EXPLORING THE TERROR MANAGEMENT
FUNCTION OF BASIC NEED-SATISFACTION

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Abstract

Self-determination theory suggests that experiencing autonomy, competence, and relatedness are basic psychological needs. Drawing from terror management theory, the present research considers whether need-satisfaction helps protect individuals against the awareness of death. After death reminders, those with higher need-satisfaction displayed lower worldview defense (Study 1) and lower death-thought accessibility (Study 2). Death reminders also increased the desire to experience need-satisfaction (Study 3) and influenced motivation to approach, or avoid, an environment based on whether it was perceived as more, or less, need-supportive than the status quo (Study 4). A fifth study showed that death reminders increased worldview defense among those valuing extrinsic, but not intrinsic (need-satisfying), goals. Study 5 also demonstrated that this effect was eliminated when extrinsically oriented participants were given need-satisfying feedback. Together, these studies demonstrate that need-satisfaction, including need-satisfying social environments and goal orientations, is capable of serving a terror management function. Practical and theoretical implications are discussed.
Consider the fact that plants need sunlight, soil, and water. To be sure, when these needs are being satisfied any gardener will gladly boast that his or her plants are much more likely to grow and flourish as a result. But when these botanical needs are not being met most any gardener will instead sound off dire warnings of horticultural death and destruction. In this way, satisfying the prerequisite for a thriving garden simultaneously allays the gardener’s fears of the advent of a frondescent wasteland. Through an extensive line of programmatic research, self-determination theory (SDT; Deci & Ryan, 2000) has established the basic psychological needs to experience competence, autonomy, and relatedness as prerequisite for gains in personal growth and well-being. Indeed, similar to the way plants need sunlight, soil, and water, much previous SDT research shows that people need to feel a sense of autonomy, competence, and relatedness before they can psychologically flourish and grow (Ryan, 1995).

But why are these needs needed? As was the case with our gardener, it may be that autonomy, competence, and relatedness are needed, in part, because their satisfaction helps provide psychological equanimity in the face of existential threat. On this very note, some have argued that the basic prerequisite for growth and well-being is, in fact, psychological security and protection from the awareness of death (e.g., Greenberg, Pyszczynski, Solomon, 1995; Pyszczynski, Greenberg, & Goldenberg, 2003; Pyszczynski, Solomon, Greenberg, Stewart-Fouts, 1996). As of yet, however, relatively little previous research has explored how the growth-oriented and the defense-oriented approaches might intersect. Therefore, as an initial effort toward the integration of these two approaches to human motivation, the present research utilizes both SDT and terror management theory (TMT; Greenberg, et al., 1990) to explore the potential protective functions of the basic psychological need for autonomy, competence, and relatedness.
**Terror management theory**

Based largely on the work of Becker (1973), TMT proposes that psychological mechanisms emerged to help manage and alleviate the uniquely human awareness of mortality. One primary mechanism for managing death awareness is the creation and maintenance of culture. Cultural beliefs and ways of life offer the possibility that some aspect of the self could be preserved beyond death, either by leaving some mark on the world (e.g., taking part in the glory of one’s nation, important accomplishments, influencing others, etc.) or through religious promises of immortality (e.g., heaven, paradise, reincarnation, etc.). Having adopted such cultural worldviews, the degree of self-esteem then provides feedback about whether the individual is worthy enough to qualify for literal or symbolic death transcendence.

According to one of the more generative hypotheses stemming from this theoretical foundation, if the cultural worldview in fact helps to buffer death awareness, then when people are aware of death they should rely particularly heavily on their cultural beliefs. For example, people reminded of death bolster faith in the enduring viability of their culture by exaggerating social consensus of their beliefs (Pyszczynski, et al., 1996), by derogating critics of one’s worldview or followers of a rival cultural belief (Greenberg, et al., 1992; Greenberg et al., 1990), or by supporting the annihilation of those threatening one’s culture (Hayes, et al., 2008; Pyszczynski et al., 2006). Similarly, TMT posits that if self-esteem functions to buffer against death awareness, then defending or bolstering self-esteem should protect the individual against the heightened awareness of death. Thus, for example, heightened levels of self-esteem reduced the increased accessibility of death-related cognition after reminders of mortality, and thereby eliminated the associated worldview defenses (Harmon-Jones, et al., 1997). The present research,
However, aims to broaden the scope of the terror management repertoire and the understanding of how people are able to buffer deeply-rooted existential fear.

**Basic psychological needs**

SDT posits that people are endowed with a universal, inherent growth tendency that serves as a basic motivating principle and has empirically identified the necessary condition that, when satisfied, afford positive social development and personal well-being: the feeling of autonomy, competence, and relatedness (Ryan & Deci, 2000a). SDT describes the competence need as the proactive engagement of challenges and the sense of effectiveness and mastery within one’s environment. The relatedness need is characterized as the desire to experience intimacy, belongingness and feelings of security with others. And finally, the autonomy need is described as the integration and inner coherence of one’s self-organization and self-regulatory behavior. SDT explains that autonomy entails a broad self-determined system of behavior regulation in which individuals engage their social and physical surroundings according to their unique, coherent, and internalized requirements (Deci & Ryan, 2000). The theory further states that the perception of autonomy, competence, and relatedness is a *fundamental need*—prerequisite condition for optimal human functioning. When this condition is met, individuals are said to be better able to integrate and learn information, express creativity, and experience a sense of intrinsic, self-determined motivation that engenders positive effects on health, vitality, and general well-being (e.g., Deci, et al., 2001; for review see Ryan & Deci, 2000a).

Recent evidence has also suggested that need-satisfaction is not simply an experiential state capable of providing a platform for personal growth, but that it is actually a necessary and motivating condition. Specifically, need-deprivation was shown to trigger motivation aimed at reestablishing a sense of need-satisfaction, in other words, at buffering against a sense of external
control, incompetence, and social isolation/ostracism. In one study, Sheldon and Gunz (2009) found that a deficit in need-satisfaction was related to increased motivation to seek experiences that would enhance one’s need-satisfaction. A second study found that experimentally undermining competence and relatedness increased motivation to seek these types of experiences. And a third, 6-week longitudinal study twice replicated Study 1 and found that changes in individual need-dissatisfaction over time predicted changes in need-related motivation. This evidence suggests that people are compelled to experience need-satisfaction.

**Basic need-satisfaction as an existential buffering mechanism**

But why are basic needs needed? Some, like Maslow (1943, 1968), Becker (1962, 1973), Brown (1959), Zilboorg (1943), and Yalom (1980, 2008), have pointed to the role of psychological defenses in providing a foundation for greater personal growth. From this view, basic need-satisfaction may be engaging and nourishing, in part, because it serves a basic protective function. The current research considers this possibility, exploring whether the fundamental nature of basic needs can be explained, in part, as a consequence of the uniquely human ability to recognize and respond to the increased awareness of mortality. Some suggestive parallels between the needs specified by SDT and the psychological buffers explored by extant TMT research implicate this possibility.

Just as SDT has elucidated the importance of relatedness for basic need satisfaction, TMT proposes that close relationships and interpersonal connectedness offer an opportunity to transcend the fears associated with the finite boundaries of physical existence, attaining a sense of symbolic immortality by stitching some aspect of oneself into the social fabric of society (see Mikulincer, Florian, & Hirschberger, 2003). Evidence for the terror management function of interpersonal relations comes from a range of different research directions. For example,
undermining important relationships increases death thought accessibility and people boost efforts to enhance close, loving relationships when confronted with thoughts about mortality (e.g., Florian, Mikulincer, & Hirschberger, 2002). Affirming romantic commitments even reduces other worldview-defensive attitudes following mortality reminders (e.g., Florian et al., 2002). From a broader construal of social connectedness, TMT also advances the notion that individuals are able to gain a sense of symbolic immortality through communal identification with self-relevant groups. Accordingly, numerous studies have shown that a subtle reminder of death can produce stronger identification with those who share national, ethnic, religious, and cultural beliefs (e.g., Castano, Yzerbyt, Paladino, & Sacci, 2002; see Greenberg, Solomon, & Arndt, 2008 for review).

Additionally, despite the valiant efforts of cultural and technological innovation, one must still play witness to the cold fact that we humans are often engaged in situations and environments in which we remain ultimately vulnerable to outside forces. Thus, just as SDT research reveals the importance of feelings of competence and fostering autonomy, we suggest that these also provide a basic way that individuals can mitigate existential insecurity. That is, to help quell these feelings of existential vulnerability, humans developed the need to feel that they can competently influence their surrounding environment. A consilience of evidence suggests a pattern of life-long apprenticeship, where a seemingly infinite range of human activities, even idle play, helps people gain competence by learning the patterns of behavior and properties tied to our surroundings (see White, 1959). In this sense, an individual’s level of perceived competence and control provides an indication of the degree to which she feels capable of navigating our existentially hazardous world (Swann, Stein-Seroussi, & Giesler, 1992). However, the need for competence is not an isolated necessity. The individual must also feel a
sense of autonomy, relatively free from the external demands and pressures of the outside world. Indeed, DeCharms (1968, p. 270) noted that individuals need to perceive being the origin of one’s actions and attitudes, as an expression of “the desire to be master of one’s fate.” It may do the individual little good to competently effect the environment as a “pawn” to some outside pressure. Rather, SDT holds that people need to feel that their competencies are in the service of their own self-determined desires (DeCharms, 1968; Deci & Ryan, 1985). On this point, Becker (1973) argued that the existential threat of mortality is what gave need for what he termed the vital lie; he suggested that man could avoid despair “by building defenses; and these defenses allow him to feel…that he really does live and act as a willful and free individual, that he has a unique and self-fashioned identity, that he is somebody—not just a trembling accident germinated on a hothouse planet that Carlyle for all time called a ‘hall of doom’” (italics original; 1973, pp.55). Thus, it may be that individuals can buffer against the awareness of mortality through the feeling of competently effecting one’s environment according to an autonomously integrated and self-determined set of beliefs, attitudes, or goals.

Some convergent support for the role of the competence and autonomy components in the terror management buffering capacity of need-satisfaction comes from research on neighboring constructs of self-esteem and personal control, respectively. As competence and self-esteem bear at least some similarities (e.g., Crocker, Karpinski, Quinn & Chase, 2003; Eidelman & Biernat, 2007; Johnson, 1998), potential insight about competence stems from a variety of lines of research indicating that self-esteem functions as a buffering mechanism (see Pyszczynski et al., 2004 for a review). For example, situationally or dispositionally heightened self-esteem decreases death-thought accessibility and defensive reactions following reminders of death (e.g., Greenberg, Solomon, et al., 1992; Harmon-Jones, et al., 1997), and reminders of
death elicit increased efforts to protect or accrue self-esteem (e.g., Mikulincer & Florian, 2002; Taubman—Ben-Ari, Florian, & Mikulincer, 1999). Further, autonomy and personal control are at least somewhat related (e.g., Greenberger & Strasser, 1986; Thompson & Prottas, 2005), which may provide some suggestions about the terror management function of autonomy. For instance, those with adequate faith in their worldviews reacted to mortality reminders by increasing their desire for control (Arndt & Solomon, 2003), and imagining taking control over death (i.e., committing suicide) reduced typical worldview defenses (Frische, Jonas, & Fankhanel, 2008).

It is important to note, however, that despite this convergent support, self-esteem and personal control are not the same as competence and autonomy (for a full discussion of the differences, see Deci & Ryan, 1985; Ryan & Brown, 2003). In short, self-determined, competent individuals may often prefer not to exert control over an outcome, and self-esteem is often derived by monitoring external indicators of worth rather than simply becoming effective within one’s environment (Arndt & Schimel, 2003). It therefore remains to be examined whether basic need-satisfaction can provide a means of managing the awareness of mortality.

The present research

Overall, the abovementioned research provides a foundation for hypothesizing that need-satisfaction functions as a viable psychological buffer against death-awareness. Yet no research has directly addressed this hypothesis. Thus, the present research has been designed to directly assess the overarching hypothesis that basic need-satisfaction, as conceptualized by SDT, functions as a terror management buffer. In an effort to triangulate on this general hypothesis, three converging lines of research were executed.
First, it was expected that heightened need-satisfaction would reduce defensive reactions to death reminders and protect against a heightened awareness of death. Much TMT research has found that reminders of death typically prompt efforts to defend one’s cultural worldview either by expressing greater faith in the veracity of one’s way of life or by derogating its critics, such as when Americans evaluate an essayist critical of the USA more negatively following death reminders (see Greenberg et al., 2008 for a review). Additionally, a growing body of research shows that heightened death-thought accessibility is a crucial cognitive ingredient in terror management processes (Hayes, Schimel, Arndt, & Faucher, 2010, for in-depth review). Thus, if basic need-satisfaction indeed serves the terror management function of effectively buffering against thoughts of death, then heightened levels of need-satisfaction should reduce motivation to engage other terror management buffers (e.g., cultural worldview defense; Study 1), as well as the accessibility of death-related cognition (Study 2).

A second line of inquiry built directly from the TMT notion that people will rely more heavily on buffering mechanisms when reminded of death. Specifically, if need-satisfaction offers existential protection, then reminders of death should increase desire to experience it, as well as motivate people to approach environments perceived as need-satisfying and avoid environments perceived as need-undermining. As an illustrative example, given that self-esteem serves a fundamental buffering function, death reminders intensify efforts to enhance one’s self-esteem (e.g., Mikulincer & Florian, 2002; Taubman—Ben-Ari, et al., 1999). Thus, Study 3 explored whether heightened awareness of death would enhance motivation to experience a sense of need-satisfaction. Similarly, Study 4 expanded this approach by investigating whether death reminders would influence support or opposition for environmental changes according to whether the individual perceived the changes as more or less autonomy-supportive (i.e., need-
satisfying) than their current environment.

A third approach sought to explore the role of need-satisfaction in goal-oriented terror management processes. Previous work has shown that those placing greater value on intrinsic, rather than extrinsic, goals tend not to display the typical defensive reactions following death reminders. Elsewhere, however, research has consistently shown that placing greater importance on intrinsic (vs. extrinsic) goals facilitates need-satisfaction, but placing greater importance on extrinsic goals is associated with reduced need-satisfaction (Niemiec, Ryan, & Deci, 2009; Sebire, Standage, & Vansteenkiste, 2009; Vansteenkiste, et al., 2007). Accordingly, Study 5 expected: a) that MS-induced worldview defenses would be reduced among those placing relatively greater value on intrinsic, but not extrinsic, goal strivings; and b) that the increased worldview defense observed among those oriented toward extrinsic goals would be, in fact, due to an insufficient level of need-satisfaction.

In exploring the interface between basic needs and terror management processes, we followed previous research (e.g., Deci, et al., 2001; Gagne, 2003) by focusing our conceptual understanding on global need-satisfaction instead of considering each component of need-satisfaction separately. Considerable research shows that all three contribute to optimal functioning and/or well-being, regardless of whether they are observed using diverse methodologies (e.g., standard longitudinal, Sheldon & Elliot, 1999; daily diary, Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; or factorial experimental, Sheldon & Filak, 2008), and across a wide variety of samples (e.g., workers, Deci, et al., 2001; students, Sheldon, Abad, & Omoile, 2009; athletes, Adie, Duda, & Ntoumanis, 2008). Accordingly, SDT holds that, “individuals cannot thrive without all of them, any more than people can thrive with water but not food” (Ryan & Deci, 2000b, p. 75). This previous work provides reasonable grounds for treating need-
satisfaction as a global construct, as will be done throughout the rest of the present paper.

Study 1

The first study assessed whether heightened need-satisfaction would reduce MS-induced worldview defense. Previous research has shown that death reminders can instigate hostile worldview defenses such as support for political and military aggression and martyrdom attacks (Hirschberger & Ein-Dor, 2006; Pyszczynski, et al., 2006), and therefore, Study 1 expected that death reminders would increase support for militaristic worldview defense. Critically, however, in Study 1 it was also expected that a heightened sense of need-satisfaction would reduce this reaction. And given that previous research has found attachment security to be related to both need-satisfaction (LaGuardia, Ryan, Couchman, & Deci, 2000) and the attenuation of terror management defenses (see Mikulincer, et al. 2003), Study 1 also tested the possibility that attachment security might better account for any buffering effects associated with need-satisfaction.

Method

Participants

A total of 41 (12 male) introductory psychology students were recruited via an online sign-up system (age $M = 18.24; SD = .73$). Participants in all present studies received course credit or extra credit in exchange for their participation.

Materials and procedure

Participants first completed a set of pre-measures assessing basic need satisfaction and attachment style. Then, a few weeks later, they were scheduled for a lab session where they were greeted at the laboratory by an experimenter who introduced the study as an investigation of
personality styles. During this lab session, they completed the MS manipulation and worldview defense measure.

Basic need satisfaction. During a mass screening survey conducted a few weeks prior to the lab session, participants used a 9-point likert-type scale (1 = Strongly disagree, 9 = Strongly agree) to complete an 18-item measure ($\alpha = .66$) of basic need-satisfaction, designed and validated by Sheldon and Gunz (2009). Example items were “I was free to do things my own way,” “I did well, even at the hard things,” and “I felt close and connected with other people who are important to me.”

Attachment. To test whether any need-satisfaction effects may be due to differences in attachment security, participants completed items from the Experiences in Close Relationships Scale (ECR; Brennan, et al., 1998). The original ECR is a 36-item measure based on a likert-type scale assessing attachment anxiety (e.g., “I worry about being abandoned”) and avoidance (e.g., “I am somewhat uncomfortable being close to others.”). Because of space limitations in the pre-measure survey, five representative items were selected from each of the anxiety ($\alpha = .88$) and the avoidance ($\alpha = .80$) subscales, chosen according to the highest item-total correlations reported by Brennan and colleagues.

Mortality salience. During the lab session, participants completed a packet containing filler questionnaires and the MS manipulation. Following previous research (Greenberg et al., 1990), participants were randomly assigned to complete one of two versions of a “projective life attitudes assessment.” In the MS condition, participants responded to the prompts, “Please briefly describe the emotions that the thought of your own death arouses in you,” and “Jot down, as specifically as you can, what you think happens to you as you physically die and once you are physically dead.” The control condition used the same personal uncertainty manipulation
developed by van den Bos (2001), “Please briefly describe the emotions that the thought of your being uncertain arouses in you,” and “Jot down, as specifically as you can, what you think physically will happen to you as you feel uncertain.”

*Delay and distraction.* Participants next completed a 20-item positive ($\alpha = .90$) and negative ($\alpha = .77$) affect schedule (PANAS; Watson, Clark, & Tellegen, 1988) and a word search distraction task. This distraction and delay allows thoughts of death to move out of conscious awareness and instigate more symbolic defenses (see Pyszczynski, et al., 1999).

*Worldview defense.* Worldview defense was measured by participant’s support for the militaristic defense of the USA (Grussendorf, McAlister, Sandstrom, Udd, & Morrison, 2002). This scale employed 10 items ($\alpha = .90$) measured on an 11-point Likert-type scale (1 = *strongly disagree*, 11 = *strongly agree*). Participants were asked to indicate whether they might accept the use of armed forces in ten separate situations, such as, “when we might be attacked by another nation if we don’t attack them first,” and “when foreign conflicts endanger our economic security.” Previous studies have used this measure to track MS induced worldview defense (Pyszczynski et al., 2009).

In this and all subsequent studies, participants concluded the study by completing a demographic questionnaire asking about age, sex, and education level.

**Results**

Multiple regression methods prescribed by Aiken and West (1991) were followed to examine the 2 (MS vs. personal uncertainty) x Need-satisfaction interaction on worldview defense. The continuous measures of need-satisfaction and attachment style were centered about the mean, and the interaction term was computed by multiplying the centered variable with the
dummy-coded MS manipulation (0 = uncertainty, 1 = death). In each of the following analyses, the main effects were entered first, with the interaction term being entered second.

Worldview Defense. Initial analysis found a main effect such that need-satisfaction was negatively related to support for militaristic defenses, $\beta = -.37, t(40)= -2.36, d = .75, p = .02$, as well as a marginal main effect of MS, such that MS increased support for militaristic defense, $\beta = .26, t(40)= 1.73, d = .55, p = .09$. However, the predicted MS x Need-satisfaction interaction also emerged, $F(1, 37) = 5.94, \Delta R^2 = .12, p = .02$. Simple slopes analyses revealed that, when reminded of mortality, greater need-satisfaction was inversely associated with militaristic defense, $\beta = -.91, t(17)= 3.41, d = 1.65, p = .002$; yet, when reminded of personal uncertainty, need-satisfaction was unrelated to militaristic defense, $\beta = -.13, t(22)= -.75, d = .32, p = .46$ (see Figure 1). Thus, heightened need-satisfaction was associated with reduced MS-induced worldview defense.

Affect & Attachment. No main effect of MS or interaction emerged on negative or positive affect, $|F|s < 1.10, \Delta R^2 < .053, ps > .30$. A single main effect of need-satisfaction emerged on negative affect, $\beta = -.51, t(41) = 3.49, d = 1.09, p < .001$. Need-satisfaction was also negatively associated with anxious attachment ($\beta = -.29, t[40] = -1.79, d = .57, p = .08$), and not related to avoidant attachment ($t[40] < 1$). Further, the MS x Need-satisfaction interaction on militaristic defense remained significant when controlling for attachment and affect.

Discussion

Study 1 provided initial evidence for the hypothesis that need-satisfaction functions as a terror management buffer by showing that heightened need-satisfaction was associated with reduced MS-induced worldview defense. Whereas MS prompted increased worldview defense for those with a lower perception of overall need-satisfaction, this effect was reduced among
those reporting greater need-satisfaction. Study 1 also ruled out affect, attachment security, and personal uncertainty as alternative accounts of the hypothesized processes.

**Study 2**

A growing body of research has begun to more closely examine the role of death-related cognition in terror management processes (see Hayes, et al., 2010). Initial work in this area built on Wegner’s (1994; Wegner & Erber, 1992) research on ironic processing, revealing a dual process sequence of terror management efforts. Specifically, when individuals become consciously aware of death, they first initiate efforts to remove those thoughts from consciousness, and after doing so death-related cognition becomes hyper-accessible (e.g., Arndt et al., 1997; Greenberg, Pyszczynski, Solomon, Simon, and Breus, 1994). Much research now points to the pivotal role that death-related cognitions play in triggering terror management processes, such as worldview defense and self-esteem striving. For example, studies have shown that a) the same conditions leading to increased death thought accessibility also elicit greater worldview defense (e.g., Simon et al., 1997), b) that increased death-thought accessibility mediates the relationship between death-related environmental stimuli and terror management defenses (Fransen, et al., 2008; Vail et al., 2010), and c) engaging a defensive buffer or worldview defense following MS alleviates the accessibility of death-related thoughts (Arndt et al., 1997; Greenberg, Arndt, Schimel, Pyszczynski, & Solomon, 2001). Together, this work suggests that the increased accessibility of death-related cognition is an important ingredient in the initiation of terror management processes.

In the context of Study 2, heightened need-satisfaction was expected to provide a buffer against the heightened accessibility of death-related thoughts. According to TMT, if a certain construct functions to protect against death-thought accessibility, then heightened levels of that
construct should prevent the increased accessibility of death-related cognition after death reminders. For instance, when reminded of death, those who affirmed a valued aspect of one’s cultural worldview or had heightened self-esteem retained low levels of death-thought accessibility, whereas those with reduced levels of these buffers displayed heightened DTA (Harmon-Jones, et al., 1997; Schmeichel & Martens, 2005). Therefore, Study 2 explored whether heightened need-satisfaction would buffer against increased death-thought accessibility after a reminder of death.

Method

Participants

Sixty-six (35 male) introductory psychology students were recruited via an online sign-up system (age $M = 18.91; SD = .50$).

Materials and procedure

Upon signing up for the study online, participants completed online measure of basic need satisfaction, desire for control, self-esteem, and attachment style. Then, one week later, they attended a lab session with similar procedures as in Study 1.

Basic need satisfaction. Participants completed the same 18-item measure ($\alpha = .66$) of basic need-satisfaction as they did in Study 1.

Study 2 also expanded the effort to explore alternative accounts of any observed buffering effects associated with need-satisfaction. Specifically, self-esteem and attachment security have been associated with both need-satisfaction (Deci, et al., 2001; LaGuardia, Ryan, Couchman, & Deci, 2000) and the attenuation of death thought-accessibility or other terror management defenses (Pyszczynski, et al., 2004; Mikulincer, et al. 2003), and the desire for control might provide an alternative account of the need for autonomy (Arndt & Solomon, 2003).
Attachment. Whereas Study 1 used a shortened version of the ECR, Study 2 administered the full 36-item ECR scale (anxiety \( \alpha = .88 \), avoidance \( \alpha = .91 \); Brennan, et al., 1998), utilizing a 6-point likert-type scale (1 = Disagree, 6 = Agree).

Self-esteem. The Rosenberg Self-Esteem scale (\( \alpha = .91 \); Rosenberg, 1965) was used to capture a global sense of self-esteem. This measure contained 10-items based on a 6-point likert-type scale (1 = Disagree, 6 = Agree) including statements such as, “On the whole, I am satisfied with myself.”

Desire for control. Participants also completed the 20-item Desire for Control scale (\( \alpha = .74 \); Burger & Cooper, 1979) using at 10-point likert-type scale (1 = Disagree, 10 = Agree). Some example items are: “I prefer a job where I have a lot of control over what I do and when I do it,” and “I enjoy making my own decisions.”

Mortality salience. During the lab session, participants completed a packet containing the same MS manipulation as in Study 1, but instead of feelings of personal uncertainty, the control condition prompted participants to contemplate failing an exam.

Delay and distraction. Participants then completed an expanded version of the PANAS (PANAS-X; Watson & Clark, 1992) and a word search distraction task. The PANAS-X contains 60 affect items measuring 13 subscales: positive and negative mood, fear, hostility, guilt, sadness, happiness, self-assuredness, attentiveness, serenity, surprise, fatigue, and shyness (all \( \alpha ’s > .69 \))

Death thought accessibility. As in previous research (e.g., Greenberg, et al., 1994; Schimel et al., 2007), the accessibility of death-related cognition was assessed using a word-stem completion task. This task presented 25 incomplete word-stems, of which 8 could be completed
with either a neutral or a death-related word (*killed, murder, skull, corpse, dead, coffin, grave, buried*). For example, GRA__ could be completed as GRANT or GRAVE.

Results

As in Study 1, methods prescribed by Aiken and West (1991) were followed to examine the 2 (MS vs. failed exam) x Need-satisfaction interaction on death-thought accessibility.

*Death thought accessibility.* Initial analysis revealed no main effects, but did find the expected MS x Need-satisfaction interaction, $F(1, 62) = 6.41, \Delta R^2 = .09, p = .01$. Simple slopes analyses revealed that when reminded of failing an exam, need-satisfaction was unrelated to death-thought accessibility, $\beta = .23, t(28) = 1.29, d = .49, p = .20$; yet, when reminded of mortality, greater need-satisfaction was inversely associated with death-thought accessibility, $\beta = -.38, t(36) = -2.34, d = .78, p = .02$. Among those with low (-1 SD) need-satisfaction, MS (vs. failed exam) increased DTA ($\beta = .46, t[65] = 2.70, d = .67, p < .01$); MS did not influence death-thought accessibility among those with high (+1 SD) need-satisfaction, $|t|(65) < .86$ (see Figure 2).

*Affect.* No main effects of MS or interactions emerged on any of the affect subscales (all $|F|s < .77$), though several main effects of need-satisfaction emerged. Need-satisfaction was inversely related to negative mood, fear, hostility, guilt, sadness, and fatigue (all $\beta$s > .26, $t[65]$s $> 2.08, ds = .52, ps < .04$) and positively related to happiness ($\beta = .27, t[65] = 2.26, d = .56, p < .03$). However, the MS x Need-satisfaction interaction remained significant when these subscales were included as covariates in the abovementioned analysis on death-thought accessibility.

*Alternatives.* The specificity of need-satisfaction as a unique buffer was tested against attachment style, self-esteem, and desire for control. Need-satisfaction was inversely related to anxious attachment ($\beta = -.30, t[65] = -2.44, d = .61, p < .02$), and non-significantly inversely
related to avoidant attachment ($\beta = -.19, t[65] = -1.53, d = .38, p = .13$), suggesting that those with greater need-satisfaction tend to be more securely attached. Additionally, need-satisfaction was positively related to self-esteem ($\beta = .32, t[65] = 2.64, d = .65, p = .01$) and desire for control ($\beta = .32, t[65] = 2.73, d = .68, p < .01$). However, the MS x Need-satisfaction interaction on death-thought accessibility remained significant even when controlling for these alternatives, both separately and simultaneously.

Discussion

Study 2 provides support for the hypothesis that heightened need-satisfaction buffers against heightened accessibility of death-related cognition. Although death reminders led to an increase in death-thought accessibility among those with reduced levels of need-satisfaction, it was not increased among those with greater levels of need-satisfaction. These results help shed light on the effects observed in Study 1, suggesting that the reduction in MS-induced worldview defense among those with greater need-satisfaction was likely due to a decreased accessibility of death-related cognition.¹

In addition, need-satisfaction was again inversely associated with negative affects, however, these associations could not account for the observed effects. But more importantly, Study 2 allowed an opportunity to test whether the effect observed using SDT’s conceptualization of basic needs could be better explained by self-esteem, attachment style, and desire for control; whether controlling for these alternatives separately or simultaneously, no alternative could account for the buffering effect associated with need-satisfaction.

Study 3

According to TMT, if a resource functions to buffer against the accessibility of death-related cognition, then reminders of death should increase motivation to enhance that particular
resource. In this vein, research has consistently demonstrated that death reminders motivate efforts to engage buffers. For example, death reminders have frequently been shown to intensify efforts to bolster or enhance self-esteem (e.g., Mikulincer & Florian, 2002; Taubman—Ben-Ari, et al., 1999) and to live up to such domain-specific standards of value as appearance and body-esteem (Goldenberg, McCoy, Pyszczynski, Greenberg, & Solomon, 2000), tolerance (Greenberg, et al., 1992), environmentalism (Vess & Arndt, 2008), and helping (Gailliot, et al., 2008). Thus, if need-satisfaction indeed buffers against thoughts of death, then individuals might boost their motivation to experience need-satisfaction when reminded of death.

Method

Participants

Thirty-four (9 male) introductory psychology students were recruited via an online sign-up system (age $M = 18.26; SD = .57$).

Materials and procedure

All participants signed up for and attended a lab session similar to Studies 1 and 2.

Mortality salience. Participants then completed the same MS manipulation as in Studies 1 and 2, except the control condition asked participants to contemplate intense pain.

Delay and distraction. Participants again completed the PANAS-X (all $\alpha$’s > .62; Watson & Clark, 1992) and a word search distraction task.

Motivation to satisfy needs. A 27-item measure of motivation to experience autonomy, competence, and relatedness was adapted from a shorter 9-item measure developed by Sheldon and Gunz (2010). All items employed a 10-point likert-type scale ($1 = strongly disagree, 10 = strongly agree$). Examples of items that assessed motivation to experience autonomy ($\alpha = .65$) are, “I want to be free to do things my own way,” and, “I want my choices to express my ‘true
self.” Examples of items that assessed motivation to experience competence ($\alpha = .74$) are, “I want to take on and master hard challenges,” and, “I want to do something well, that makes me feel competent.” Examples of items that assessed motivation for relatedness ($\alpha = .64$) are, “I would like to meet more people I can really talk to,” and, “I want to feel close and connected with other people who are important to me.”

**Results & Discussion**

*Motivation to satisfy needs.* A 2 (MS vs. pain) x 3 (need type: autonomy vs. competence vs. relatedness) mixed ANOVA revealed the predicted main effect of MS; compared to the control condition, MS increased motivation to experience overall need-satisfaction $F(1, 32) = 6.00, \eta^2 = .16, p = .02$ (see *Figure 3*). Incidentally, a main effect of need-type also emerged ($F[2, 64] = 7.70, \eta^2 = .25, p < .001$). Pairwise comparisons showed that motivation to satisfy the autonomy need was lower than the motivation for competence or for relatedness (both $|t|$’s $> 2.91, d_s = 1.01, ps < .01$), and that the motivation for competence and relatedness did not differ ($t[33] = 1.21, d = .42, p = .24$). However, no interaction was found, $F < 1$, suggesting that MS did not differentially influence each need-related motivation, but rather increased motivation to attain satisfaction of all three needs together. Because several items of the PANAS-X appear on multiple subscales, the positive and negative mood were assessed with ANOVAs while a multivariate analysis of variance (MANOVA) was conducted on each of the 11 subscales; none of these were influenced by MS, all $Fs < 1.93, ps > .18$. In sum, Study 3 provided evidence supporting the hypothesis that death reminders lead to an increased desire to experience a sense of need-satisfaction.

**Study 4**

Based on the implication of Study 3, that people increase desire for need-satisfaction
when reminded of death, people reminded of death should also become motivated to actively approach environments perceived as need-satisfying and avoid those perceived as need-undermining. Although countless environments might directly influence one’s sense of need-satisfaction, SDT holds that, irrespective of the specific domain (e.g., home, work, government, etc.), _autonomy-supportive_ contexts are more need-satisfying than others. Specifically, autonomy-supportive contexts a) provide more choice and options, b) understanding and explanations for low levels of choice, and c) perspective-taking and caring consideration about the individual’s point of view. But despite the name “autonomy”-supportive, research has overwhelmingly shown that such environments actually facilitate need-satisfaction on the whole whereas environments perceived as autonomy-undermining, or controlling, are associated with a reduction in overall need-satisfaction (Adie, Duda, & Ntoumanis, 2008; Alvarez, Balaguer, Castillo, Duda, & Howard, 2009; Baard, Deci, & Ryan, 2004; Filak & Sheldon, 2003; Sheldon, Abad, & Omoile, 2009; Sheldon & Krieger, 2007; Smith, Ntoumanis, & Duda, 2007). Thus, individuals motivated to experience need-satisfaction might take steps to help environments judged as autonomy-supportive take form, and similarly take steps to thwart the formation of environments judged less autonomy-supportive (i.e., more controlling).

One illustrative context in which these environmental judgments took center stage was the 2009 national debate on healthcare reform. Especially within the domain of personal health, it is often incredibly difficult to get away from the ultimate fragility of life and that no matter what type of care we receive, we are all destined for the same chilling diagnosis: dead. Notably, one additional theme underlying the 2009 healthcare debate was concern about whether the reforms would enhance or restrict autonomy-support compared to the existing system (Klein, 2010). Indeed, some touted the reforms as a sort of autonomy-supportive “liberation” from the
insurance industry’s control over individual healthcare options, offering an opportunity for choice and open access to care. In contrast, others viewed it as less autonomy-supportive than the current system, as a controlling freedom grab that would impose prohibitive requirements on individuals as well as small and big businesses, ultimately translating into restricted opportunity and choice (Condon, 2009; Given, 2009).

Study 4, which was conducted during the Fall 2009 Congressional healthcare debate, was therefore designed to assess whether the existential motivation to experience need-satisfaction would influence support for the proposed 2009 Congressional healthcare reforms. Specifically, it was expected that death reminders would increase support for the reforms among individuals who felt the reforms would be more autonomy-supportive than the current system, but reduce support among people who felt the reforms would be less autonomy-supportive than the current system.

Additionally, whereas Studies 1 & 2 ruled out the role of attachment style, self-esteem, and desire for control as alternative accounts of why need-satisfaction might have buffered worldview defense or death-thought accessibility, Study 4 sought to further test whether these could provide an alternative account for any MS-induced support or opposition to the reforms. It is also possible that the predicted effects could be due to an underlying association between political orientation and perceptions of healthcare reform as more or less autonomy-supportive. If this were the case, the predicted effects would simply represent an affirmation of one’s pre-existing political worldview after mortality reminders; therefore we also assessed political orientation to test this alternative account.

Method

Participants
Seventy-two (27 male) introductory psychology students were recruited via an online sign-up system (age $M = 18.76; SD = .96$).

**Materials and procedure**

As in Study 2, participants completed a set of online measures, and then one week later they attended a lab session where they completed the experimental manipulation and dependent measure.

*Healthcare climate questionnaire.* The online measures included a 6-item Healthcare Climate Questionnaire (HCQ), adapted to assess perceptions of autonomy support in the healthcare domain. The original measure (Williams, Gagne, Ryan, & Deci, 2002) was designed to be adapted to specific targets (e.g., physicians, providers, etc.); in this case, it was adapted to assess whether the existing private healthcare system or the proposed public option reform was viewed as more autonomy supportive. Each item presented a quality of an autonomy supportive healthcare system and asked participants to use a 6-point likert-type scale to indicate which system they felt would best satisfy that quality (1 = *Current healthcare system definitely*, 2 = *Current healthcare system most likely*, 3 = *Current healthcare system probably*, 4 = *Healthcare reforms/public option probably*, 5 = *Healthcare reforms/public option most likely*, 6 = *Healthcare reforms/public option definitely*). The six items ($\alpha = .90$) are as follows: “I feel that the ____ would provide me with more choices and options about healthcare,” “I feel that those advancing ____ understand how I see things with regard to healthcare,” “The ____ conveys confidence in my ability to make changes regarding my health,” “The ____ would be responsive to how I would like to do things regarding my health,” “The ____ would encourage me to take control of my health,” “The ____ would do a better job of taking my healthcare concerns into account before implementing care.”
Using the same measures included in Study 2, the online measures also assessed potential alternatives: self-esteem, attachment, and desire for control.

*MS, delay, and distraction.* As in Study 2, during the lab session, the MS manipulation (vs. failed exam) was followed by the PANAS-X (all α’s > .64) and the wordsearch.

*Support for healthcare reforms.* The dependent measure was composed of nine items assessing level of support for the 2009 proposed healthcare reforms. All items used a 10-point likert-type scale (1 = Not at all, 10 = Definitely). Items measured: a) support for and b) agreement with the proposed healthcare reforms (e.g., public option); whether the public option was viewed as c) helpful, or as d) harmful; e) whether it would improve the health of oneself and others; whether it f) should or g) should not be passed; and whether the participant would be willing to contact their state representative to urge them to h) oppose, or to i) support, the legislation. After reverse scoring the appropriate items, a composite score (α = .93) was computed such that higher scores represented support for the reforms and lower scores represented opposition.

*Political orientation.* A single-item measure of political orientation used a 10-item Likert-type scale (1 = Liberal, 10 = Conservative).

**Results**

As in Studies 1 and 2, methods prescribed by Aiken and West (1991) were followed to examine the effects of MS and perceptions of autonomy-support on support or opposition to healthcare reform.

*Support for healthcare reforms.* Initial analysis revealed a main effect such that HCQ scores were positively associated with support for the reforms (β = .69, t[71] = 7.63, d = 1.81, p < .001); that is, perceiving healthcare reforms to be autonomy-supportive was associated with
greater support for the reforms and vice versa. However, the expected interaction also emerged,
\[ F(1, 68) = 10.99, \Delta R^2 = .07, p = .001. \] Among those perceiving the reforms to be relatively more (+1 SD) autonomy-supportive, MS (vs. failed exam) increased support for the reforms (\( \beta = .26, t[71] = 2.17, d = .52, p = .03 \)); among those who perceived the reforms to be relatively less (-1 SD) autonomy-supportive than the existing healthcare system, MS decreased support for the reforms (\( \beta = -.31, t[71] = -2.56, d = .61, p = .01 \)). Simple slopes analyses revealed that when reminded of failing an exam, HCQ ratings of autonomy-support were positively associated with support for reform, \( \beta = .35, t(35) = 2.68, d = .91, p < .01 \); however, this association was much stronger when reminded of mortality, \( \beta = .92, t(35) = 8.39, d = 2.84, p < .001 \) (see Figure 4).

**Affect.** No main effects emerged on any of the affect subscales (all \(|F|s < 1.67, ps > .20\)). However, several marginally significant interactions emerged on negative mood, hostility, and serenity\(^2\), all \( F(1, 67)s > 2.84, \Delta R^2 s > .04, ps < .10 \). Nevertheless, the MS x HCQ interaction remained significant when controlling for these three affect subscales.

**Alternatives.** The specificity of autonomy-support ratings was first tested against attachment style, self-esteem, and desire for control. HCQ ratings were positively related to avoidant attachment (\( \beta = .24, t[71] = 2.05, d = .49, p = .04 \)), and not related to anxious attachment (\( \beta = .12, t[71] = 1.01, d = .24, p = .32 \)), self-esteem (\(|t|[65] < 1\)), or desire for control (\( \beta = -.14, t[71] = -1.16, d = .28, p < .25 \)). Accordingly, the MS x HCQ interaction on support for reform remained significant while including these alternatives as covariates, either separately or simultaneously. Further, political orientation was inversely associated with HCQ ratings (\( \beta = -.41, t[71] = -3.81, d = .90, p < .001 \)), and support for the reforms (\( \beta = -.55, t[71] = -5.52, d = 1.31, p < .001 \)), such that liberals tended to perceive reforms as autonomy-supportive and support it, whereas conservatives tended to perceive reform as less autonomy-supportive than the extant
system and oppose it. However, there was no MS x Political orientation interaction, \(F(1, 68) = 1.76, \Delta R^2 = .02, p = .19\), and controlling for political orientation as a covariate did not alter the MS x Autonomy-support interaction on support for healthcare reform.

Discussion

Study 4 provided evidence supporting the hypothesis that death reminders motivate people to approach need-satisfying (i.e., autonomy-supportive) environments and avoid need-undermining environments. Specifically, Study 4 showed that death reminders increased support for healthcare reforms among those who felt the reforms would be more autonomy-supportive than the existing system, and decreased support among those who felt the reforms would be less autonomy-supportive than the existing system. These results also supply convergent support for Study 3, especially when considering the abundance of previous research demonstrating that perceptions of higher or lower autonomy-support are directly related to higher or lower need-satisfaction, respectively (Adie, et al., 2008; Alvarez, et al., 2009; Baard, et al., 2004; Filak & Sheldon, 2003; Sheldon, et al., 2009; Sheldon & Krieger, 2007; Smith, et al., 2007). That is, Study 4 builds on Study 3 by showing that the existential motivation to experience need-satisfaction translated into attitudes about shaping one’s environment according to needs-related environmental judgments.

Study 5

In addition to deriving need-satisfaction from autonomy-supportive contexts, people may also experience need-satisfaction by orienting themselves toward certain life goals. However, it appears that goal content matters. Although an individual might value, and be motivated to accomplish, any number of different goals, some types of goals do a better job of facilitating need-satisfaction than others. For instance, valuing goals oriented toward building personal
growth, enhancing positive relationships, and building community are thought to be inherently need-satisfying because of their clear and direct alignment with intrinsic motives for growth and competence, and positive relatedness with others. In contrast, goals oriented toward things like wealth, fame, and physical attractiveness tend to be both ephemeral and shallow because they are externally imposed and often quite unsustainable, and therefore typically don’t satisfy (and can often undermine) one’s sense of need-satisfaction. Initial work on goal content revealed that placing importance on intrinsic, relative to extrinsic, goals was associated with greater well-being (e.g., Kasser & Ryan, 1993, 1996; Ryan, Chirkov, Little, Sheldon, Timoshima, & Deci, 1999; Schmuck, Kasser, & Ryan, 2000). More recently, a growing number of studies have demonstrated that placing greater relative importance of intrinsic goals is in fact associated with greater levels of need-satisfaction whereas placing importance on extrinsic goals is associated with reduced need-satisfaction (see, e.g., Niemiec, Ryan, & Deci, 2009; Sebire, Standage, & Vansteenkiste, 2009; Vansteenkiste, et al., 2007).

Study 5 therefore expected that those placing relatively greater value on intrinsic, but not extrinsic, goals would be buffered against death reminders as a result of their heightened sense of need satisfaction. That is, death reminders were expected to elicit heightened worldview defense among those placing relatively greater importance on extrinsic, but not intrinsic, goals. Converging evidence from several domains supports this hypothesis. For instance, those with greater intrinsic goal orientations tend not to display the typical MS-induced worldview defenses, such as self-serving greed (Cozzolino, Sheldon, Schachtman, & Meyers, 2009; Cozzolino, Staples, Meyers, & Samboceti, 2004), and older adults who reported greater attainment of intrinsic goals tended to have reduced death anxiety (Van Hiel & Vansteenkiste, 2009). Critically, Study 5 also hypothesized that if the expected MS-induced worldview defense
among those valuing extrinsic goals was the result of extrinsically oriented individuals’ lack of need-satisfaction, then temporarily enhancing their sense of need-satisfaction should eliminate their MS-induced worldview defense.

Method

Participants

A total of 176 (74 male) introductory psychology students were recruited via an online sign-up system (age $M = 18.87; SD = 2.29$).

Procedure

After being welcomed to the lab by the experimenter, participants were informed that the scheduled study was relatively short in length. Because of this, they were asked to participate in a second study as well, ostensibly being conducted by other researchers from another laboratory, in order to make full use of the research hour. These studies were actually one single study, but to give the impression that the second study was in fact unrelated to the first, Times New Roman font was used on all materials in the first packet whereas Letter Gothic Standard font was used on all materials in the second, and the experimenter casually recited the instructions to the first study as if they were instructions to a study in which she was closely involved whereas she read off the instructions to the second study from a printout as if they had been transmitted from researchers at another lab.

The experimenter briefly introduced the “first” study as an effort to validate some new personality assessments, and escorted participants into a single-occupant cubicle where they were given a packet of materials containing several filler measures to bolster the cover story, a measure of intrinsic and extrinsic goal importance, and the MS manipulation. When the participant had finished, the experimenter thanked them for participating in the first study and
then introduced the supposed second study. For the second study, participants were briefly informed that this study was part of an ongoing effort to correlate certain personality characteristics with social and political attitudes. The instructions further explained that, earlier in the semester, the participant had completed the first “phase” of this ongoing study as part of a large set of online pre-measures (which most introductory psychology students complete as part of their course requirement) and that this information was used to compile a personality profile that would be used in this second phase to study other components of the person, such as social and political attitudes. In fact, these profiles were not based on any prior assessment; participants were actually randomly assigned to receive one of four profiles designed to bolster the participant’s sense of autonomy, competence, relatedness, or none of these (a neutral profile). Participants were handed an envelope containing their personality profile and materials packet. They were instructed to read their profile first, and then complete the remaining materials, which contained a manipulation check, the dependent measure, and demographic questionnaire. Upon completion, participants were thoroughly debriefed and thanked.

Materials

**Goals.** To measure the relative importance of intrinsic or extrinsic goals, participants completed the 30-item *importance* subscale of the aspirations index, developed by Kasser and Ryan (1996). This measure used 5 items each to assess the importance of three extrinsic goals (wealth, fame, and image; $\alpha = .92$) and three intrinsic goals (personal growth, positive relationships, and contributing to one’s community; $\alpha = .87$). The sentence stem, “How important is this to you…” was presented at the top of the page, and the importance of each item was measured using a 10-point likert-type scale (1 = *Not at all*, 10 = *Very*). Following methods similar to those suggested by Kasser and Ryan (1996), the relative importance of each type of
goal was computed by subtracting the mean importance of extrinsic goals from the mean importance of intrinsic goals; higher scores indicated the relative importance of intrinsic goals, lower scores indicated the relative importance of extrinsic goals.

**MS and delay.** After the MS (vs. personal uncertainty) manipulation, a sufficient distraction was provided during the 5-7 minutes spent introducing the supposed second study and reading the personality profile.

**Need manipulation.** Participants were randomly assigned to receive one of four personality profiles designed to enhance feelings of autonomy, competence, relatedness, or none of these (a neutral condition). Each profile was printed on a single sheet of paper titled, “PERSONALITY PROFILE” and was headed by the participant’s name as well as several lines of information designed to enhance the legitimacy of the document (e.g., time and place of initial evaluation, methods used, reason for referral, and release approval number). Under a heading titled “Evaluation:” a brief initial paragraph provided a neutral, vague description of some popular aspects of personality intended to induce the illusion of personal applicability by capitalizing on the Barnum effect. A subsequent paragraph varied according to condition and was adapted from methods developed by Sheldon and Filak (2008). Profile materials are presented in Appendix A. Each personality profile was folded and inserted into an envelope such that the participant’s name was visible just above the crease, and were prepared by another assistant so as to keep the experimenter blind to feedback condition.

**Manipulation checks.** To ensure that the need manipulation temporarily affected perceived need-satisfaction, but did not affect self-esteem, a set of three items each was used to measure the perceived satisfaction of the need for autonomy ($\alpha = .70$), competence ($\alpha = .77$), relatedness ($\alpha = .65$), and state self-esteem ($\alpha = .84$). Items measuring each of the three needs
were taken from the Sheldon and Gunz (2009) measure used in Studies 1 and 2. Self-esteem was measured with one item validated by Robins, Hendin, and Trzesniewski (2001; “I have high self-esteem”) and two items validated by Wildschut, Sedikides, Routledge, Arndt, and Cordaro (2010; “I value myself more,” and “I have many positive qualities”).

**Worldview defense.** Based on methods used by Greenberg, et al., (1992), worldview defense was measured by assessing reactions to an essay critical of the United States. Participants were first informed that the essay was written by an exchange student in Maryland and that their reactions would be used to help assess foreigners’ views of America. The essay is presented in *Appendix B*. Following this essay were five items assessing the degree to which participants: a) liked the author; thought the author was b) intelligent, and c) knowledgeable; and the extent to which they d) agreed with the author, and e) thought the authors opinions were true. Each item employed a 10-point likert-type scale (1 = *Not at all*, 10 = *A lot*). A composite score was formed (α = .92) and reversed such that higher scores indicated greater derogation of the author and essay (and thus, greater worldview defense).

**Results**

*Manipulation Checks.* A null one-way (profile: neutral vs. autonomy vs. competence vs. relatedness) ANOVA, *F*(3, 172) = 1.58, *η*² = .03, *p* = .20, indicated that the personality profiles did not impact state self-esteem.

To check the impact of the personality profile conditions on each of the three types of needs, a 4 (profile: neutral vs. autonomy vs. competence vs. relatedness) x 3 (need: autonomy vs. competence vs. relatedness) mixed ANOVA was conducted. A null interaction emerged, suggesting that the profiles did not differentially impact specific needs, *F*(6, 344) = 1.73, *η*² = .03, *p* > .11. However, a main effect of profile condition also emerged, suggesting that the
profiles instead manipulated the three needs together, \( F(3, 172) = 12.22, \eta^2 = .18, p < .001 \). Specifically, pairwise comparisons revealed that, compared to the neutral condition, the autonomy, competence, and relatedness profiles each boosted total need-satisfaction, all \(|t|s > 2.49, d = .53, ps \leq .01\). Additionally, need-satisfaction did not differ between the autonomy and competence profile conditions \((t[87] = 1.22, d = .26, p > .22)\), and was greatest in the relatedness profile condition, all \(|t|s > 2.16, d = .46, ps \leq .03\). While the lack of interaction was unanticipated, this main effect suggested that each of the three need-relevant profiles were in fact successful in boosting all three needs compared to the neutral condition. A second main effect of need type also emerged, \( F(2, 344) = 32.29, \eta^2 = .16, p < .001 \), revealing that autonomy satisfaction was lower than competence and relatedness \((t[175]s > 4.82, d = .73, ps < .001)\), and that relatedness satisfaction was also greater than competence, \( t[175] = 3.34, d = .50, p = .001 \).

*Worldview defense.* Methods prescribed by Aiken and West (1991) were followed to examine the Goal-importance x 2 (MS vs. uncertainty) x 4 (profile: neutral vs. autonomy vs. competence vs. relatedness) interaction on essay evaluation scores. While there were no main effects, there was a two-way MS x Goal interaction \((\beta = -24, t[175] = -2.06, d = .31, p = .04)\). As depicted in Figure 5, this two-way was qualified by the predicted three-way interaction, \( F(3, 160) = 2.32, \Delta R^2 = .04, p = .07 \). To more closely examine the nature of this interaction, a series of comparisons unpacked the three-way.

First, within the neutral profile condition, the predicted MS x Goals interaction emerged, \( F(1, 36) = 7.84, \Delta R^2 = .17, p < .01 \). Among those placing greater relative importance on extrinsic goals (-1 SD), MS (vs. personal uncertainty) increased derogation of the anti-US essay, \( \beta = .68, t(39) = 2.91, d = .93, p < .01 \); MS had no effect among those placing greater value on intrinsic goals (+1 SD), \(|t|(39) < 1 \). Simple slopes analyses revealed that when participants were reminded
of death, relative goal importance was inversely related to derogatory essay evaluations, such that placing greater importance on extrinsic goals was associated with greater derogation of the essay ($\beta = -.62, t[15] = -2.72, d = 1.40, p = .01$); goals were unrelated to essay evaluations after reminders of personal uncertainty ($\beta = .34, t[23] = 1.33, d = .55, p = .19$). As expected, the MS x Goals interaction was eliminated within each of the needs-satisfying profile feedback conditions, all $|F|s < 1.03, \Delta R^2s < .02, ps > .32$.

Further, a set of comparisons tested whether those valuing extrinsic goals would reduce MS-induced worldview defense when given need-satisfying profiles (vs. the neutral profile condition). Among those placing relatively greater importance on extrinsic goals (-1 SD), the expected MS x Profile interaction emerged, $\beta = .65, t(175) = 2.36, d = .36, p < .02$. When extrinsically oriented participants received a neutral profile, MS led to greater derogation ($\beta = .77, t[39] = 3.09, d = .99, p < .01$); but when they received a need-satisfying profile, MS did not have any effect on essay evaluations ($|t|(135) < 1$). From a different perspective, in the MS condition, essay derogation was reduced when extrinsically oriented participants received a need-satisfying profile compared to the neutral profile, $\beta = -.39, t(80) = -1.95, d = .44, p = .05$; there was no effect of profile condition among extrinsically oriented participants reminded of personal uncertainty, $\beta = -.17, t(94) = -1.34, d = .28, p > .18$. There was also no MS x Profile interaction on essay evaluations among those placing relatively greater importance on intrinsic goals (+1 SD) $|t|(175) < 1$.

Discussion

Although people pursue many different goals, some goal orientations seem to be better suited for dealing with one’s existential fears than others. Specifically, Study 5 shows that pursuing intrinsic goals—those that help enhance need-satisfaction by orienting the self toward
personal growth, positive relationships, and community building—help buffer against reminders of death. In the neutral profile condition, those placing greater value on extrinsic, but not intrinsic, goals increased worldview defense after MS. This suggests that those valuing intrinsic goals were buffered, whereas those valuing extrinsic goals were not. Study 5 also demonstrated that the MS-induced worldview defense observed among extrinsically oriented participants was due to a relative lack of need-satisfaction. When extrinsically oriented participants were given need-satisfying feedback, MS-induced worldview defenses were eliminated. Study 5 also provides convergent support for Study 1 by showing that heightened need-satisfaction, via intrinsic goal importance and need-satisfying personality profile feedback, reduced worldview defense after death reminders.

General Discussion

Five studies provided converging evidence that need-satisfaction serves a terror management buffering function. In Studies 1 and 2, heightened need-satisfaction was associated with reduced MS-induced worldview defense and death-thought accessibility. In contrast, these were both heightened when those with lower levels of need-satisfaction were reminded of death, suggesting that greater need-satisfaction served as a buffer against the awareness of death. On the basis of these findings, Studies 3 and 4 showed that heightened death awareness increased the desire to experience need-satisfaction, and motivated people to approach environments perceived as need-satisfying (i.e., autonomy-supportive) and avoid those perceived as need-undermining. Finally, Study 5 found that needs-related goal orientations and experimentally enhanced need-satisfaction each buffered against MS-induced worldview defense. Together, these studies provide evidence for a novel understanding of need-satisfaction as a terror management buffering mechanism.
The present research helps advance a novel understanding of several core concepts of SDT. Until very recently, basic need-satisfaction has been conceptualized as a prerequisite, yet largely passive experiential condition for growth, in which individuals are primarily subject to the facilitation of need-satisfaction by outside forces. Recent work, however, suggests that need-satisfaction is a fundamentally motivating experience in and of itself. Simply, people need need-satisfaction, and deficits can lead to an increased desire to attain it (Sheldon & Gunz, 2009). The present research helps explain why this might be. In line with Sheldon (& Filak, 2008; Sheldon & Gunz, 2009), the present research, and Study 3 in particular, suggests that people have a fundamental existential motivation to experience need-satisfaction in order to maintain psychological equanimity. The five studies presented here suggest that need-satisfaction serves a security function, and individuals with greater levels of need-satisfaction are better protected against psychological threat than are less need-satisfied individuals. Further, we know of no previous research that has explored the individual’s bottom-up influence on autonomy-supportive (i.e., need-satisfying) environments.

On this note, Studies 4 and 5 extended the implications of these findings into new areas of inquiry about the interface between TMT and SDT. These studies investigated the role of terror management processes in two domains intimately related to basic need-satisfaction: environmental contexts and goal striving. Building on previous findings that “autonomy-supportive” social/organizational environments directly facilitate people’s sense of need-satisfaction, Study 4 provided some of the first evidence that individuals may be motivated to help facilitate environments judged to be need-satisfying (i.e., autonomy-supportive) and thwart those judged to be need-undermining, especially when the existential desire to experience need-satisfaction is heightened. Extending the novel understanding of need-satisfaction developed in
the first four studies, Study 5 illustrated the crucial role of need-satisfaction as a terror management buffer in two key ways. First, building on research showing that intrinsic goals facilitate need-satisfaction whereas extrinsic goals do not (Niemiec, et al., 2009; Sebire, et al., 2009; Vansteenkiste, et al., 2007), it found that intrinsic goals serve a needs-related terror management function; and second, it demonstrated that the MS-induced worldview defense found among the extrinsically oriented participants was due to an insufficient level of need-satisfaction.

Additionally, it is worth noting a difference between research that has examined goal orientations as an individual difference in buffering capacity, and studies that have examined the downstream effect of existential threat on goal strivings. As just noted, several previous studies have found that a previously existing intrinsic goal focus is capable of attenuating worldview defenses, an effect which, as shown by Study 5, is likely due to the heightened need-satisfaction associated with these goals. However, other research has shown that people often continue to pursue extrinsic goals, erroneously believing that they will ultimately lead to happiness (Sheldon, Gunz, Nichols, & Ferguson, 2010). Importantly, this erroneous belief is likely because extrinsic goals tend to be culturally derived and glorified by many around us as the standards of value toward which we should ultimately be concerned. From the perspective of TMT, because the increased awareness of mortality typically motivates individuals to defend, uphold, and adhere to one’s cultural worldview, individuals reminded of death become more motivated to pursue extrinsic goals (see Kosloff & Greenberg, 2009; Sheldon & Kasser, 2008). In sum, while Study 5 contributes to a growing amount of evidence showing that individuals focused on intrinsic goals tend to be buffered (Cozzolino, et al., 2009; Cozzolino, et al., 2004; Van Hiel & Vansteenkiste, 2009), other research suggests that death reminders may motivate people to strive for more
culturally valued (extrinsic) goals rather than more need-satisfying (intrinsic) goals.

*Ruling out alternative accounts and competing hypotheses*

Several alternatives to the principal hypothesis that need-satisfaction serves a terror management function were examined. Self-esteem and attachment security were explored because each have been linked to both heightened need-satisfaction (Deci, et al., 2001; LaGuardia, Ryan, Couchman, & Deci, 2000) and terror management processes (Pyszczynski, et al., 2004; Mikulincer, et al. 2003); and although few studies have explored the role of autonomy in terror management processes, the desire for control might have provided an alternative account of any observed role of autonomy in managing the awareness of death (e.g., see Arndt & Solomon, 2003). However, the hypothesized buffering effect of need-satisfaction, and needs-related environmental perceptions, persisted even while controlling for attachment, self-esteem, and desire for control in Studies 1, 2, and 4.

Another possibility might have been that the buffering effect of need-satisfaction was being driven by fluctuation in affect. Although SDT research has tended to find that basic need-satisfaction leads to more positive and less negative affect (e.g., Reis, Sheldon, Gable, Roscoe, & Ryan, 2000), Studies 1 and 2 showed that affect could not account for the buffering effect of need-satisfaction. Controlling for differences in affect also did not account for the differential effect of MS on support or opposition to reform in Study 4. Studies 1, 2, and 3 also join an overwhelming number of studies showing that death reminders do not influence responses via explicit affective experience. Additionally Studies 1 and 5 directly examined the specificity of death thought in relation to the uncertainty management model (e.g., van den Bos, 2009; van den Bos, Poortvliet, Maas, Miedema, & van den Ham, 2005), which claims that MS effects are actually a result of an underlying feeling of personal uncertainty, and that defending the validity
of one’s cultural worldview functions to restore a sense of certainty. Yet, MS produced a greater effect compared not only to personal uncertainty, but also compared to failure (i.e., a failed exam; Studies 2 and 4) and intense pain (Study 3). Thus, in line with much previous research (c.f., Pyszczynski, Greenberg, Solomon, & Maxfield, 2006), the present research shows that the effects of MS are not simply due to thoughts of some other aversive event or experience.

On a related note, Study 4 provided a direct comparison between TMT and the recent uncertainty-threat model of political ideology (e.g., Jost, Glaser, Kruglanski, & Sulloway, 2003). The uncertainty-threat model holds that both uncertainty and mortality awareness constitute an existential threat, which would each motivate efforts to conserve the status quo (i.e., a conservative shift). Not only did uncertainty not parallel MS-induced worldview defense in Studies 1 and 5, but in the context of Study 4, whereas the uncertainty-threat model would have predicted that MS would motivate efforts to oppose national healthcare reforms (thereby conserving the social, economic, and political status quo), TMT predicted that MS would motivate people to support reform if they felt the reforms would be more autonomy-supportive (need-satisfying) than the status quo. Evidence supported TMT, and more broadly supported the contentions of Greenberg and Jonas (2003; see also Anson et al., 2009) that the motivated social-cognitive foundations of political ideology extend to include progressive change, and are not limited to a conservative protection of the status quo (see also Rutjens, van der Pligt, & van Harreveld, 2009). Importantly, the observed MS x Autonomy-support interaction could not be alternatively explained by participants’ political orientation, suggesting that death reminders did not simply induce the zealous defense of one’s political persuasion. Rather, in Study 4, a combination of the MS-induced desire to experience need-satisfaction and differences in the perception that progressive reform of the healthcare system would either enhance, or undermine,
an autonomy-supportive (need-satisfying) environment ultimately demonstrated the ability of terror management processes to intensify either conservative or progressive political attitudes, and not simply produce a conservative shift or political zealotry.

*Healing the wound: The role of TMT in politics, healthcare reform, and the notion of liberty*

Study 4 also provided convergent support for a growing number of studies demonstrating the influence of terror management processes, particularly in the political arena. According to Fromm (1941) and Becker (1962, 1973), the existential motivation to envelop oneself in a meaningful, virtuous, and permanent worldview often manifests in the form of support for leaders particularly well-suited for securing one’s way of life and proclaiming its superiority. For instance, several studies have shown that reminders of death increased support for Presidential candidates that emphasized the security and superiority of the American worldview (Cohen, Ogilvie, Solomon, Greenberg, & Pyszczynski, 2005; Landau, et al., 2004). However, the shift in support toward these types of leaders in the face of existential threat is not the inevitable one. Several studies have shown that the impact of death reminders on Presidential voting preferences can be reversed to produce support for progressive candidates according to candidate-consistent attachment styles (Weise, et al., 2008), or values (Vail, et al., 2009). These latter two studies suggest that perceptions of a leader can intensify, or even redirect, political expressions of terror management defenses. In similar fashion, Study 4 demonstrated that political expressions of the terror management desire for need-satisfaction were guided by the perception of whether a new political environment (i.e., healthcare reform) would be more or less autonomy-supportive.

On this note, Study 4 offers insight into a long history of political turmoil surrounding the healthcare debate. Nestled amid an accompanying array of death-related platform-issues (e.g., wars, terrorism, etc.), the healthcare debate bore its own set of concerns pertaining to mortality...
awareness, such as inflammatory rumors of “death panels” and controversy about funding abortion services (Kirkpatrick, 2009; Rutenberg & Calmes, 2009). This salient existential threat was combined with the additional, long-standing presence of opposing claims regarding the autonomy-supportive environmental qualities of healthcare reform reaching as far back as 1912 to characterize, for better or worse, the Presidencies and campaigns of Roosevelt, Truman, Kennedy, Johnson, Clinton, and Obama. More recently, during the 2009 debate, the existentially motivated desire for need-satisfaction may have helped transform what might otherwise have been a civil debate about domestic policy into the angry and violent encounters which took place at numerous Congress member’s ‘healthcare town hall’ meetings (e.g., Halloran, 2009). But beyond the issue of healthcare reform, Study 4 more broadly informs the role that perceptions of autonomy-supportive environments, and perhaps even the very idea of political freedom and liberty, play in SDT and TMT processes. That is, people might be more inclined to approach, or avoid, any number of political, social, or economic environments based on perceptions of the environment as being more or less autonomy-supportive than the status quo, especially when reminded of death.

Life and death: Toward integrating TMT and SDT within a dual motive system

In Toward a Psychology of Being, Abraham H. Maslow tellingly mused, “The basic dilemma or conflict between the defensive forces and the growth trends I conceive to be existential, embedded in the deepest nature of the human being, now and forever into the future” (1968, pp. 46). Indeed, much of social and personality psychology has been devoted to gaining an understanding of why people ultimately do what they do. On the one hand, many have approached the problem of motivation from a humanistic or positive perspective, working from the assumption that humans are inherently oriented toward personal growth and well-being. On
the other hand, others have approached the study of motivation from the assumption that many behaviors and attitudes are motivated, at their roots, by the desire to feel a sense of safety and security in the face of existential threats. The present research helps suggest one way that these two approaches might intersect.

Whereas the dynamic interaction between motives for self-defense and self-expansion has been the subject of cautious controversy for some time, a few have argued that the psychological motivations for security and growth actually lie along a dual motive continuum, such that the basic prerequisite for growth and well-being is, in fact, psychological equanimity and protection from the awareness of existential threat in particular (e.g., Greenberg, et al., 1995; Pyszczynski, et al., 2003; Pyszczynski, et al., 1996). Such a conceptualization offers an opportunity to arrange both the defensive and acquisitive existential psychologies within a dual motive system where growth and optimal human functioning is unlikely to occur unless the individual is first (or simultaneously) adequately buffered against the encroaching reminders of life’s vagaries. As a result, people would need to maintain at least a modicum of psychological equanimity from which to optimally expand the self.

The present research takes some of the first steps toward integrating SDT and TMT within this dual motive system, demonstrating that need-satisfaction—the prerequisite for self-expansion, optimal human functioning and well-being—also functions to buffer against the awareness of mortality. Where Studies 1, 2, and 5, showed that dispositionally or experimentally heightened need-satisfaction helped buffer against death thoughts and eliminated the need for psychological defenses, Studies 3 and 4 demonstrated that death reminders motivated efforts to enhance need-satisfaction. One implication here is that as individuals become more need-satisfied, they would also feel less existentially threatened, until they reach the point where they
feel secure enough to attempt personal growth; or, from the other perspective, as individuals feel more psychologically threatened, such as when they become particularly aware of death, they would need to strengthen their buffering capacity (e.g., need-satisfaction) in order to continue engaging personal growth motivation. In this fashion, Irvin Yalom (1980, p. 33) suggested that, “rather than sentence us to existences of terror or bleak pessimism, [death] acts as a catalyst to plunge us into more authentic life modes, and it enhances our pleasure in the living of life.”

However, it is worth noting that there are myriad other ways (e.g., self-esteem striving, belief defense, etc.) people can buffer mortality awareness, many of which are not need-satisfying. As oft-observed, there exists the potential for psychological threat—and the awareness of death in particular—to induce motivation that works to undermine need-satisfaction and thereby hamper personal growth and well-being. To the extent that individuals are able to buffer against threat by boosting need-satisfaction however, they may be able to facilitate growth while simultaneously protecting against threat. Future research could further explore these implications by investigating how buffering mechanisms like need-satisfaction might compare with other terror management mechanisms in facilitating growth motivation and well-being in the face of existential threat.

Limitations

Although all studies supported the hypothesis that need-satisfaction functions as a terror management mechanism, we suggest several opportunities for improvement in future research. The first stemmed from the curious difference in the effect observed in Study 1 compared to some of the other studies. In Study 1, worldview defense significantly reduced but was not completely eliminated as a function of measured need-satisfaction. This may have been the result of differences in timing of measurement, in which the probability of new experiences or
environments altering participants need-satisfaction may have been more likely with longer lag times between the pre-measure and the experimental session. This would perhaps explain why Study 1 observed a reduction in worldview defense, whereas Studies 2 and 5 found full attenuation to control condition levels. Next, as all five studies were conducted among American psychology student samples, future research would do well to reach beyond this population. Another potential limitation might be that Study 3 did not assess alternate strivings, leaving the possibility that participants were simply yea saying after death reminders. However, there is reason to believe that this was not the case. Specifically, Study 4 provided a conceptual replication in which the expression of the MS-induced desire for need-satisfaction was expressed as either support or opposition based on individuals’ perceptions of whether the new environment would be need-supportive or not.

**Conclusion**

The present research helps advance an understanding of the existential function of basic psychological needs. Much previous research has shown that basic need-satisfaction facilitates growth and well-being (see Ryan & Deci, 2000a). However, no previous empirical research has investigated potential reasons such needs might have emerged. Indeed, as Friedrich Nietzsche once quipped, “Need is supposed to be the cause of things, but in truth it is often only the result of things” (1982, p. 123). In this sense the present studies help explain why basic needs are needed. That is, the present research builds on both TMT and SDT, demonstrating that need-satisfaction—the basic prerequisite for growth and well-being—functions in part to provide psychological equanimity and protection from the awareness of death.
1. Attentive readers will note a discrepancy between the buffering effects observed in Studies 1 and 2. In Study 1, although need-satisfaction was associated with reduced levels of MS-induced worldview defense, MS still led to an increase in defense among those with both heightened and reduced levels of need-satisfaction. In contrast, Study 2 demonstrated that MS altogether eliminated the increase death-thought accessibility among those with greater need-satisfaction. One potential explanation for this effect could be that differences in the timing of measurement of need-satisfaction affected its degree of relevancy to the immediate experimental session. In Study 1, need-satisfaction was assessed several weeks prior to the experimental session, but was assessed only one week prior in Study 2. The probability of new experiences or environments altering participants need-satisfaction may have been more likely with longer lag times between the pre-measure and the experimental session (e.g., Study 1) and would perhaps explain why Study 1 observed a reduction in worldview defense, whereas Study 2 found full attenuation to control condition levels. Regardless, both studies provide evidence that need-satisfaction helps function as an existential buffer. Further, Study 5 supported the effects observed in Study 2, showing that experientially immediate measurements and manipulations of needs-related constructs predicted full attenuation of MS-induced worldview defense.

2. Regarding negative mood and hostility: MS (vs. failed exam) did not influence negative mood or hostility among those perceiving the reforms to be relatively more (+1 SD) autonomy supportive (both \(t([70])s > 1\)); however, MS led to greater negative mood and hostility among those who viewed the reforms as less (-1 SD) autonomy supportive than the existing healthcare system (all \(bs > .33, t([70])s > 1.85, ds = .44, ps < .07\)). Simple slopes analyses showed that when reminded of failing an exam, HCQ ratings of autonomy-support were positively related to negative mood and hostility, all \(bs > .32, t(34) > 1.68, ds = .58, ps < .10\); but, this association was eliminated when participants were reminded of mortality, \(t(34) < 1\). Regarding serenity: among those perceiving the reforms to be relatively more (+1 SD) autonomy-supportive, MS (vs. failed exam) increased serenity (b = .34, \(t([70]) = 2.03, d = .49, p < .05\)); MS had no impact on serenity among those who viewed the reforms as less (-1 SD) autonomy supportive than the existing healthcare system (\(t([70]) > 1\)). Simple slopes analyses showed that when reminded of failing an exam, HCQ ratings of autonomy-support were unrelated to serenity, \(t(34) < 1\); but, this association was positive when participants were reminded of mortality, b = .32, \(t(35) = 2.02, d = .68, p < .05\).

3. Following some previous research showing that experimentally enhanced satisfaction of any one of the three needs, on their own, produced an additive increase in performance and situational well-being (Sheldon & Filak, 2008), Study 5 initially endeavored to manipulate the satisfaction of each need separately. We were unable to pursue this direction, however, because the manipulation check indicated that each of the needs-relevant profile conditions enhanced need-satisfaction overall rather than uniquely enhancing each targeted need.
Appendix A

PERSONALITY PROFILE

Name: Doe, Jane F.
Time and Place of Evaluation: Spring, 2010; Introductory Psychology Survey
Methods Used: (1) Beck Personality Inventory; (2) Rosenberg Self-assessment;
(3) Sensitization Scale; (4) Social Aptitude;
(5) Thulin Value Inventory; (6) Kasser Aspirations Index;
Reason for Referral: Research Purposes. Release approval no.: 1044638
Evaluation:

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At times you can be extroverted, affable, and sociable, while at other times you can be introverted, wary, and reserved. Sometimes you have good self-discipline, but not always. You tend to like a certain amount of change and variety but also allow routines to develop. Although you are often productive, your energy may sometimes not be used to its full advantage. While usually confident in your abilities, you are sometimes unsure about how they fit with your aspirations.

[NEUTRAL]
Most importantly, your responses reveal that you have a few personality weaknesses; however, you are able to compensate for most of them. Given these personality traits, some of your aspirations are a bit unrealistic, but others are attainable. You try to be an independent thinker but on occasion accept other opinions without satisfactory proof. You are generally self-sufficient although you sometimes need other people to do things for you. You have some tendency to be too critical of yourself at times, yet too positive about yourself at other times. Your responses also contained elements of a spectrum of positive and negative social interaction styles.
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[RELATEDNESS]
Most importantly, your responses reveal elements of the trait of socially-adept personality. This type often ends up with many friends and loved ones later in life. So, although you may or may not have an average number of friends and relationships now, in a few years you will have gained a large number of deep and meaningful relationships. You will likely marry, and this will likely be a long-lasting, fulfilling partnership. Your other relationships will also tend to be lasting and caring, and when you begin to form new relationships less frequently, the odds are that you will still have many strong, enjoyable connections.
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[COMPETENCE]
Most importantly, your responses reveal elements of the trait of competent/effective personality. This type finds it easy to succeed in life. Although you may or may not be doing relatively average here in university, when you graduate into the bigger world you will surely find your
place and flourish. You will get hired for some great jobs, and at least one of these will likely continue well into the later stages of life. People will expect a lot from you, and you will likely exceed their expectations. Once you have had some success, the odds are that you’ll find it easier and easier to succeed.

[AUTONOMY]
Most importantly, your responses reveal elements of the trait of self-determined personality. This type often ends up with a great amount of autonomy and freedom in life. Although you may or may not have a relatively average amount of choice now, you will tend to act autonomously and exert an increasing amount of control over your own life. You may have few options about your life at first, but you will soon be free to do whatever you set your mind toward. Ultimately, this will affect how you think, dress, and talk, and your real individuality and desires will become more and more self-liberated over time.
Appendix B

ANTI-US ESSAY

“My opinion about the United States? Well, I don’t live here for a reason. Last week I read an article saying that Americans were rated as the most hated people in the world. I can imagine. Just look at the average American—they’re vile, detestable, morally corrupt scumbags! When I first visited the US, I believed it was the ‘Land of Opportunity,’” but I soon realized this was only true for the rich. All Americans care about is money and trying to own things. They have no sympathy for each other, much less for people living elsewhere in the world. Americans are spoiled, dumb, and lazy and want everything handed to them on a silver platter. Americans think they live in a great country but they don’t, and it’s because of them.”
References


Figure 1. Greater need-satisfaction reduced MS-induced worldview defense.
Figure 2. Death reminders increased death-thought accessibility among those with low need-satisfaction, but not among those with greater need-satisfaction.
Figure 3. A main effect showed that MS increased desire for overall need-satisfaction; a second main effect showed that the desire for autonomy was lower than the desire for competence or relatedness.
Figure 4. MS increased support for the reforms among those who felt the proposed healthcare reforms would be more autonomy-supportive than the existing system, but decreased it among those who felt the reforms would be less autonomy-supportive than the current system.
Figure 5. In the neutral feed-back condition, death reminders increased worldview defense among those placing more importance on extrinsic, but not intrinsic, goals; this effect was eliminated when participants received need-satisfying feedback.