighbors, police records, and so forth that they would be asked about later. Participants were then randomly assigned to receive either positive or negative quotes about the victim. These quotes were identical to those used in Study 5. The instructions read: "Below are actual quotes that appear later in the article you just read. Please read them completely. Later we will ask you for your impression of this information and how it fits together." Instructions on the following page indicated that a neutral filler task was necessary to allow the information time to settle before being evaluated.

Death word accessibility measure. The next form was presented as this neutral filler task, but it was actually the death thought accessibility measure. This task was a word-fragment completion exercise, similar to measures used in prior research (e.g., Arndt, Greenberg, Solomon, et al., 1997), that contained 26 word fragments, 7 of which could be completed with one death-related or a neutral word. The 5 target fragments were: COFF_ _, completed as *coffin* or *coffee;* DE _ _, as *dead* or, for example, *deep*; KI _ _ ED, as *killed* or *kicked*, SK _ LL, as *skull* or *skill*; CO _ _ SE, as *corpse* or *course*; and GRA _ _, as *grave* or, for example, *grape*. Death accessibility was assessed as the total number of death-related word completions.

After completing the packet, the experimenter gave participants a form with two manipulation-check questions: "How random or senseless did the event described in the article seem to be?" (1 = *completely sensible*, 7 = *completely senseless*) and "how positively did the quotes portray the victim of the event described in the article?" (1 = *extremely negative*, 7 = *extremely positive*). Participants were debriefed and thanked after answering these questions.

Results and Discussion

As in the previous studies, high- and low-PNS groups were created by means of a tertile split, with the highest and lowest thirds of the distribution constituting the high- and low-PNS groups. Both manipulation check items were submitted to 2 (positive vs. negative victim) $\times$ 2 (high vs. low PNS) ANOVAs. These analyses revealed only main effects of victim information for ratings of the senselessness of event, $F(1, 42) = 5.76$, $p = .02$, and how positively the victim was portrayed, $F(1, 42) = 151.20$, $p < .001$. The event was rated as more senseless when the victim was portrayed in positive terms ($M = 6.36$, $SD = 1.22$) than when the victim was depicted negatively ($M = 5.54$, $SD = 1.10$), and the positively portrayed victim was perceived more positively ($M = 6.86$, $SD = 0.28$) than the negatively portrayed victim ($M = 2.22$, $SD = 1.75$). Thus the victim valence–just world threat manipulation was successful.

Our main predictions were (a) that high-PNS participants would exhibit higher death thought accessibility when the victim of a senseless tragedy was portrayed positively (just world threat) than they would when the victim was portrayed negatively (just world consistent) and (b) that high-PNS participants would have higher death thought accessibility than low-PNS participants following a positive portrayal. A 2 (positive vs. negative victim) $\times$ 2 (high vs. low PNS) ANOVA on total death thought accessibility revealed only the predicted interaction, $F(1, 42) = 6.90$, $p = .01$ (relevant means in Table 6). Pairwise comparisons showed that high-PNS participants exhibited significantly higher death thought accessibility following a positive victim portrayal compared with a negative portrayal ($p = .03$). High-PNS participants also exhibited marginally higher death thought accessibility than low-PNS participants following a positive victim portrayal ($p < .06$) and marginally lower death thought accessibility compared with low-PNS participants following a negative portrayal ($p = .08$). There was no significant difference in death thought accessibility for low-PNS participants as a function of how the victim was portrayed ($p > .15$).

In support of our TMT analysis, these results indicate that high-PNS participants exhibited higher death thought accessibility when they received positive information about the victim of a senseless tragedy. The fact that it was positive rather than negative information about the victim that led to increased death thought accessibility among high-PNS participants argues against a priming of negative information explanation for death accessibility findings, which would predict greater death thought access in the negative information condition. The present finding, that *positive* information about a victim led to heightened death thought accessibility among high-PNS participants complements the finding of Study 5—that MS led high-PNS participants to seek more negative information about a victim—in suggesting that terror management concerns play an important role in motivating maintenance of just world beliefs among high-PNS individuals.

Study 7: Benevolent Causation

Whereas Studies 5 and 6 provided evidence supporting a terror management function of just world beliefs, Study 7 was conducted to examine a different but related way in which people come to grips with the occurrence of tragic events. In addition to viewing tragic events as just, people can also cope with such events by viewing them as somehow beneficial or ultimately leading to some good that compensates for the suffering. People seem to find security in viewing even incomprehensible tragedies as part of some broader and ultimately benign master plan for our lives or as serving some useful purpose, such as to "teach us something."

Table 6

Study 6: Death Accessibility Scores as a Function of Personal Need for Structure (PNS) and Victim Portrayal

	Victim portrayal	
PNS group	Positive M (SD)	Negative M (SD)
High PNS	3.00 (1.35)	1.77 (1.36)
Low PNS	1.90 (1.28)	2.73 (1.27)

Note. Higher scores indicate higher death thought accessibility.

Everything, it is believed, happens "for a reason," and preferably a benevolent one. Consistent with this notion, research suggests that people appreciate "happy endings" to horrific events (Tannenbaum & Gaer, 1965). In a related vein, McAdams, Reynolds, Lewis, Patten, and Bowman (2001) found that a common strategy for imbuing subjective experience with meaning and coherence is the redemption story, which emphasizes times when bad life events were salvaged or redeemed by a subsequent positive outcome.

From a TMT perspective, the belief that there is purpose and direction in the social world—that there is a benevolent causal order—is widely and profoundly appealing because it staves off mortality-related anxiety by obscuring the harsh reality that negative and even life-threatening events tend to strike with no sympathy for our concerns. If such beliefs in benevolent causation do serve a terror management function, it follows that MS will increase preference for scenarios in which negative events ultimately cause positive outcomes to occur. This conviction may be especially attractive to those particularly inclined to use structure as a terror management strategy, as Studies 3–6 indicate is the case for those high in PNS. Thus, we hypothesized that high-PNS participants would express especially favorable attitudes toward scenarios in which a negative event leads to a positive event. We tested this hypothesis by having participants rate their preference for two scenarios, both involving a negative event followed by a positive event. In one scenario the negative event was portrayed as causing the positive event, whereas in the other, the events were portrayed as causally unrelated. In a straightforward utilitarian sense, the scenarios' target character incurred the same tragedy and found the same joy, and in both cases, there were clearly stated causal antecedents for the events. However, to the extent that people cope with tragedy by imbuing the world with benevolent causal structure, we predicted that MS would lead high-PNS participants to show an especially strong preference for the scenario in which the negative event was causally connected to the positive outcome.

Method

Participants

A total of 59 (24 male and 35 female) students enrolled in introductory psychology classes at a Southwestern state university participated in partial satisfaction of a course requirement.

Materials and Procedure

The study was run in a laboratory setting, and participants were told that they were participating in an experiment on student personality characteristics. All participants completed a packet of written materials (described subsequently) that contained the MS manipulation and target scenarios. As in Study 6, data on PNS levels were collected in mass-screening sessions conducted a few weeks before the main study. Participants were fully debriefed and thanked for their time after completing the materials packet.

MS and delay. We used an alternative MS manipulation developed by Dechesne et al. (2003) in this study. In this version, participants are asked to "please write down the first sentence that comes to your mind when thinking about your own death." Those in the control condition completed a parallel question: "Please write down the first sentence that comes to your mind when thinking about dental pain." Participants were then given two double-spaced lines on which to respond. Because death is contemplated

for less time with this procedure, only the PANAS-X was used as the delay and distraction.

Plot descriptions and evaluation. Directly following the delay task, participants were given a form explaining how personal preferences are often diagnostic of one's personality. In accord with this explanation, participants were told that they would be presented with outline descriptions of two movie plots and then rate their preferences for each. In both plots the main character was introduced as a typical male in his early 20s who has been struggling in his search for love. Both plots then described Event 1: the main character's apartment and valuables are incinerated in a fire started by a neighbor's misplaced cigarette. Both plots then described Event 2: the main character meets a beautiful woman, falls in love, and lives happily ever after. The valence of the target's fates and his personal desirability were kept constant across the two versions, and in both versions, the events came about through no apparent agency of the target character. The only difference between the two plots was the manner in which Events 1 and 2 related to each other. In the causally dependent version, the main character meets the woman while watching his apartment burn down, and it is made clear that they would have never met otherwise. In the causally independent version, the main character meets the woman under different circumstances that have nothing to do with his apartment burning. The two versions were presented in counterbalanced order, and participants answered the same three questions following each description: "How much do you like this plot?," "how strongly do the events described appeal to you at a gut level?," and "if this plot were made into a movie, how much do you think you'd enjoy this movie?" All responses were rated on a 9-point scale (1 = *not at all*, 9 = *extremely*).

Results and Discussion

Preliminary analyses revealed no main effects for presentation order (all $Fs < 1$), so this variable was excluded from subsequent analyses. Tertile splits were computed on the PNS scores as in Studies 3–6. For the causally independent and dependent versions, the responses to the three plot evaluation questions revealed good internal reliability (αs = .90 and .89, respectively) and were thus summed to create a composite liking score for each version. A difference score was then computed such that high scores indicate a higher relative preference for the causally dependent version, and these scores were submitted to a 2 (MS vs. control) × 2 (high vs. low PNS) ANOVA. Results revealed a significant interaction, $F(1, 58) = 4.61$, $p = .04$ (see Table 7 for relevant means). Pairwise comparisons revealed that, compared with high-PNS participants in the control prime condition, high-PNS participants in the MS condition reported higher relative preference for the causally dependent version ($p = .05$). Moreover, although high- and low-PNS groups did not differ in their preference in the control prime

Table 7

Study 7: Relative Preference for the Benevolent Causation Story as a Function of Mortality Salience and Personal Need for Structure

	Prime condition	
Structure group	Mortality salience M (SD)	Control M (SD)
High	6.23 (2.95)	2.88 (4.83)
Low	1.78 (4.78)	3.64 (5.28)

Note. Higher scores indicate higher preference for the causally dependent version.

condition, high-PNS participants reported significantly higher preference for the causally dependent version compared with low-PNS participants in the MS condition ($p = .01$).

The results of this study support our hypothesis that for those high in PNS, MS increased preference for a story that bolsters the belief that negative life outcomes ultimately lead to positive ones. In addition, the use of a different MS prime adds to the generalizability of the findings from the first six studies. One of TMT's central theoretical claims is that people's awareness of their vulnerability and ultimate mortality compels them to cling to very core beliefs in the benevolent nature of social events. The beliefs in justice and benevolent causation appear to be two important assumptions that high-PNS people use to deal with this awareness. Although the relationship between TMT and just world beliefs has been discussed in the past (Pyszczynski, Greenberg, & Solomon, 1997), Studies 5−7 provide the first empirical demonstration that death-related concerns lead people to conceive of social events as just, orderly, and beneficent.

General Discussion

The results of the seven experiments reported here provide converging evidence that striving for consistency and benevolent order in the way people construe their social worlds is one common response to the problem of mortality. In the domain of interpersonal perception, Study 1 demonstrated that MS results in a stronger impressional primacy effect, Study 2 revealed that MS increases the tendency for people to categorize others on the basis of representative rather than statistical information, Study 3 revealed that MS reduces high-PNS participants' liking for a dispositionally ambiguous target, and Study 4 revealed that MS increases high-PNS participants' preference for balanced over imbalanced interpersonal relations. Focusing on more complex social events, Studies 5, 6, and 7 suggest that mortality concerns at least partly underlie the desire for a just, benevolent world among those high in PNS. Considered together, these findings offer consistent support for the claim that terror management concerns contribute to the seeking of, and preference for, diverse forms of structure. Although clear and coherent social knowledge certainly affords predictability and a clear basis for immediate action, the present findings suggest that structure is also sought as a way of coping with the human existential dilemma. The many cognitive structuring tendencies affected by thoughts of death in the present research provide a basis for psychological equanimity by imposing stability, benevolent order, and meaning on what would otherwise be an overwhelmingly frightening world.

Terror Management and Lay Epistemology

The present findings highlight the compatibility of the terror management and lay epistemic theoretical frameworks. The two theories share the view that people often, though not always, prefer definite knowledge over a constantly expanding set of hypotheses and that this preference results not only from limitations of the human information-processing system, but also from need for structure. TMT also concurs with the lay epistemic framework that external factors (e.g., escaping aversive stimuli) often induce people to seek epistemically satisfying conclusions. In light of the present findings, it appears that at least one distal benefit of epistemic freezing is the role it plays in maintaining a semantically and logically coherent benevolent worldview that effectively buffers people from the implicit awareness of their own death. Whereas lay epistemology theory explicates relatively proximal motivational forces that determine how information is selectively processed and distorted to confirm what are often relatively automatic biases, we suggest that these biases also serve the more distal function of maintaining the overall structural integrity of the anxiety-buffering cultural worldview.

Consideration of lay epistemology theory also sheds new light on issues central to TMT. One of the unique features of the current findings is that they demonstrate a more general form of worldview defense than those uncovered in previous terror management research. Whereas past studies have focused on the defense of specific structures (e.g., in-group identities, self-concepts, and out-group stereotypes), the present research demonstrates that MS also increases adherence to relatively nonspecific organizing principles about the nature of the social world that serve as basic prerequisites for maintaining the more specific contents of the worldview. It seems likely that the nonspecific and specific contents of our cognitive system work together in enabling the individual to maintain a consistent, meaningful, and secure understanding of reality.

There may be important boundaries, however, to the relationship between terror management needs and the epistemic motivation for nonspecific structure. In Study 5, for example, MS did not affect participants' preference for a clear causal history behind events, suggesting the possibility that MS preferentially influences the need for specific conclusions (justice) over just any conclusion (causal order). The fact that preferences for specific and nonspecific information were assessed relative to each other in the same study precludes us from drawing firm conclusions about whether preference for causal order would have been obtained if no information implying justice were available to participants. Nevertheless, Jonas, Greenberg, and Frey (2003) reported a similar effect; they found that MS increases bias in information search in favor of decision-supporting information primarily when the nature of the decision is relevant to the content of the participants' worldviews. It may be that worldview-specific information is preferred when available, but that anything that helps structure one's social world is sought when needs for specific contents have not been activated. The issue of relative preference for specific and nonspecific structures is an important question for future research. This is an intriguing theoretical issue because it forces one to consider where the conceptual structure of the worldview ends and the contents of the worldview begins.

TMT would also benefit from a consideration of the influence MS might exert on the motivation to *avoid* closure. Whereas the present studies show that MS can lead to more rapid freezing of the epistemic process, lay epistemology theory suggests that other motives can lead to protracted inferential processes. For example, Webster (1993) found that increasing a need to avoid closure led participants to exhibit almost no correspondence bias. A manipulated need to avoid closure has also been shown to reduce the primacy effect (Freund et al., 1985). We agree with lay epistemology theory that considerable costs (e.g., ridicule, maladaptive decisions) can result from committing a judgmental error and that the resulting fear of invalidity may increase the tendency to continue considering alternative hypotheses prior to closure. Further-

more, because the potential for terror is partly managed by main-
taining self-esteem through making favorable impressions on
others—goals that lead people to want to appear knowledgeable,
intelligent, or tolerant when held personally accountable for their
judgments—MS might promote avoidance of premature closure
when judgmental errors potentially threaten one's standing in these
domains. MS might also inhibit freezing when the only available
information is unambiguously incongruent with particular
worldview-relevant beliefs and expectations. Future research must
determine whether and under what conditions MS increases the
desire to avoid closure.

The Moderating Role of PNS

The results of the current studies also extend prior TMT re-
search on individual factors that moderate different modes of
defense, and they offer new insights into the psychological con-
cerns that underlie individual differences in the need for structure.
As in past research that has focused on different modes of defense
(e.g., self-esteem bolstering, belonging, distancing from the cor-
poreal, and defending more specific elements of the worldview),
we found that individual differences play an important role in
moderating MS effects on structuring. Although the need for
meaning and value are pervasive human goals from the perspective
of TMT, simple structuring may be just one approach to bolstering
meaning and value. Indeed, it would be difficult to argue other-
wise, given the flexibility and resilience that humans display in a
variety of threatening and nonthreatening situations. Our findings
reinforce the point, however, that people who do invest in simple
structuring of the social world become less flexible in their re-
sponses when terror management needs are high.

For those disposed to structure, MS consistently led to a pref-
erence for, and use of, social information that facilitated epistemic
certainty and clarity at the expense of considering all relevant
information and responses. In contrast, the responses of low-PNS
participants seemed less consistent when mortality was salient.
Although in most cases (Studies 3, 4, and 7) there were no
significant differences between the responses of low-PNS partic-
ipants in the MS and control conditions, Study 5 did reveal a
significant reversed pattern such that low-PNS participants favored
positive information about the victim. An examination of the
means in Studies 3, 4, and 7 suggests that there was somewhat of
a move away from structuring behavior among low-PNS individ-
uals after MS in these studies as well. This pattern was unexpected,
though not entirely inconsistent with past research on the need for
structure (e.g., Neuberg & Newsome, 1993).

To see if this trend was truly meaningful, we used three tech-
niques to combine the results across the four MS studies that
included PNS as a moderator. We did not include Study 6 in these
analyses because we were interested in the role of PNS in mod-
erating mortality-induced defensive structuring, and in this study,
we did not manipulate MS, and our dependent variable was death
thought accessibility rather than defensive structuring.

We first examined the overall low-PNS pattern by pooling the
raw data. We collapsed the two control conditions in Study 5
because of its larger design and only included participants in the
inconsistent target condition from Study 3. The dependent mea-
sures were coded such that higher numbers indicate more prefer-
ence for structure, converted to z scores, and submitted to a 2 (MS

vs. control primes) $\times$ 2 (high vs. low PNS) ANOVA. As expected,
a PNS main effect revealed that high-PNS participants preferred
more structure across the four studies ($M = 0.33$) than low-PNS
participants ($M = -0.14$), $F(1, 212) = 10.85, p < .001$. Although
there was no main effect for MS ($F < 1$), there was a significant
interaction, $F(1, 212) = 10.04, p = .002$. As would be expected,
high PNS favored significantly higher structure ($M = 0.61$) than
low- ($M = -0.32$) within MS ($p < .001$), and high-PNS partic-
ipants in control prime conditions ($p < .01$). However, mortality
salient low-PNS participants exhibited only a marginal decrease in
desire for structure ($p = .09$).

Following Rosenthal and Rosnow's (1984) recommendations,
we also interpreted the low PNS trend across studies using a
Stouffer method of combining the probability levels of the con-
trasts between the low PNS–MS mean with the low PNS–control
mean. When the original two-tailed probability values[5] for Studies
3, 4, 5, and 7 (.6, .55, .006, and .29, respectively) are entered into
the equation, the composite z score (1.72) was significant with a
one-tailed test ($p = .04$), but marginal with a two-tailed test ($p =
.08$).

Last, we evaluated the study results using meta-analytic formu-
las for effect sizes (e.g., Lipsey & Wilson, 2001). We computed
Cohen's (1988) d for each study's low-PNS MS versus control
prime contrast using the pooled standard deviations of the two
groups. We averaged the effect sizes for Studies 3, 4, 5, and 7
(0.22, 0.20, 1.62, 0.37, respectively) to arrive at an average effect
size of 0.60 ($SE = 0.34$). The 95% confidence interval around the
average effect size was thus $-0.08 < d < 1.28$, suggesting that the
population effect size is not significantly different from 0. These
effect size results suggest that the low PNS–MS versus low PNS–
control contrasts are not strong effects across studies.

The three techniques used to examine the overall effect of
low-PNS individuals revealed a somewhat ambiguous picture—
which might be expected given that those low in PNS are more
flexible and less consistent in other domains (Neuberg & New-
some, 1993)—although the trend warrants further attention. The
notion that some individuals are more flexible information proces-
sors and are less likely to rely on limited bands of information is
consistent with past research showing that low-PNS people are
motivated to seek alternative hypotheses and rely less on stereo-
types (Dijksterhuis, van Knippenberg, Kruglanski, & Schaper,
1996; Kruglanski & Freund, 1983). Perhaps low-PNS people ac-
tually derive some form of security from the greater freedom and
flexibility that results from lower levels of structure in their per-
ceptual and social worlds. Consequently, MS might have made the
value of flexible thinking more salient and increased the potential
for less rigid responses among low-PNS participants. Interestingly,
Allport (1954, p. 24) offered a description of a certain group of
people that we think fits the low need for structure profile quite
well:

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[5] Although Rosenthal and Rosnow (1984) recommend using one-tailed
probability values, we felt that two-tailed values were more appropriate
given our lack of an a priori directional hypothesis for the low-PNS
participants. Use of one-tailed probability values (.3, .275, .003, and .145,
respectively) yields a composite z score of 2.47, $p = .007$ (one-tailed), $p =
.01$ (two-tailed).

There are people who seem to go through life with relatively little of the rubricizing tendency. They are suspicious of all labels, of categories, of sweeping statements. They habitually insist on knowing the evidence for each and every broad generalization. Realizing the complexity and variety in human nature, they are especially chary of ethnic generalizations. If they hold to any at all it is in a highly tentative way, and every contrary experience is allowed to modify the pre-existing ethnic concept.

Some extant research is consistent with the idea that this type of person may actually cope with their mortality concerns by reducing reliance on simple structuring. Greenberg et al. (1990) found that participants low in authoritarianism (presumably with lower need for structure) tended to judge a dissimilar other more favorably following MS—the opposite pattern of their high authoritarian counterparts. Dechesne et al. (2000) showed that death-primed low-PNS individuals distanced from criticized in-group identities rather than defending them. Schimel et al. (1999) also found that those low in need for closure, in contrast to those high in need for closure, responded to MS with a nonsignificant trend toward increased liking for the stereotype-inconsistent target and decreased liking for the stereotype-consistent target.

This body of past research, in conjunction with the present findings, is relevant to the recent controversial analysis of political conservatism by Jost, Glaser, Kruglanski, and Sulloway (2003). On the basis of a large body of evidence, Jost et al. argued that political conservatism is characterized by cognitive rigidity and is encouraged by the fear of death and other threats. On the basis of a substantial set of findings neglected by Jost et al., Greenberg and Jonas (2003) countered that fear and threat play a role in clinging to any extreme and rigid ideology, whether right-wing or left-wing. The present findings are broadly consistent with both perspectives in showing that MS increases cognitive structuring for the high-PNS participants. However, in contrast to both views, the present work suggests that low-PNS people are not driven toward cognitive rigidity by death-related thoughts at all. One explanation for this might be that low-PNS individuals are less concerned with their mortality. Although possible, this explanation cannot easily account for the significant effects of MS on low-PNS people reported by Dechesne et al. (2000) and in the current Study 5. To the extent that the ideological rigidity discussed by Jost et al. and Greenberg and Jonas contributes to intergroup conflict and political oppression, greater understanding of these low-PNS people is sorely needed.

To further explore the psychological underpinnings of cognitive rigidity, we examined how the PNS Scale relates to the constructs of the Big Five Personality Inventory (see Neuberg & Newsome, 1993; Thompson et al., 2001, for similar analyses[6]). We had 107 participants (75 women) complete the PNS Scale and the NEO-Five-Factor Inventory (Costa & McCrae, 1989, 1992), separated from each other by irrelevant fillers in a large packet of materials. Consistent with Neuberg and Newsome's (1993) results, we found that scores on the PNS were negatively correlated with Openness ($r = -.28$, $p = .004$). We also found that PNS positively correlated with Conscientiousness ($r = .33$, $p < .001$), as well as Neuroticism ($r = .27$, $p = .005$), and negatively correlated with Extraversion ($r = -.30$, $p = .002$). Although Neuberg and Newsome found that PNS was uncorrelated with Agreeableness, we found a significant negative correlation between the two ($r = -.21$, $p = .03$). These results, in conjunction with similar results

by Neuberg and Newsome and Thompson et al. (2001), provide evidence that low-PNS individuals are more invested than high-PNS individuals in openness to experience and novelty and that they are more sociable, agreeable, and less concerned with rule following.

Whatever the underlying determinants of level of need for structure may be, this variable is clearly an important moderator of MS effects for diverse phenomena. A final important implication of these findings is that a revision of the traditional TMT notion that a highly ordered and stable worldview is necessary for managing existential fears is needed. Perhaps for those low in need for structure, worldviews that are highly flexible and open can also provide sufficient meaning and value to quell mortality concerns.

Motivation and Cognition

This research has interesting implications for the oft-discussed cleavage between motivational and information-processing accounts of how we think about others, and it provides further evidence that the two can peacefully coexist (Kruglanski, 1996; Kunda, 1990; Pyszczynski & Greenberg, 1987). Specifically, the studies presented here support the notion that capacity limitations and other features of cognitive economy may act as the proximal mechanisms that reflect distal terror management goals. This is a significant distinction because whereas epistemic motives tend to be linked to basic survival (e.g., Fiske, 2003), we claim that people's struggle to understand and make sense of other people and significant events can also satisfy an intrapsychic need for psychological equanimity in the face of the awareness of mortality. Ultimately, we feel that TMT is quite compatible with many of the claims of mainstream social cognitive research programs (e.g., that interpretation of others' behavior can be influenced by constructs and goals that are activated outside of conscious awareness; Bargh & Chartrand, 1999), and it can contribute to the motivated social cognition perspective by further specifying the role of general motivational and specific individual factors in social thought and action.

Conclusion

In conclusion, the motivated social cognition perspective portrays humans as motivated to structure social information by constructing theories, applying heuristics, and using other cognitive devices in the service of parsimonious and powerful explanations, and the findings of these seven studies support the TMT view that these knowledge structures often serve deeply rooted existential concerns. From this perspective, social cognitive processes that appear to result from cognitive shortcuts may in fact be quite functional when they systematically favor worldview consistent information and, thereby, avert potential anxiety. From an evolutionary perspective (cf. Solomon et al., 2004), it is ironic that the distinctly human and potentially liberating cognitive capabilities designed to confer expansive thought (e.g., abstract reasoning, extended planning), by also engendering a recognition of personal vulnerability and death, encouraged at least one large segment of

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[6] Although Neuberg and Newsome (1993) examined two subfactors of the PNS Scale, which acted somewhat differently, we examined it as a unidimensional scale.

humankind to retreat to restricted models of reality to imbue their lives with consistency, structure, and benign order. In discussing the ideas of Adam Smith, Heilbroner (1986) eloquently stated this point:

> It is not an abstract drive for truth that impels the search for theory, but the concrete promptings of anxiety. When we first encounter anything that is not familiar or expected. . . we are struck by the feelings we call Surprise and Wonder. These are not welcome feelings. Humankind needs to classify and categorize its knowledge: We may not know any more about something when we can place in into a general class of things, but we feel vastly relieved at being able to do so. (p. 15)

References

Allport, G. W. (1954). *The nature of prejudice*. Cambridge, England: Addison-Wesley.

Arndt, J., Allen, J. J. B., & Greenberg, J. (2001). Traces of terror: Subliminal death primes and facial electromyographic indices of affect. *Motivation and Emotion, 25*, 253–277.

Arndt, J., Greenberg, J., Pyszczynski, T., & Solomon, S. (1997). Subliminal exposure to death-related stimuli increases defense of the cultural worldview. *Psychological Science, 8*, 379–385.

Arndt, J., Greenberg, J., Solomon, S., Pyszczynski, T., & Simon, L. (1997). Suppression, accessibility of death-related thoughts, and cultural worldview defense: Exploring the psychodynamics of terror management. *Journal of Personality and Social Psychology, 73*, 5–18.

Arndt, J., Schimel, J., & Goldenberg, J. L. (2003). Death can be good for your health: Fitness intentions as proximal and distal defense against mortality salience. *Journal of Applied Social Psychology, 38*, 1726–1746.

Asch, S. E. (1946). Forming impressions of personality. *Journal of Abnormal and Social Psychology, 41*, 258–290.

Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist, 54*, 462–479.

Carlston, D. E. (1980). The recall and use of traits and events in social inference processes. *Journal of Experimental Social Psychology, 35*, 38–48.

Cartwright, D., & Harary, F. (1956). Structural balance: A generalization of Heider's theory. *Psychological Review, 63*, 277–293.

Chaiken, A. L., & Darley, J. M. (1973). Victim or perpetrator? Defensive attribution of responsibility and the need for order and justice. *Journal of Personality and Social Psychology, 25*, 268–275.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Costa, P. T., & McCrae, R. R. (1989). *NEO-PI/FFI manual supplement*. Odessa, FL: Psychological Assessment Resources.

Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO PI–R) and Neo Five Factor Inventory professional manual*. Odessa, FL: Psychological Assessment Resources.

Deacon, T. (1997). *The symbolic species: The coevolution of language and the brain*. New York: Norton.

Dechesne, M., Janssen, J., & van Knippenberg, A. (2000). Defense and distancing as terror management strategies: The moderating role of need for structure and permeability of group boundaries. *Journal of Personality and Social Psychology, 79*, 923–932.

Dechesne, M., Pyszczynski, T., Arndt, J., Ransom, S., Sheldon, K. M., van Knippenberg, & Janssen, J. (2003). Literal and symbolic immortality: The effect of evidence of literal immortality on self-esteem striving in response to mortality salience. *Journal of Personality and Social Psychology, 84*, 722–737.

Dijksterhuis, A., van Knippenberg, A., Kruglanski, A. W., & Schaper, C. (1996). Motivated social cognition: Need for closure effects on memory and judgment. *Journal of Experimental Social Psychology, 32*, 254–270.

Dunning, D., & Beauregard, K. S. (2000). Regulating impressions of others to affirm images of self. *Social Cognition, 18*, 198–222.

Eysenck, H. J., & Eysenck, S. B. G. (1964). *Manual of the Eysenck Personality Inventory*. London: University of London Press.

Fiske, S. T. (2003). Five core social motives plus or minus five. In S. J. Spencer & S. Fein (Eds.), *Motivated social perception: The Ontario Symposium* (Vol. 9, pp. 233–246). Mahwah, NJ: Erlbaum.

Fiske, S. T., & Neuberg, S. L. (1990). A continuum model of impression formation, from category based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 1–74). New York: Academic Press.

Fiske, S. T., & Taylor, S. E. (1991). *Social cognition*. New York: McGraw-Hill.

Ford, T. E., & Kruglanski, A. W. (1995). Effects of epistemic motivation on the use of accessible constructs in social judgment. *Personality and Social Psychology Bulletin, 21*, 950–962.

Freund, T., Kruglanski, A. W., & Shpitzajzen, A. (1985). The freezing and unfreezing of impressional primacy: Effects of the need for structure and the fear of invalidity. *Personality and Social Psychology Bulletin, 11*, 479–487.

Goldenberg, J. L., Pyszczynski, T., Greenberg, J., Solomon, S., Kluck, B., & Cornwell, R. (2001). I am not an animal: Mortality salience, disgust, and the denial of human creatureliness. *Journal of Experimental Psychology: General, 130*, 427–435.

Goldenberg, J. L., Pyszczynski, T., McCoy, S. K., Greenberg, J., & Solomon, S. (1999). Death, sex, love, and neuroticism: Why is sex such a problem? *Journal of Personality and Social Psychology, 77*, 1173–1187.

Greenberg, J., Arndt, J., Schimel, J., Pyszczynski, T., & Solomon, S. (2001). Clarifying the function of mortality-salience induced worldview defense: Renewed suppression or reduced accessibility of death-related thoughts? *Journal of Experimental Social Psychology, 37*, 70–76.

Greenberg, J., & Jonas, E. (2003). Psychological motives and political orientation—The left, the right, and the rigid: Comment on Jost et al. (2003). *Psychological Bulletin, 129*, 376–382.

Greenberg, J., Martens, A., & Jonas, E. (2003). Psychological defense in anticipation of anxiety: Eliminating the potential for anxiety eliminates the effect of mortality salience on worldview defense. *Psychological Science, 14*, 516–519.

Greenberg, J., Pyszczynski, T., & Solomon, S. (1986). The causes and consequences of a need for self-esteem: A terror management theory. In R. F. Baumeister (Ed.), *Public self and private self* (pp. 189–212). New York: Springer-Verlag.

Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeder, M., Kirkland, S., & Lyon, D. (1990). Evidence for terror management theory: II. The effects of mortality salience on reactions to those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology, 58*, 308–318.

Greenberg, J., Pyszczynski, T., Solomon, S., Simon, L., & Breus, M. (1994). The role of consciousness and accessibility of death-related thoughts in mortality salience effects. *Journal of Personality and Social Psychology, 67*, 627–637.

Greenberg, J., Simon, L., Harmon-Jones, E., Solomon, S., Pyszczynski, T., & Lyon, D. (1995). Testing alternative explanations for mortality salience effects: Terror management, value accessibility, or worrisome thoughts? *European Journal of Social Psychology, 25*, 417–433.

Greenberg, J., Simon, L., Porteus, J., Pyszczynski, T., & Solomon, S. (1995). Evidence of a terror management function of cultural icons: The effects of mortality salience on the inappropriate use of cherished cultural symbols. *Personality and Social Psychology Bulletin, 21*, 1221–1228.

Greenberg, J., Simon, L., Pyszczynski, T., Solomon, S., & Chatel, D. (1992). Terror management and tolerance: Does mortality salience al-

ways intensify negative reactions to others who threaten one's world-view? *Journal of Personality and Social Psychology, 63*, 212–220.

Greenberg, J., Solomon, S., & Pyszczynski, T. (1997). Terror management theory of self-esteem and cultural worldviews: Empirical assessments and conceptual refinements. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 61–139). San Diego, CA: Academic Press.

Heider, F. (1958). *The psychology of interpersonal relationships*. New York: Wiley.

Heilbroner, R. L. (1986). *The essential Adam Smith*. New York: Norton.

Higgins, R. T., & Bargh, J. A. (1987). Social cognition and social perception. *Annual Review of Psychology, 38*, 369–425.

Higgins, E. T., Bargh, J. A., & Lombardi, W. (1985). Nature of priming effects on categorization. *Journal of Experimental Social Psychology, 11*, 59–69.

Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology, 13*, 141–154.

Jonas, E., Greenberg, J., & Frey, D. (2003). Connecting terror management and dissonance theories: Evidence that mortality salience increases the preference for supportive information after decisions. *Personality and Social Psychology Bulletin, 29*, 1181–1189.

Jones, E. E., & Davis, K. E. (1965). From acts to dispositions: The attribution process in person perception. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2, pp. 219–266). Orlando, FL: Academic Press.

Jordan, N. (1953). Behavioral forces that are a function of attitudes and cognitive organization. *Human Relations, 6, 273–287.*

Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin, 129*, 339–375.

Kahneman, D., Slovic, P., & Tversky, A. (1982). *Judgment under uncertainty: Heuristics and biases.* Cambridge, England: Cambridge University Press.

Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review, 80, 237–251.*

Kahneman, D., & Tversky, A. (1996). On the reality of cognitive illusions. *Psychological Review, 103, 582–591.*

Klar, Y., & Pol, I. (1980). *Balance effects in the lay-epistemic framework.* Unpublished manuscript, Tel-Aviv University, Tel-Aviv, Israel.

Kruglanski, A. W. (1980). Lay epistemology process and contents. *Psychological Review, 87, 70–87.*

Kruglanski, A. W. (1989). *Lay epistemics and human knowledge: Cognitive and motivational bases.* New York: Plenum.

Kruglanski, A. W. (1990). Lay epistemic theory in social cognitive psychology. *Psychological Inquiry, 1, 181–197.*

Kruglanski, A. W. (1996). Motivated social cognition: Principles of the interface. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 493–520). New York: Guilford Press.

Kruglanski, A. W., & Freund, T. (1983). The freezing and unfreezing of lay inferences: Effects on impressional primacy, ethnic stereotyping, and numerical anchoring. *Journal of Experimental Social Psychology, 19*, 448–468.

Kruglanski, A. W., & Klar, Y. (1987). A view from a bridge: Synthesizing the consistency and attribution paradigms from a lay epistemic perspective. *European Journal of Social Psychology, 17*, 211–241.

Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing." *Psychological Review, 103, 263–283.*

Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin, 108, 480–498.*

Lerner, M. J. (1978). Just world research and the attribution process: Looking back and looking ahead. *Psychological Bulletin, 85, 1030–1051.*

Lerner, M. J. (1980). *The belief in a just world: A fundamental delusion*. New York: Plenum.

Lerner, M. J., & Simmons, C. H. (1966). The observer's reactions to the "innocent victim": Compassion or rejection? *Journal of Personality and Social Psychology, 4,* 203–210.

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage.

Locksley, A., Borgida, E., Brekke, N., & Hepburn, C. (1980). Sex stereotypes and social judgment. *Journal of Personality and Social Psychology, 39,* 821–831.

Luchins, A. S. (1957). Experimental attempts to minimize the impact of first impressions. In C. E. Hovland (Ed.), *The order of presentation in persuasion* (pp. 62–75). New Haven, CT: Yale University Press.

MacDonald, A. P., Jr. (1972). More on the Protestant ethic. *Journal of Consulting and Clinical Psychology, 39,* 116–122.

Mayseless, O., & Kruglanski. A. W. (1987). What makes you sure? Effects of epistemic motivations on judgmental confidence. *Organizational Behavior and Human Decision Processes, 39*, 162–183.

McAdams, D. P., Reynolds, J., Lewis, M., Patten, A. H., & Bowman, P. J. (2001). When bad things turn good and good things turn bad: Sequences of redemption and contamination in life narrative and their relation to psychosocial adaptation in midlife adults and in students. *Personality and Social Psychology Bulletin, 27,* 474–485.

McGregor, I., Zanna, M. P., Holmes, J. G., & Spencer, S. J. (2001). Compensatory conviction in the face of personal uncertainty: Going to extremes and being oneself. *Journal of Personality and Social Psychology, 80,* 472–488.

Mikulincer, M., Florian, V., & Hirschberger, G. (2003). The existential function of close relationships: Introducing death into the science of love. *Personality and Social Psychology Review, 7,* 20–40.

Moskowitz, G. B. (1993). Individual differences in social categorization: The influence of personal need for structure on spontaneous trait inferences. *Journal of Personality and Social Psychology, 65,* 132–142.

Neuberg, S. L., & Newsome, J. (1993). Personal need for structure: Individual differences in the desire for simple structure. *Journal of Personality and Social Psychology, 65,* 113–131.

Newcomb, T. M. (1953). An approach to the study of communicative acts. *Psychological Review, 60,* 393–404.

Nisbett, R. E., & Ross, L. (1980). *Human inference: Strategies and shortcomings.* Englewood Cliffs, NJ: Prentice Hall.

Pennington, N., & Hastie, R. (1986). Evidence evaluation in complex decision making. *Journal of Personality and Social Psychology, 51,* 242–254.

Pyszczynski, T., & Greenberg, J. (1987). Toward an integration of cognitive and motivational perspectives on social inference: A biased hypothesis-testing model. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 20, pp. 297–340). New York: Academic Press.

Pyszczynski, T., Greenberg, J., & Solomon, S. (1997). Why do we need what we need? A terror management perspective on the roots of human social motivation. *Psychological Inquiry, 8,* 1–20.

Pyszczynski, T., Greenberg, J., & Solomon, S. (1999). A dual-process model of defense against conscious and unconscious death-related thoughts: An extension of terror management theory. *Psychological Bulletin, 106,* 835–845.

Pyszczynski, T., Solomon, S., & Greenberg, J. (2003). *In the wake of 9/11: The psychology of terror.* Washington, DC: American Psychological Association.

Read, S. J., & Marcus-Newhall, A. (1993). Explanatory coherence in social explanations: A parallel distributed processing account. *Journal of Personality and Social Psychology, 65,* 429–447.

Rosch, E. (1978). Principles of categorization. In E. Rosch & B. B. Lloyd (Eds.), *Cognition and categorization* (pp. 27–48). Hillsdale, NJ: Erlbaum.

Rosenblatt, A., Greenberg, J., Solomon, S., Pyszczynski, T., & Lyon, D. (1989). Evidence for terror management theory: I. The effects of mortality salience on reactions to those who violate or uphold cultural values. *Journal of Personality and Social Psychology, 57,* 681–690.

Rosenthal, R., & Rosnow, R. L. (1984). *Essentials of behavioral research: Methods and data analysis.* New York: McGraw-Hill.

Schaller, M., Boyd, C., Yohannes, J., & O'Brien, M. (1995). The prejudiced personality revisited: Personal need for structure and formation of erroneous group stereotypes. *Journal of Personality and Social Psychology, 68,* 544–555.

Schimel, J., Simon, L., Greenberg, J., Pyszczynski, T., Solomon, S., Waxmonsky, J., & Arndt, J. (1999). Stereotypes and terror management: Evidence that mortality salience enhances stereotypic thinking and preferences. *Journal of Personality and Social Psychology, 77,* 905–926.

Simon, H. A. (1979). *Models of thought.* New Haven, CT: Yale University Press.

Simon, H. A. (1983). *Reason in human affairs.* Stanford, CA: Stanford University Press.

Snyder, M., & Swann, W. B. (1978). Hypothesis testing processes in social interaction. *Journal of Personality and Social Psychology, 36,* 1202–1212.

Solomon, S., Greenberg, J., & Pyszczynski, T. (1991). Terror management theory of self-esteem. In C. R. Snyder & D. Forsyth (Eds.), *Handbook of social and clinical psychology: The health perspective* (pp. 21–40). New York: Pergamon Press.

Solomon, S., Greenberg, J., Schimel, J., Arndt, J., & Pyszczynski, T. (2004). Human awareness of death and the evolution of culture. In M. Schaller & C. Crandal (Eds.), *The psychological foundations of culture* (pp. 15–40). Mahwah, NJ: Erlbaum.

Sorrentino, R. M., Bobocel, D. R., Gitta, M. Z., Olson, J. M., & Hewett, E. L. (1988). Uncertainty orientation and persuasion: Individual differences in the effects of personal relevance on social judgments. *Journal of Personality and Social Psychology, 55,* 357–371.

Sorrentino, R. M., & Short, J. C. (1986). Uncertainty orientation, motivation, and cognition. In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (pp. 379–403). New York: Guilford Press.

Srull, T. K., & Wyer, R. S. (1989). Person memory and judgment. *Psychological Review, 96,* 58–83.

Stangor, C., & Ruble, D. (1989). Schema strength and expectancy confirmation. *Journal of Experimental Social Psychology, 25,* 18–35.

Swann, W. B. (1987). Identity negotiation: Where two roads meet. *Journal of Personality and Social Psychology, 53,* 1038–1051.

Tajfel, H. (1969). Cognitive aspects of prejudice. *Journal of Social Issues, 25,* 79–97.

Tannenbaum, P. H., & Gaer, E. P. (1965). Mood changes as a function of stress of protagonist and degree of identification in a film-viewing situation. *Journal of Personality and Social Psychology, 2,* 612–616.

Thompson, M. M., Naccarato, M. E., Parker, K. C. H., & Moskowitz, G. B. (2001). The personal need for structure and personal fear of invalidity measures: Historical perspectives, current applications, and future directions. In G. B. Moskowitz (Ed.), *Cognitive social psychology: The Princeton Symposium on the Legacy and Future of Social Cognition* (pp. 19–39). Mahwah, NJ: Erlbaum.

Tversky, A., & Kahnemann, D. (1974, September). Judgment under uncertainty: Heuristics and biases. *Science, 185,* 1124–1131.

van den Bos, K. (2001). Uncertainty management: The influence of uncertainty salience on reactions to perceived procedural unfairness. *Journal of Personality and Social Psychology, 80,* 931–941.

van den Bos, K., & Miedema, J. (2000). Toward understanding why fairness matters: The influence of mortality salience on reactions to procedural fairness. *Journal of Personality and Social Psychology, 79,* 355–366.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology, 54,* 1063–1070.

Webster, D. M. (1993). Motivated augmentation and reduction of the overattribution bias. *Journal of Personality and Social Psychology, 65,* 261–271.

Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology, 67,* 1049–1062.

Webster, D. M., Richter, L., & Kruglanski, A. W. (1996). On leaping to conclusions when feeling tired: Mental fatigue effects on impressional primacy. *Journal of Experimental Social Psychology, 32,* 181–195.

Wegner, D. M., & Smart, L. (1997). Deep cognitive activation: A new approach to the unconscious. *Journal of Consulting and Clinical Psychology, 65,* 984–995.

Wyer, R. S., Budesheim, T. L., & Lambert, A. J. (1990). Cognitive representations of conversations about persons. *Journal of Personality and Social Psychology, 58,* 218–238.

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