

Original Article

## Normative Bias and Adaptive Challenges: A Relational Approach to Coalitional Psychology and a Critique of Terror Management Theory

Carlos David Navarrete, Department of Psychology, University of California, Los Angeles, 1285 Franz Hall, Los Angeles, CA, 90095-1563, USA. Email: [cdn@ucla.edu](mailto:cdn@ucla.edu).

Daniel M.T. Fessler, Center for Behavior, Evolution, and Culture and Department of Anthropology, 341 Haines Hall, UCLA, Los Angeles, CA 90095-1553, USA. Email: [dfessler@anthro.ucla.edu](mailto:dfessler@anthro.ucla.edu).

**Abstract:** Adherence to ingroup ideology increases after exposure to death-related stimuli, a reaction that proponents of terror management theory (TMT) explain as a psychological defense against the uniquely human existential fear of death. We argue that existential concerns are not the relevant issue; rather, such concepts can be subsumed under a larger category of adaptive challenges that prime coalitional thinking. We suggest that increases in adherence to ingroup ideology in response to adaptive challenges are manifestations of normative mental representations emanating from psychological systems designed to enhance coordination and membership in social groups. In providing an alternative to TMT, we (1) explain why the theory is inconsistent with contemporary evolutionary biology, (2) demonstrate that mortality-salience does not have the unique evocative powers ascribed to it by TMT advocates, and (3) discuss our approach to coalitional psychology, a framework consistent with modern evolutionary theory and informed by a broad understanding of cultural variation, can be employed to help account for both the corpus of results in TMT research and the growing body of findings inconsistent with TMT's predictions.

**Keywords:** terror management, coalition formation, intergroup bias, worldview defense, normative beliefs

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### Introduction

On the morning of September 11, 2001, many citizens of the United States awoke to news of terrorist attacks on the World Trade Center in New York and the Pentagon in Washington, D.C. Almost immediately thereafter, patriotic sentiments increased radically driving up sales of flags and other patriotic merchandise. A spokesperson for Valley Forge Flag Company in Pennsylvania noted that “in an

average year, consumers purchase about two million house flags. On September 11, 2001, twenty-five to thirty million people wanted house flags instantly” (Gaffin, 2004). Americans also became less tolerant of views critical of the United States and its foreign policy. For comments deemed too insensitive in a post-9/11 television environment, wisecracker Bill Maher was widely criticized and eventually dismissed as the host of a popular night-time political talk show. Some patriotic Americans even took this previously latent intolerance for ideological heterogeneity to violent extremes, aggressing against those perceived to share membership in the ethnic group of the alleged perpetrators of the terrorist attacks. Human Rights Watch reported that anti-Arab bias crimes in the U.S. increased 1700% in the days following September 11 (Human Rights Watch, 2002).

There have been many attempts to understand adherence to and defense of national ideologies and values, intolerance of dissent, and hostility towards dissimilar others. However, few have sought to ask *why* such intergroup bias varies as a function of the degree of national emergency, and why it differs between individuals. In the wake of events surrounding the September 11 attacks, terror management theory (TMT, Greenberg, Pyszczynski, and Solomon, 1986) has emerged as the leading source of answers to these and related questions. To get a sense of the impact of this perspective, consider the following: the exact phrase “terror management theory” produces 1,560 hits on the Google Internet search engine, and 373 hits on the PsychInfo electronic database of psychological literature. Clearly, TMT is a force to be reckoned with in contemporary social science. TMT explains the increase in patriotism and the concomitant decrease in tolerance of dissent since September 11 as defensive reactions against existential fear elicited by the images of death and destruction to which everyday Americans were exposed (Pyszczynski, Solomon, and Greenberg, 2002). Proponents of this perspective have drawn on a substantial corpus of empirical results in support of their views, pointing to over one hundred experiments that demonstrate that such defensive reactions increase as a function of exposure to death-related stimuli (for a review see: Solomon, Greenberg, Schimel, Arndt, and Pyszczynski, 2004).

In this paper we present an alternative approach to understanding the impact of exposure to threat on intergroup ideological bias. We suggest how increases in adherence to ingroup ideology, intolerance of opposing views, and derogation of dissimilar others can be interpreted as behavioral manifestations of normative mental representations emanating from psychological systems designed to enhance individual acceptance in, and coordination with, social groups. These normative mental representations increase in the face of adaptive challenges that can be addressed through marshalling social support. In providing an alternative to TMT, we describe the theoretical difficulties of TMT—central to which is the claim that it is consistent with modern evolutionary social science. We present a view of fitness threats and adherence to ingroup norms that is consistent with evolutionary theory, and is informed by a broader view of cultural variation. Finally, we evaluate these competing perspectives in light of the available evidence.

## **Terror Management Theory**

“The idea of death, the fear of it, haunts the human animal like nothing else; it is a mainspring of human activity—designed largely to avoid the fatality of death, to overcome it by denying in some way that it is the final destiny of man.”

—Ernest Becker

While terror management theory (Greenberg et al., 1986; Greenberg, Solomon, and Pyszczynski, 1997; Pyszczynski et al., 2002; Solomon et al., 2004) owes a scholarly debt to a wide variety of influences (Freud, 1929; Kierkegaard, 1844; Rank, 1936), it was primarily inspired by the work of the anthropologist Ernst Becker (1962; 1973), who proposed that the uniquely human capacity to recognize the inevitability of one’s own death produces deep, existential fear that pervades all aspects of the human condition. According to Becker, as organisms with an instinct for self-preservation, the knowledge of the inevitability of death creates the potential for a chronic condition of debilitating anxiety—an adaptive problem that our species overcomes through a series of symbolic defense mechanisms. This collection of mechanisms is mediated through an ethnocentric cultural construction of reality, a “cultural worldview.”

Terror management theorists have insightfully elaborated on Becker’s rather intuitive claim that a key function of cultural worldviews is to manage the fear of death. Faith in a worldview is said to be important in assuaging death terror, as worldviews are thought to provide a sense of real or symbolic immortality—real in the sense that they provide promises of an afterlife; symbolic in the sense that they provide a system of meaning and stability that is larger than the individual and persists after the individual’s death. According to this view, ethnocentrism is in large part caused by a defensive reaction to outgroup ideologies. Merely knowing that others hold values and beliefs different from those of the established ingroup challenges the validity of the individual’s culturally constructed worldview, thus reducing its usefulness as an anxiety buffer. TMT theorists argue that individuals are therefore motivated to buffer themselves from this anxiety by bolstering their faith in their own worldview. This is done by affirming one’s core beliefs, derogating outgroups, and, in extreme cases, aggressing against or annihilating those who do not share one’s views (Greenberg et al., 1997).

Because the individual’s worldview provides protection against death concerns, according to TMT, reminding individuals of the prospect of their own death should increase the need for this cultural buffer. TMT researchers have shown that participants in experiments who are asked to contemplate their own deaths exhibit increases in positive evaluations of people whose attitudes and values are similar to their own, and derogation of those holding dissimilar views. TMT theorists claim that these changes reflect an attempt by participants to defend their cultural worldviews in order to buffer themselves from the fear of death. Among other “worldview-defense

tactics”, mortality-salience induction has been shown to lead to harsher evaluations of moral transgressors, attitudinally dissimilar others, and those who criticize the worldview of the ingroup. Conversely, mortality-salience induction also demonstrably elicits positive evaluative biases towards those who uphold ingroup moral standards, who are attitudinally similar, and who explicitly bolster the view of the ingroup (Greenberg, Arndt, Schimel, Pyszczynski, and Solomon, 2001; Greenberg, Pyszczynski, Solomon, Rosenblatt, and et al., 1990; Harmon-Jones, Greenberg, Solomon, and Simon, 1996; Pyszczynski et al., 2002; Rosenblatt, Greenberg, Solomon, Pyszczynski, and et al., 1989).

### *Theoretical Difficulties with TMT*

While TMT has led to an impressive corpus of research, with detailed predictions being borne out by careful and creative experimental work, numerous authors have noted problems with the theory itself (Boyer, 2001; Buss, 1997; Kirkpatrick, 1999; Navarrete, Kurzban, Fessler, and Kirkpatrick, 2004; Paulhus and Trapnell, 1997). The principal architects of TMT claim that theirs is an evolutionary theory (Pyszczynski et al., 2002; Solomon et al., 2004). Here, we take issue with proponents’ assertions that TMT is broadly consistent with the principles and findings of modern evolutionary social science. In doing so, we critique (1) the assumption of a “survival instinct” on which the theory hinges, (2) the notion of an adaptive function for anxiety reduction, and (3) the idea that cultural worldviews are inherently anxiety-buffering.

*Survival instinct.* TMT proponents make reference to a “survival instinct,” a motivational system that purportedly causes all organisms to seek to avoid their own deaths (Greenberg et al., 1997). However, there are principled grounds on which to doubt that such an instinct exists in any species, our own included.

Modern evolutionary biology is premised on the supposition that, when in their natural environment, individual organisms generally function in ways which increase the likelihood that their genes will be favorably represented in future generations. Neither ensuring immediate survival nor enhancing longevity is expected to constitute an invariant goal, since such objectives often detract from reproductive success (Hamilton, 1964; Williams, 1966). In short, sometimes organisms avoid situations that cause bodily harm, sometimes they are indifferent to such situations, and sometimes they actively seek them out, depending on the ultimate consequences of a given action for reproductive success. For example, if Alaskan salmon were oriented towards self-preservation and driven by a survival instinct, they would remain in the ocean during the breeding season, safely distant from the gaping jaws of the predatory grizzly bears lining the banks of the streams that lead to their breeding grounds. Salmon swim upstream at enormous risk of predation and injury in order to reach the precise pool in which they hatched. Only a small percentage successfully navigate the hazardous journey; those that do spawn then die of exhaustion. The salmon alive today are the descendents of individual fish that were motivated to make

this fatal trek—any fish that favored survival over all else would not have made the journey, would not have reached the breeding grounds, and would not have left descendants who could perpetuate their overarching “survival instinct”.

Although the salmon’s behavior is complex, consisting of long-distance travel, intricate navigation, and elaborate mating interactions, it is reasonable to describe these actions as instinctive. Stereotyped species-typical behavior having positive fitness consequences fits the definition of an instinct, a mechanism which generates a patterned behavioral response under highly specified stimulus conditions (Darwin, 1859). Contrary to the premises of TMT, avoiding death does not fit the definition of an instinct, since strategies for staying alive are contingent on the nature of the challenge confronting the organism at a given time. While journeying upstream to their deaths, salmon veer away from looming shadows and arch their bodies violently when stranded. These responses are patterned and situation-specific—although they have the common higher-level outcome of temporarily enhancing survival, survival per se is not a goal of the organism (cf. Oehman and Mineka, 2001). Interpreting the observation that salmon seem to often attempt to maintain their existence as evidence of a survival instinct is thus equivalent to arguing that water runs downhill because of a gravity instinct—both statements mistakenly impute the presence of an overarching goal. The notion of a survival instinct is thus unproductive, and for this reason this concept is not a part of the language of modern evolutionary theory. Organisms respond to specific stimuli in ways that have consistently been associated with fitness-enhancing outcomes over evolutionary timescales (Dawkins, 1989; Tooby and Cosmides, 1992; Williams, 1966). Organisms such as salmon might be afraid of predators, but almost certainly not death, hence it may be sensible to talk about a “predator-avoidance instinct” (if one must use that under-specified term), but it makes no sense to talk about organisms having a survival instinct.

From a broader theoretical perspective, the notion of a “survival instinct” is problematic on first principles. The emerging consensus within contemporary evolutionary social science is that highly general motivational systems are unlikely to evolve, as natural selection can only build mechanisms designed to solve particular adaptive problems (Barrett, 2005; Boyer, 2000; Buss, 2001; Cosmides and Tooby, 1994, 2002; Pinker, 1997; Rozin, 1976; Symons, 1992). Even if we were to grant that the concept of a “self-preservation instinct” is a hypothetical construct that refers only to a general predisposition to orient oneself toward continued life, it is not obvious how such an imperative could result in any practical guidance of adaptive behavior (Paulhus and Trapnell, 1997). Organisms do not safely navigate complex environments because “an orientation for death-avoidance behavior” is programmed into their nervous systems, but rather because different life-threatening situations require different adaptive responses. While a problem such as avoiding cliffs (Gibson and Walk, 1960) is a task that natural selection can design cognitive mechanisms to solve, avoiding death, per se, is not. Thus the “survival instinct” so often referred to in popular treatments of evolutionary approaches to behavior is most likely an

emergent property of a collection of discrete mechanisms, each designed to protect the organism from particular kinds of dangers, a goal achieved in part through the generation of anxiety in reaction to specific classes of proximate cues.

TMT notions of a survival instinct and its uniquely human consequences are not only out of step with evolutionary biology and evolutionary social science, they are self-contradictory. In evaluating the plausibility of a pan-specific survival mechanism, consider the following: A generalized instinct to avoid death could only function through some sort of ability to foresee the ultimate consequences of failing to avoid hazards (e.g., “If I fall off this cliff my body will be irreparably damaged, resulting in my demise,” etc.). A “survival instinct” thus necessitates awareness that events that have not yet occurred will bring an end to one’s life. This is tantamount to an awareness of one’s own mortality. How then can it be the case that, as TMT claims, all organisms possess a “survival instinct,” but only humans can foresee their own deaths? If possessing a “survival instinct” and being aware of one’s mortality causes paralyzing anxiety that is only remedied through worldview defense, then either all organisms engage in worldview defense, or else only humans possess a “survival instinct,” meaning that natural selection created in humans a novel instinct which, upon its creation, instantly generated paralyzing anxiety in those who possessed it. Neither possibility is plausible.

In attempting to articulate their perspective in the language of contemporary evolutionary biology, TMT theorists argue that staying alive is necessary for reproductive success since, if one does not live long enough to reproduce, then one will not be reproductively successful (Pyszczyński et al., 1997). While the latter observation is true to the point of banality, it in no way justifies the TMT premise that survival is an overarching motive driving behavior. Consider the following: extended to its logical conclusion, this argument predicts that successful reproduction should have an exacerbating effect on the frequency of behaviors that entail risk of injury or death (since individuals who have not yet reproduced should be more vigorous in their attempts to maximize survival) and, more generally, that the demographic patterns of bodily risk-taking should reflect the demographic patterns of reproduction (since the age/sex classes that contain the fewest parents should be the most cautious). As automobile insurance companies know well, the opposite patterns obtain—young people take the most risks with their survival, while the middle-aged are much more cautious; within age/sex classes, marrying (often the first step toward reproduction) reduces risk-taking, while divorce and widowhood increase it (Daly and Wilson, 2001; Wilson and Daly, 1985). In short, the relationship between survival maximization and reproduction is precisely opposite that entailed by the claim that differential reproductive success favors the existence of a survival instinct. Unlike TMT, contemporary evolutionary theory has no difficulty explaining the demographics of risk-taking: natural selection favors behavior to the extent that it increases access to resources (including social position, mates, and material goods) that can translate into reproductive success—it is in pursuit of these resources that, far from attempting to ensure their survival, bachelors the world over often go out of

their way to flirt with injury and death (Daly and Wilson, 1988).

*The function of anxiety reduction*

“I don't want to achieve immortality through my work. I want to achieve it through not dying.”

—Woody Allen

Like its psychoanalytic forbearers, TMT adopts a nonfunctional approach to anxiety. Anxiety is seen as an adaptive problem that needs to be overcome. Specifically, the fear of death ostensibly causes a dysfunctional state of anxiety, hampering effective psychological functioning. This approach contrasts with a functionalist view in which emotions are seen as the products of specialized adaptations crafted by natural selection, with each emotion addressing a discrete class of adaptive challenges (Cosmides and Tooby, 2000; Fessler and Haley, 2003; Frank, 1988; Izard, 1977; Johnston, 1999; Nesse, 1990; Weisfeld, 1997). From this perspective, anxiety is generally functional, indexing pressing social or environmental challenges (Baumeister and Tice, 1990; Buss, 1990). Various forms of anxiety motivate organisms to engage in behaviors that will ultimately eliminate or alleviate specific problems—reactions such as fight or flight responses, immobility, backing away from cliffs, or avoiding certain social interactions each constitute situation-specific adaptive responses to the fitness challenges indexed by particular types of anxiety.

While the functionalist view of emotions is wholly compatible with contemporary evolutionary approaches to mind, the TMT portrait of anxiety is wholly out of step. It would be quite astonishing were natural selection to produce a psychology in which, instead of orienting the organism to pressing adaptive challenges and motivating behavior that addressed them, anxiety regularly produced a paralytic state that could only be relieved through time- and attention-consuming mental gymnastics. In contrast to this implausible scenario, an informed evolutionary perspective suggests that, if anxiety is the product of adaptations that are activated in the face of specific classes of fitness challenges, then selection should strongly disfavor additional systems that inhibit anxious responses (Leary and Schreindorfer, 1997; Pelham, 1997). A person feeling anxious sitting on railroad tracks as a train approaches might feel some relief by thinking warm thoughts about her worldview, but the problem of imminent annihilation still looms. One would expect that an adaptive response to the prospect of harm or death would be to engage in behavior that makes such events less likely, as opposed to merely reducing the anxiety that flags these prospects. Even if, for some reason, circumstances changed such that most members of a species were regularly reacting to particular stimuli with a maladaptive excess of anxiety, it is not clear why natural selection would not then simply favor a reduction in the affective response, rather than construct an elaborate separate psychological system to compensate for the excessive anxiety. In fact, in contrast to

TMT's antiquated premise that anxiety constitutes an obstacle to effective behavior, a large and growing body of work indicates that human affective systems are well designed to prompt appropriate behavior in the face of adaptive challenges likely to have confronted our hunter-gatherer ancestors (Cosmides and Tooby, 2002; Curtis and Biran, 2001; Frank, 2001; Kirkpatrick, Waugh, Valencia, and Webster, 2002).

*Anxiety reducing properties of worldviews*

Terror management theory offers a philosophically sophisticated version of the common intuition that worldviews (particularly religious ones) provide a psychological defense against fear of death and the unknown. According to this account, worldviews provide a stable belief system, giving individuals a sense of permanence and security that allows them to live with relative equanimity despite the inevitable ultimate annihilation of the self. Worldviews provide standards and rewards such that the individual can achieve literal or figurative immortality by living up to the norms and values of the local culture (Greenberg et al., 1997). While these observations seem commonsensical to Western readers, a consideration of the range of variation of human cultures casts doubt on the claim that all worldviews function in this manner. The ethnographic and historical corpora reveal that worldviews are as likely to be terror-inducing as anxiety-reducing. The anthropological record is replete with examples of belief systems in which misfortune is thought to befall individuals through no fault of their own, capricious supernatural entities murder children, crops fail because of witchcraft, the "evil eye" of envy causes catastrophe to befall successful people, and so on. For example, the Fang people of Gabon believe that an internal bodily organ can launch attacks against other people, drink their blood, and bring illness, harm or even death to the victims (Boyer, 2001), while life among the Azande of the Sudan has been described as rife with paranoia, fear, and suspicion due to a worldview saturated with witchcraft beliefs (Evans-Pritchard, 1937). In each of these and numerous other cases, pain, suffering, and death rain down upon people regardless of whether or not they live up to the standards of the given cultural worldview.

Although ethnographic descriptions of the belief systems of small-scale traditional societies contain innumerable cases indicating that worldviews are at least as likely to be anxiety-promoting as anxiety-reducing, one need not look to such exotic examples to illustrate this point. Protestant evangelists in the Calvinist tradition have long emphasized the doctrine that humanity is naturally depraved, and is headed for an eternity in torment, save for the few "elect" whom God has called; for the true Calvinist, one can never know whether one has been so selected, and no degree of virtue will save those who have not. Catholic Christianity is equally ambiguous as to the assurance of a secure afterlife, arguing that even believers can never know if they are eternally secure until judgment day. According to the New Testament, even Jesus Christ, rather than exclusively providing comfort to his followers, taught: "Many will say to me in that day, Lord, Lord, have we not prophesied in Thy name? And in Thy

name have cast out devils? And in Thy name done many wonderful works? And then will I profess unto them, I never knew you: depart from me” (Matthew 7:22-3, King James Bible).

Far from being a secure buffer against existential anxiety, worldviews raise as many questions as they answer, and often do not paint a rosy picture of the future, even for those that follow the rules. This is true for both religious and secular worldviews, as secular worldviews such as those held by many in the peace or environmental movements can be every bit as apocalyptic and anxiety-producing as fundamentalist views. Many anthropologists have long been suspicious of the notion that worldviews buffer anxiety, and instead argue that belief systems often bring tension and stress into everyday life, since not only do the living need to be attended to and appeased, but also the dead (Boyer, 2001). The TMT perspective on belief systems is one developed in the context of a 20<sup>th</sup> Century post-war milieu where ideological beliefs of the White North American middle class have become sanitized, egoistic, and much more comforting than was true in the past, or is true in most cultures outside of the U.S. today. Because TMT does not attend to the belief systems of non-Western societies, nor does it accurately characterize most Western belief systems when viewed in historical context, it provides a limited and profoundly ethnocentric approach to the function of worldviews. A North American Christian worldview of the late 20<sup>th</sup> Century is hardly an appropriate prototype in any theory that aims to describe a phenomenon which is purportedly ubiquitous across the panoply of cultures past and present.

## **A Coalitional Psychological Perspective**

### *Worldview Defense and the Social Cognition of Coalitional Alliances*

In developing an alternative to TMT, we connect a classical social science view of the function of ingroup ideologies with recent evolutionary game-theoretic perspectives. We begin with the recognition that coalitions and alliances are important features of social life among humans and other animals. The ability to form coalitions to meet adaptive challenges has been documented across diverse taxa and has been particularly important development in the evolution of primate social behavior (see De Waal and Harcourt, 1992). Human societies have elaborated on this basic feature of primate life in that the ability to coordinate behavior has been developed to a level of complexity and efficiency unparalleled in the non-human animal world (Boyd and Richerson, 1990).

Unlike eusocial animals, much of our abilities in hyper-sociality do not lie in kin-related altruism, but is due to the unique human abilities for imitation, internalization of and conformity to social norms—processes crucial for individual adaptive coordination within groups (Boyd and Richerson, 1985; Gintis, Bowles, Boyd, and Fehr, 2003; Hallowell, 1956, 1963; Sherif, 1936/1966). Conformity to social norms, including embodying the attitudes, values, and life-ways of the ingroup,

enhances the efficiency of coordinated action among self-interested actors (McElreath, Boyd, and Richerson, 2003). In addition to their sometimes complex cosmologies, cultural belief systems contain norms that address conflict resolution and resource distribution, as well as marriage rules, stereotypes, delineated power relationships, and group membership criteria that define who does or does not belong (van Dijk, 1998). Such guidelines are undoubtedly crucial for solving a variety of adaptive problems that confront people in every society.<sup>1</sup>

Muzafer Sherif (1936) recognized that all groups develop life-ways with characteristic beliefs, standards, strategies and even “enemies” in order to coordinate social life. Hence, if individuals are to function effectively in the ingroup, they must hold the ideological schemas containing the preferences and attitudes towards friends and enemies of the ingroup. Attitude formation thus comes not as nonintegrated declarative truisms, but rather is “functionally related to becoming a group member—to adopting the group and its values (norms) as the main anchorage for regulating experience and behavior” (Sherif and Sherif, 1953, p. 251).

As Hardin and Conley (2001) note, Solomon Asch also recognized that adaptive human understanding is predicated on social transmission and shared experience. Like Sherif, he understood the importance of the function of socially shared beliefs, and emphasized the role of such beliefs, even when ethnocentric and prejudiced, in negotiating social relationships:

That attitudes have such social roots and implications has consequences for their cognitive and emotional functioning, for the conditions of their growth and change. Their content and their persistence and change must be seen as an expression of the need to maintain viable group relations. Only in this way can we fully understand the pull of social conditions in the formation and modification of attitudes and the fact that they vary lawfully with group membership...For a Southerner to deny the prevailing views about Negroes requires a drastic intellectual reorientation and a serious snapping of social bonds. It would be tantamount to questioning the perceptions and cherished values of those nearest to him and casting himself out of the group (Asch [1950] quoted in Hardin and Conley, 2001).

Intimations of these early insights are resonant in recent research on the social cognition of intergroup relations (e.g. Haines and Jost, 2000; Hewstone and Lord, 1998; Lyons and Kashima, 2003). One of the important ways in which people can create or enhance interpersonal connections is through the affirmation of a perceived achievement of mutual understanding and common values, or what some have termed a *shared reality* with relevant others (Hardin and Higgins, 1996). As beings motivated to affiliate with and seek acceptance from others, people tend to present themselves in ways they believe will lead others to respect and like them (Baumeister

and Leary, 1995). Thus, if individuals strategically alter the contents of their communications in response to relational goals, impression management motives may well influence their social representations and evaluative assessments of others (Schaller and Conway, 1999). In this sense, culturally constructed worldviews can be seen as mental representations that facilitate the creation and maintenance of social relationships.

With the recognition that (a) coordinating one's behavior with others benefits the individual, (b) cultural beliefs are the foundation for such coordination, and (c) social cognitions dynamically instantiate cultural beliefs, then it is clear that aligning one's social cognitions with those of the ingroup is often adaptive. We propose that, if the social benefits of norm adherence are the ultimate cause of the individual's subscription to worldviews, then the focus and salience of a given individual's ideology can be expected to vary as a function of their need to ally themselves with relevant others. Moreover, if the benefits of social inclusion are particularly important in times of need (Baumeister and Leary, 1995; Tooby and Cosmides, 1996), then natural selection can be expected to have shaped human psychology such that, when confronted with emergency situations that are best addressed using coalitional support, individuals should exhibit a strongly pro-normative orientation in order to enhance the maintenance and formation of alliances.

We propose that the mortality-salience phenomena documented by terror management researchers are best explained as the social-cognitive output of a system of adaptive mechanisms that facilitate the formation of social networks, interpersonal attachments, and coalitions. We predict that exposure to stimuli indexing adaptive challenges that could conceivably be addressed through coalitional support should lead to increases in normative attitudes toward relevant reference groups. From this perspective, rather than being the sole and central focus of the phenomena at issue, the contemplation of death elicits increased normative attitudes regarding the ideology of the ingroup primarily because the likely common causes of death in ancestral environments (dire illness, disease, severe bodily harm, and starvation) were conditions in which successfully acquiring increased social support (and possibly avoiding outgroup members) would have had significant fitness consequences. Hence, whereas TMT predicts that no stimuli or arousal short of those that elicit thoughts of death will lead to the aforementioned enhancement of pro-normative social attitudes (Arndt, Greenberg, Solomon, Pyszczynski, and et al., 1997; Greenberg, Simon, Harmon-Jones, Solomon, and et al., 1995), we predict that a range of aversive stimuli should have this effect. More specifically, we predict that such eliciting stimuli will concern or index situations that (a) pose adaptive problems for the individual, and (b) are most effectively addressed using the support of allies.

TMT advocates have pointedly argued that mortality concerns are not merely a specific instance of a more general category of threatening events that could increase normative sentiments. In defense of this claim they have gone to not inconsiderable length to demonstrate that exposure to some aversive thoughts unrelated to death, such as failing an exam or being forced to engage in public

speaking, do not engender the “worldview-defense” effects elicited by mortality-salience (Greenberg, Pyszczynski, Solomon, Simon, and et al., 1994; Greenberg et al., 1995). They have interpreted these findings as supporting their claim that the worldview defense effects found in their experiments are *uniquely* caused by the existential concerns engendered by mortality salience. However, from our perspective, contemplating failing an exam or having to give a speech should not be expected to provoke the same shifts in normative cognitions since these scenarios do not concern fitness-relevant challenges in which coalitions could conceivably be a part of an adaptive solution to the problem. Rather than speaking to the uniqueness of mortality-salience, these results simply underline the need to view contemporary experiences with an eye toward the ancestral world in which our minds are designed to operate.

### *On the Evolution of Normative Bias*

As illustrated by our critique of TMT, in order to be compelling, evolutionary hypotheses must be consistent with what is known about the processes and products of natural selection, and what is known about the evolution the human lineage. The patterns of coalition and alliances found in related primate species suggest that such strategic social structures are likely to be far more ancient than the hominid lineage itself (De Waal, 1982). To negotiate their social world successfully, and to anticipate the likely social consequences of alternative courses of action, our ancestors would have benefited from possession of psychological systems that could facilitate, maintain and track such alliances (Kurzban, Tooby, and Cosmides, 2001; Tooby and Cosmides, 1988). A core tenet of contemporary evolutionary approaches to behavior is the supposition that, because actions entail costs (in the form of time, attention, energy, exposure to risk, or loss of opportunities to engage in alternate actions), evolution will only favor the propensity to act in a given fashion when, in general, such a propensity generates benefits that exceed its costs. In this paper, we argue that the process we describe as normative bias is the foundation for behavior performed by individuals wanting to associate with and seek out potential coalition partners. We also argue that not only is this process an emanation of the general affiliative impulse in times of need, but that when confronted with adaptive challenges, people increase their support for the ideology of the ingroup at least in part because by doing so they increase the likelihood that others will come to their aid. This extension however, raises the question as to why displays of normative sentiment should inspire observers to aid the actor, as it is not obvious why others should incur the costs of providing assistance.

Norm conformity often marks membership in a culturally-defined group: dialect, comportment, styles of dress and adornment, modes of greeting and address, and myriad other behaviors all differ between groups. Behavioral markers that allow individuals to identify and preferentially interact with others who share their social norms can arise and persist if interactions between individuals who share beliefs are

more successful than interactions among people with discordant beliefs (McElreath et al., 2003). Demonstrating a normative orientation may thus serve to advertise the individual's allegiance to the ingroup, and one's predictability for coordinated action in coalitions. Across cultures, both norms favoring dyadic reciprocity and norms favoring aiding ingroup members are extremely common. Observers may thus be motivated to assist an individual who displays normative sentiments both because (a) they hope for future reciprocation (Milinski, Semmann, and Krambeck, 2002; Panchanathan and Boyd, 2004), and (b) by providing aid they demonstrate to third parties that they themselves adhere to the cultural prescriptions of the group (Fessler, 1999; Fessler and Haley, 2003). In small-scale societies like those that likely characterized ancestral human populations, this system is stabilized by the iterated nature of interactions, circumstances that enhance opportunities for both reputation formation and retaliation (Bowles and Gintis, 1998). In such a context it is relatively easy for observers to keep track of whether individuals who signal group allegiance and norm adherence when in need then later conform to those standards by similarly aiding others. Those who falsely claim to be good citizens typically suffer the withdrawal of future aid, the loss of opportunities for cooperative action, and, sometimes, direct and violent punishment. Although neighboring groups sometimes provide refuge for outcasts, individuals must generally strive to remain in good stead with the members of a single group because coordination with new groups is often costly, as dialect and new norms are difficult to learn (Nettle and Dunbar, 1997). In addition, advertising one's adherence to the norms of one group may have bridge-burning consequences—once the individual has voiced loyalty to one group, it often becomes difficult to gain entry into other groups. The individual's attractiveness to members of other groups is diminished once time, energy, and loyalty have already been promised to a given group, commitments implicit in the display of normative behaviors. Even if those commitments are broken, the individual's attractiveness to members of other groups is not thereby enhanced, since individuals who fail to live up to claims of adherence to one group are unlikely to later demonstrate greater fidelity to any other group that takes them in. Taken together, these factors increase the likelihood both that signals of normative sentiment will often be attended to, and that observers will often be willing to incur the costs of providing aid to those who display such signals.

### *Supporting Evidence*

We do not claim that the view presented here explains every detail in the substantial corpus of existing terror management research. Indeed, we believe it to be very likely that death is associated with unique cognitive and behavioral outputs (see Barrett, in press). However, employing the approach outlined above, we believe that the central finding of terror management research—that participants in psychological studies who contemplate their corporeal death display greater support for the normative views of the ingroup—can be reinterpreted as an illustration of how

individuals become more normative in their ideological orientation because of the benefits attending ingroup-affiliative behavior. This holds true for a vast array of the consequences of mortality-salience induction documented by TMT researchers: increased support of one's nationalist, religious, or secular ideology, disliking dissimilar others, supporting ethnic stereotypes, denigrating or distancing oneself towards the ideology of the outgroup, ingratiating oneself to heroes or those who bolster the views of the ingroup, intensifying altruistic tendencies towards the ingroup, or proposing greater punishment for those who violate the norms of the ingroup can all be viewed as the output of psychological mechanisms designed to increase normative mental representations that undergird the maintenance and formation of social relationships.

The value of a theoretical framework hinges on its logical coherence, its congruence with existing knowledge, and its explanatory power. With regard to the latter factor, it is noteworthy that a number of findings in the terror management literature are problematic for TMT, but fit well with our perspective. TMT research has shown that (1) mortality-salience enhances ingroup bias even in minimal groups having trivial between-group differences in worldviews, and (2) mortality-salience increases affiliative behavior even towards those who do not share the worldview. In addition to these findings inconsistent with TMT from within the corpus of experimental results of its advocates, other empirical results (such as our finding that worldview defense occurs even when mortality is not salient) belie its advocates claims to the uniqueness of death concerns in eliciting ideological bias. Below we consider each of these findings in greater detail.

TMT proponents emphatically argue that their experimental results are caused exclusively by the salience of death concerns (Arndt et al., 1997; Greenberg et al., 1994) and that their findings remove TMT from the domain of theories that explain increased cultural affiliation in response to self-relevant threats (Pyszczynski, Greenberg, and Solomon, 1997). In support of the claim that ideology-defense effects occur specifically and exclusively because individuals are motivated to buffer themselves from the unique anxiety-producing properties of death-salient stimuli, TMT researchers claim to have demonstrated that these effects do not emerge from generalized value accessibility, negative affect, or worrisome thoughts, and that aversive thoughts unrelated to death (such as contemplating failing an exam or addressing a public audience) do not engender effects parallel to those elicited by mortality-salience (Greenberg et al., 1994; Greenberg et al., 1995; Greenberg et al., 1997; Solomon et al., 2004). They interpret these findings as supporting the notion that mortality salience effects are "outside the purview of other theories that might suggest that self-relevant threats would enhance intergroup bias and adherence to cultural values" (Greenberg et al., 1994). In a recent review article (Greenberg et al., 1997) three of the principal architects of TMT unambiguously state:

Unique support for [TMT] from the studies reported above is predicated on the assumption that mortality salience effects are

engendered specifically by concerns about one's own mortality rather than in response to any anxiety-provoking or self-threatening event. We believe that a very strong case can now be made that mortality salience effects are indeed uniquely driven by thoughts of mortality (p. 17).

Challenged by these claims, we conducted a series of investigations in which participants contemplated scenarios that contained an adaptive challenge but did not elicit thoughts of death. Whereas advocates of TMT explicitly predict that the worldview defense effects found in their studies are uniquely caused by death thoughts, our perspective predicts that fitness-relevant stimuli unrelated to death can produce similar results, provided that the eliciting stimuli indexes an adaptive challenge that could be effectively addressed through social support.

In six studies conducted in the U.S. and Costa Rica, we demonstrated that participants who contemplated death, theft of personal belongings, social isolation, or soliciting help for a cooperative task all increased their support of a pro-nationalist author over a societal critic when compared to participants who contemplated a neutral theme<sup>2</sup> (Navarrete, in press; Navarrete et al., 2004). In addition, again contrary to the predictions of TMT, mortality salience failed to increase normative bias among Costa Rican participants, calling into question the cross-cultural ubiquity of such existential concerns.

Under the assumption that disease threats provided some selection pressure under Pleistocene conditions such that our ancestors would have benefited from the assistance of ingroup members (e.g. ingroup members could provide aid when one is ill and vulnerable to predators or conspecifics), in a separate series of studies using U.S. citizens on the Internet as participants, we demonstrate that ethnocentrism rises as a function of perceived vulnerability to disease. This relationship occurs even when the effects of death anxiety are statistically controlled in the model. In a follow up study we show that support for ingroup ideology is positively predicted by disgust sensitivity towards potential sources of pathogen contagion when measured as a chronic individual difference measure, and when disgust sensitivity is experimentally primed. Finally, in an online study using pregnant women as participants, we show that ingroup bias peaks during the first trimester (the period when the mother and fetus are most vulnerable to infection), and decreases in the second and third trimesters when pathogen risk is lower (Navarrete, Fessler & Eng, 2005).

These results showed that worldview-defense effects can occur even when death is not salient, provided that the eliciting stimuli contain content that is relevant to fitness concerns that can conceivably be addressed through the social support that coalition membership can provide. Illness, social isolation, theft of personal property, and a need for assistance in a cooperative task all require that individuals take steps necessary for social inclusion, and increasing one's pro-normative orientation facilitates success toward this end. While our results are striking, our enterprise is not the only one to demonstrate that normative bias rises in response to self-relevant

threats that do not engender death-thoughts. Experimental manipulations that are unrelated to death but which share conceptual links to personal uncertainty or to threats of physical bodily-integrity have been found to increase ideology defense as well (Burris and Rempel, 2004; McGregor, Zanna, Holmes, and Spencer, 2001). Because (a) others are often able to provide direction and aid in uncertain situations, and (b) threats to bodily self-integrity can be addressed through social support, these results are consistent with our thesis that increases in normative orientation are ultimately aimed at recruiting assistance.

Findings from both classic and current research on social support are congruent with our contention that affiliation defenses are triggered by a wider variety of threats than simply those that might invoke existential anxiety. Taylor and colleagues (2003) present a host of evidence indicating that social support in the face of stressful events is beneficial to human psychological and physical functioning. The authors note that affiliation appears to be especially common under stress, and is particularly beneficial when individuals are part of a network of communication and mutual obligation. Stanley Schachter's (1959) studies of the psychology of affiliation reveal that research participants increase their affiliative responses in response to a wide range of aversive stimuli that do not invoke mortality concerns. Such threats increased affiliation most markedly with others believed to be facing the same situation. Congruent with our premise regarding the adaptive utility of coalition membership in the face of threats, Schachter interprets his results as indicating that such challenges "lead to a desire to be with others as a means of socially evaluating and determining the 'appropriate' and proper reaction."

Harmon-Jones and colleagues (1996) examined the effects of mortality salience on minimal groups (*sensu* Tajfel, Billig, Bundy, and Flament, 1971) and found that study participants who contemplated death preferred ingroup members to outgroup members in arbitrarily assigned groups. The authors interpret these results as indicating that, when confronted with death, individuals who lack an existing and meaningful outlet on which to project their death anxiety will seize on arbitrary or trivial factors with which to boost their personal sense of value and preserve their psychological equanimity. We suggest that, because these results reveal that intergroup bias occurs in the absence of meaningful worldview distinctions, this investigation actually demonstrates that it is perceived coalitional membership, and not worldview defense, that is the key factor in mortality-salience phenomena. As noted above, while shared beliefs are important in determining group identity (who belongs and who does not), it is not the beliefs per se that are the relevant issue, but rather the group membership thus marked. Contrary to TMT claims, group identity does not function to assuage worldview defense needs (*sensu* Mikulincer and Florian, 2000) – instead, worldviews serve the purpose of facilitating intergroup and interpersonal relationships. Wisman and Koole (2003) present a series of studies in which mortality salience consistently leads to increased affiliation strivings as demonstrated by a greater tendency to sit next to others rather than alone, and to sit with ingroup members compared to outgroup members. On their own, these results

are consistent with both our coalitional psychology theory and a TMT perspective on affiliation needs: whereas we assert that affiliation with others is an important means of coping with threats to fitness, proponents of TMT argue that belongingness with others bolsters one's worldview and thus relieves existential anxiety, since social relationships are an integral part of a meaningful, anxiety-buffering worldview (Florian, Mikulincer, and Hirschberger, 2002; Taubman Ben-Ari, Findler, and Mikulincer, 2002). However, in contrast to predictions entailed by the latter interpretation, Wisman and Koole also found that the affiliative response swamped worldview defense effects, as affiliation tendencies increased even when group members had threatened participants' worldviews, and when the group forced participants to attack their own worldviews. These effects occurred even though the participants' worldviews were personally relevant and highly accessible. Together, these results suggest that affiliative responses suffice to attenuate or eliminate the need to increase one's normative orientation, a pattern that contradicts the TMT view of the relationship between affiliation and beliefs. If, as TMT researchers claim, affiliation is attractive to the extent that relationships are part of a meaningful worldview, then participants should not affiliate with those who contravene their worldviews. In contrast, the pattern documented by Wisman and Koole is wholly understandable once it is recognized that TMT erroneously reverses the relationship between worldviews and affiliation – from the perspective of coalitional psychology, because affiliation is itself the goal underlying increases in normative cognitions, if affiliation can be achieved directly, the value of more roundabout means of achieving this objective is reduced.

*Other moderators of normative bias*

In providing an alternative explanation of the findings of terror management research, we do not propose that the phenomena to be explained consist merely of the tendency for people to produce positive evaluations of the ingroup and negative evaluations of outgroups—the available evidence suggests that the phenomena at issue are much more complex (Greenberg et al., 1990; Mikulincer, Florian, Birnbaum, and Malishkevich, 2002). We agree with terror management researchers that evaluations of dissimilar views may be tolerated to a greater or lesser degree under mortality-salience conditions depending upon the personality and ideology of the respondent. However, whereas TMT researchers view such differences as reflecting unique styles of coping with the existential dilemma stemming from the particulars of individuals' worldviews and problem-solving styles, we interpret these results as simply reflecting adaptive shifts in the cognition that binds social relations. Because the behaviors that maintain and enhance social relationships occur within a context of shared values, beliefs, and norms (Hardin and Conley, 2001), the relational cognitions appropriate for servicing social relationships will differ depending on the norms of the social group with which one identifies. In addition, the extent to which such behaviors will be pursued will be contingent on the individual's self-assessed

ability to meet fitness challenges – time and effort will not be expended seeking social support if such support is deemed unnecessary by a given individual facing a given challenge. Thus, the expression of a pro-normative orientation should be moderated by both the extent to which one's ingroup values tolerance of diversity and the degree of self-assessed need for assistance. Below, we consider these factors in greater detail.

*Authoritarianism.* A variety of terror management experiments demonstrate that authoritarianism and political conservatism are moderators of bias against dissimilar others (Greenberg et al., 1990; Greenberg, Simon, Pyszczynski, Solomon, and et al., 1992). Political conservatives and high-authoritarians showed decreased liking for dissimilar others after contemplating death, but no such effects were found for political liberals and low-authoritarians. The authors claim that these patterns reflect individuals' attempts to buffer themselves against existential anxiety by bolstering their respective worldviews. For example, because tolerance of dissimilar others is central to a liberal political philosophy, under mortality-salience conditions, liberals ostensibly become more tolerant of outgroup members because they are clinging more tenaciously to their ideology in order to avoid confronting their own mortality. In contrast to this interpretation, we propose that differences in tolerance are important not because they influence how individuals attempt to assuage death-anxiety, but rather because tolerance of dissimilar others reflects norms which individuals believe are important to their respective ingroups. High authoritarian individuals identify with groups that advocate intolerance of cultural diversity, while low authoritarians identify with groups that advocate the reverse.

Our investigations in the U.S. and Costa Rica (Navarrete et al., 2004) support our interpretation of the effects of authoritarianism on responses to challenging circumstances. Using stimuli unrelated to death, we demonstrated that attitudinal changes are moderated by individual differences in authoritarianism: the effects of the treatments on normative bias are greatest for participants scoring high on authoritarianism, while the effects are attenuated or even reversed for low authoritarians. These results are consistent with our hypothesis that, when faced with a challenging situation in which social alliances would be of particular importance, individuals conform to the culturally constructed standards of their ingroup by overtly embodying those norms. Consistent with our predictions, and contrary to the claims of TMT, these effects are not limited to death-relevant threats.

*Self-esteem.* Self-esteem plays a critical role in terror management research, as investigators have shown that individuals having high self-esteem respond to mortality-salience primes with less worldview defense than do individuals having low self-esteem (Goldenberg, McCoy, Pyszczynski, Greenberg, and Solomon, 2000; Harmon-Jones, Simon, Greenberg, Pyszczynski, and et al., 1997). While proponents of TMT claim that this occurs because high self-esteem indexes possession of a strong buffer against death terror (i.e., one has met the standards of one's worldview and can therefore live with equanimity despite the knowledge of one's inevitable death), emerging perspectives on self-esteem suggest that this pattern is more

plausibly explained in terms of the relationship between self-esteem and the individual's ability to meet fitness-relevant challenges, including the challenge of maintaining social support. Leary, Tambor and Terdal (1995) describe self-esteem as a representation to the self of the degree to which one is socially connected. Noting the functional significance of group inclusion, Leary and colleagues argue that the hedonic aspects of self-esteem serve to motivate behaviors that enhance acceptance by the group. Reasoning along similar lines, Fessler (2001) argues that the emotions of shame and pride index instances of failure or success with regard to both cultural standards for behavior and questions of social dominance; self-esteem provides a representation of one's current standing in the group by summing one's history of shame- and pride-inducing events. Finally, Kirkpatrick and Ellis (2001) argue that there are numerous functionally distinct self-esteems, each gauging how well one is performing in a given fitness-relevant domain; global self-esteem can thus be seen as a running tally of one's fitness prospects, with performance in a variety of social arenas constituting a critical determinant (see also Kirkpatrick et al., 2002).

If self-esteem is an index of how well one is equipped to meet fitness challenges, and if such readiness is at least in part a function of one's degree of social integration, then it follows that individuals having high self-esteem should work less stridently to marshal social support when confronted with adaptive challenges than individuals having low self-esteem, as the former can more reliably count on others to provide support when needed. On the basis of this reasoning we predicted that, as had been previously demonstrated by TMT researchers, death-related primes should have a greater enhancing effect on intergroup bias in low self-esteem individuals. While this prediction did not differentiate our theory from TMT, in contrast to the latter, we also predicted that the same should be true of threat primes that do not evoke thoughts of death. Each of these predictions was supported (Navarrete et al., 2004; Study 3).

Our view of the role played by self-esteem in reactions to adaptive challenges is congruent with a body of literature indicating that people on the periphery of desirable ingroups express greater attachment towards ingroup ideals, and more outgroup derogation, than do those at the center of the ingroup (see Hewstone, Rubin, and Willis, 2002 for a review). For example, Peres (1971) has shown that, in Israel, lower status Middle Eastern Jews report more intense hostility and prejudice towards Arabs than do higher status European Jews. Middle Eastern Jews, who are relatively peripheral members of Israeli society, may use derogation of Arabs to gain acceptance by the higher-status, core members of their society. These effects are deepened when threats to the shared common interests of all Israelis are made salient (Jost et al., in press). Similarly, Noel, Wann, and Branscombe (1995) present experimental results showing that people with peripheral membership status in an ingroup express negative judgments about a comparison outgroup, particularly when an ingroup audience is anticipated. Finally, Vohs and Heatherton (2001; 2003) demonstrate that when confronted with an ego-threat, individuals with low self-esteem modify their behavior so as to become more likeable to peers, a shift that is mediated through perceptions of the self as interdependent with others. Hence, in

both naturally occurring and artificially created groups, those who likely see their status as more tenuous work harder to advertise their conformity to ingroup norms, derogating outgroup members and otherwise adjusting their self-presentation so as to increase their appeal to relevant others. When combined with findings concerning the centrality of social acceptance and norm adherence to self-esteem (Kirkpatrick and Ellis, 2001; Leary, 2001; Leary, Cottrell, and Phillips, 2001), these results lend credence to our interpretation of the interaction between self-esteem and responses to threat-primers, importantly including primers that do not concern death.

*Interdependence.* An important question in cross-cultural research concerns the extent to which individuals in various societies differ with regard to independent versus interdependent construals of the self. This concept is seen by many cross-cultural researchers as the most basic element of a culture, and a distinctive dimension of cultural variation (Markus and Kitayama, 1999; Triandis, 1995). An independent self emphasizes values such as self-reliance, individual rights, and self-actualization. Conversely, the interdependent self focuses on sociocentric values such as dependence on others, duty, and conformity to social norms.

Our initial studies found that social isolation-salience produced greater normative cognitions than did mortality salience among Costa Rican participants, but that the opposite was true among American undergraduates (Navarrete et al., 2004). In fact, mortality-salience failed to produce significant main effect increases on normative bias in the Costa Rican samples. We hypothesized that cultural differences in the conceptualization and importance of social relationships might be the cause of these differences. Since rural Costa Ricans value interconnectedness and view their ability to meet life challenges as fundamentally dependent on their relationships with others, Costa Ricans may assess complete social isolation as a more dire fitness challenge than do our more individualistic American undergraduates. By extension, this reasoning suggests that, within a single culture, interindividual variation in the perceived dependence upon others in meeting life challenges should correspond with the extremity of normative sentiments that are exhibited under conditions of threat or challenge. A follow-up study in Costa Rica (Navarrete et al., 2004; Study 4) produced evidence supporting this prediction, as we found that adherence to collectivist values positively predicted normative bias as a function of exposure to coalition-relevant primers, and that increases in normative bias after the manipulation were primarily driven by participants with high interdependent self-construals.

This finding was replicated among urban North American undergraduates in a second series of studies (Navarrete, in press). Intriguingly, reversing the pattern found in Costa Rica, among UCLA undergraduates, contemplation of social isolation produced smaller effects than did mortality salience. These population differences are consistent with the notion that ideological reactions to self-relevant adaptive challenges reflect cultural differences in how such challenges are cognized. Various aspects of universal themes may be differentially cognitively elaborated or downplayed in different cultures (Levy, 1973), producing between-population differences in the aversiveness of various scenarios. Specifically, social isolation may

be a more significant threat in societies that emphasize collective as opposed to individual responses to challenges, and existential mortality concerns may not be particularly salient to individuals in societies where religious beliefs and fatalistic attitudes make avoiding such themes less troublesome than is the case for people living in complex industrialized nation-states where cultures emphasize secular life, longevity, avoidance of death, and control over one's destiny (Cohen and Nisbett, 1998; Durkheim, 1897/1951).

## **Conclusion**

Our results and those of other researchers provide clear evidence that bias towards ingroup ideology can be produced using fitness-relevant primes without reminding participants of their mortality. These effects are moderated by the same individual differences constructs employed in terror management research (authoritarianism, self-esteem), as well as by a novel moderator that we have explored (interdependence). Together, these patterns support our contention that humans possess psychological mechanisms that shape reactions to adaptive challenges in ways which would have been fitness-enhancing under ancestral conditions. These mechanisms adjust behavior as a function of the need to improve one's chances of receiving coalitional support, generating output that is shaped by the culture of the group with which one identifies.

Recent terror management research has documented that group identification and close social relationships are key themes in the investigation of intergroup bias and ideology defense (Florian et al., 2002; Hirschberger, Florian, and Mikulincer, 2003; Mikulincer et al., 2002). Indeed, these researchers have recognized the adaptive value of social relationships in addressing fitness challenges (e.g. finding food, shelter, staying safe, etc.). While we welcome this trend, we question the utility of grafting increasingly accurate additions onto a dubious theoretical framework. Contrary to the claims of its proponents, terror management theory is not in step with contemporary evolutionary approaches to behavior regarding the function of anxiety, nor does it accurately describe beliefs found in many of the world's cultures. Even if it were the case that a gargantuan system of psychological mechanisms evolved solely for the palliative function of anxiety reduction, terror management theory can not adequately explain why it should be the case that belief in a worldview should, on first principles, be anxiety-reducing as opposed to anxiety-inducing. Lastly, and most damning of all, mortality salience does not have the unique evocative powers ascribed to it by its proponents. Our approach to coalitional psychology, a framework premised on the tenets of modern evolutionary theory and informed by a broad understanding of cultural variation, can provide direction in accounting for both the corpus of results so impressively documented in terror management research and the growing body of findings inconsistent with the predictions of terror management theory in its present form.

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## **Notes**

1. In contrast to the meaning of the word “adaptive” as used in the developmental, educational and clinical literatures (i.e., enhancing individual wellbeing), following usage in evolutionary biology, we employ this term to describe behavior which enhances individual biological fitness (defined as the percentile representation of the individual organism’s genes in future generations). The term adaptive challenge thus refers to any circumstance that threatens to reduce the biological fitness of the individual organism.
2. Our reasoning for employing the experience of theft as an experimental prime was as follows: We hypothesize that an individual’s access to and control over resources was a significant determinant of fitness in ancestral environments. Coalitions clearly aid in achieving these goals, as allies can increase access to resources, assist in guarding resources, and enact retribution on competitors who attempt to appropriate resources. We therefore predicted that psychological mechanisms that operate to enhance coalitional support should be activated by the prospect of having had one’s possessions stolen, for such an event indicates an immediate increase in the need for resources, indexes inadequate social assistance in the protection of one’s resources, and signals the need for allies in seeking vengeance on thieves, actions that will deter future fitness-reducing transgressions. We predicted that the prospect of complete social isolation as an experimental prime would similarly elicit the mechanisms that enhance coalitional support. An individual’s access to any of the benefits of sociality, such as finding mates, protection from predators or conspecifics, access to food and shelter, etc., depends on his or her inclusion in social groups. Thus, we posited that, in times of social exclusion or marginalization, the adaptive system for creating or reaffirming beneficial social bonds should give rise to the pro-normative, ingroup-affiliative sentiments necessary to obtain needed social support. Finally, we designed an additional experimental manipulation to directly explore the workings of the psychological mechanisms which we postulate undergird coalitional psychology. This prime induced participants to contemplate the need to enlist the aid of family and friends to build a home. To the extent that enlisting others to aid in a cooperative task requires that individuals take steps to increase the likelihood that others will view them as valuable ingroup members deserving of aid, enhancing one’s normative orientation is a cognitive first step toward achieving this end.

## References

- Arndt, J., Greenberg, J., Solomon, S., Pyszczynski, T. *et al.* (1997). Suppression, accessibility of death-related thoughts, and cultural worldview defense: Exploring the psychodynamics of terror management. *Journal of Personality and Social Psychology*, 73(1), 5-18.
- Barrett, H. C. (2005). Enzymatic computation and cognitive modularity. *Mind and Language*, 20, 259-287.
- Barrett, H. C. (in press). Adaptations to predators and prey. In *Handbook of Evolutionary Psychology*.
- Baumeister, R. F. and Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497-529.
- Baumeister, R. F. and Tice, D. M. (1990). Anxiety and social exclusion. *Journal of Social and Clinical Psychology*, 9(165-195).
- Becker, E. (1962). *The birth and death of meaning*. New York: Free Press.
- Becker, E. (1973). *The Denial of Death*. New York: Free Press.
- Bowles, S. and Gintis, H. (1998). The moral economy of communities: Structured populations and the evolution of pro-social norms. *Evolution and Human Behavior*, 19(1), 3-25.
- Boyd, R., and Richerson, P. J. (1985). *Culture and the evolutionary process*. Chicago: University of Chicago Press.
- Boyd, R., and Richerson, P. J. (1990). Culture and Cooperation. In J. J. Mansbridge (Ed.), *Beyond self-interest* (pp. 111-132). Chicago: The University of Chicago Press.
- Boyer, P. (2000). Evolutionary psychology and cultural transmission. *American Behavioral Scientist. Special Issue: Evolutionary psychology: Potential and limits of a Darwinian framework for the behavioral sciences*, 43(6), 987-1000.
- Boyer, P. (2001). *Religion explained: The evolutionary origins of religious thought*. New York: Basic Books.
- Burris, C. T. and Rempel, J. K. (2004). "It's the End of the World as We Know It": Threat and the Spatial-Symbolic Self. *Journal of Personality and Social Psychology*, 86(1), 19-42.
- Buss, D. M. (1990). The evolution of anxiety and social exclusion. *Journal of Social and Clinical Psychology*, 9(2), 196-201.
- Buss, D. M. (1997). Human social motivation in evolutionary perspective: Grounding terror management theory. *Psychological Inquiry*, 8(1), 22-26.
- Buss, D. M. (2001). The design of the human mind. *Psychologist*, 14(8), 425-426.
- Cohen, D. and Nisbett, R. E. (1998). Are there differences in fatalism between rural Southerners and Midwesterners? *Journal of Applied Social Psychology*, 28(23), 2181-2195.
- Cosmides, L. and Tooby, J. (1994). Origins of domain specificity: The evolution of

- functional organization. In L. A. Hirschfeld and S. A. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture* (pp. 85-116). New York, NY: Cambridge University Press.
- Cosmides, L. and Tooby, J. (2000). Evolutionary psychology and the emotions. In M. Lewis and J. M. Haviland-Jones (Eds.), *Handbook of Emotions* (2nd ed., pp. 91-115). New York: Guilford Press.
- Cosmides, L. and Tooby, J. (2002). Unraveling the enigma of human intelligence: Evolutionary psychology and the multimodular mind. In R. J. Sternberg and J. C. Kaufman (Eds.), *The evolution of intelligence* (pp. 145-198). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Curtis, V. A. and Biran, A. (2001). Dirt, disgust and disease: is hygiene in our genes? *Perspectives in Biology and Medicine*, 44(1), 17-31.
- Daly, M. and Wilson, M. (1988). *Homicide*. Hawthorne, NY: Aldine.
- Daly, M. and Wilson, M. (2001). Risk-taking, intrasexual competition, and homicide. *Nebraska Symposium on Motivation*, 47, 1-36.
- Darwin, C. (1859). *On the Origin of Species by Means of Natural Selection*. London: John Murray.
- Dawkins, R. (1989). *The Selfish Gene*. Oxford: Oxford University Press.
- De Waal, F. B. M. (1982). *Chimpanzee Politics: Power and Sex Among Apes*. New York: Harper and Row.
- De Waal, F. B. M., and Harcourt, A. H. (Eds.). (1992). *Coalitions and alliances in humans and other animals*. Oxford: Oxford University Press.
- Durkheim, E. (1951). *Suicide*. New York: Free Press. Originally published in 1897.
- Evans-Pritchard, E. E. (1937). *Witchcraft, oracles and magic among the Azande*. Oxford: Oxford University Press.
- Fessler, D. M. T. (1999). Toward an understanding of the universality of second order emotions. In *Beyond nature or nurture: Biocultural approaches to emotions* (pp. 75-116). New York: Cambridge University Press.
- Fessler, D. M. T. (2001). Emotions and cost/benefit assessment: The role of shame and self-esteem in risk taking. In R. Selten and G. Gigerenzer (Eds.), *Bounded Rationality: The Adaptive Toolbox* (pp. 191-214). Cambridge, MA: MIT University Press.
- Fessler, D. M. T., and Haley, K. J. (2003). The strategy of affect: Emotions in human cooperation. In P. Hammerstein (Ed.), *The genetic and cultural evolution of cooperation* (pp. 7-36). Cambridge, MA: MIT Press.
- Florian, V., Mikulincer, M. and Hirschberger, G. (2002). The anxiety-buffering function of close relationships: Evidence that relationship commitment acts as a terror management mechanism. *Journal of Personality and Social Psychology*, 82(4), 527-542.
- Frank, R. H. (1988). *Passions within reason: The strategic role of the emotions*. New York: W.W. Norton.
- Frank, R. H. (2001). Cooperation through emotional commitment. In R. M. Nesse (Ed.), *Evolution and the capacity for commitment. Volume III in the Russell*

- Sage Foundation series on trust* (pp. 57-76). New York, NY: Russell Sage Foundation.
- Freud, S. (1929). *Civilization and its discontents*. New York: Norton.
- Gaffin, N. M. (2004). Rallying Behind the Flag Industry. Monster.com. Featured Reports: A Year Later in the World of Work. Accessed 10 February, 2004 from Monster.com website: <http://featuredreports.monster.com/911/flag/>.
- Gibson, E. J. and Walk, R. D. (1960). "The "visual cliff." *Scientific American*, 202(4), 64-71.
- Gintis, H., Bowles, S., Boyd, R. and Fehr, E. (2003). Explaining altruistic behavior in humans. *Evolution and Human Behavior*, 24(3), 153-172.
- Goldenberg, J. L., McCoy, S. K., Pyszczynski, T., Greenberg, J. and Solomon, S. (2000). The body as a source of self-esteem: The effect of mortality salience on identification with one's body, interest in sex, and appearance monitoring. *Journal of Personality and Social Psychology*, 79(1), 118-130.
- Greenberg, J., Arndt, J., Schimel, J., Pyszczynski, T. and Solomon, S. (2001). Clarifying the function of mortality salience-induced worldview defense: Renewed suppression or reduced accessibility of death-related thoughts? *Journal of Experimental Social Psychology*, 37(1), 70-76.
- Greenberg, J., Pyszczynski, T. and Solomon, S. (1986). The causes and consequences of a need for self-esteem: A terror management theory. In R. F. Baumeister (Ed.), *Public and Private Self* (pp. 189-212). New York: Springer-Verlag.
- Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A. et al. (1990). Evidence for terror management theory II: The effects of mortality salience on reactions to those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology*, 58(2), 308-318.
- Greenberg, J., Pyszczynski, T., Solomon, S., Simon, L. et al. (1994). Role of consciousness and accessibility of death-related thoughts in mortality salience effects. *Journal of Personality and Social Psychology*, 67(4), 627-637.
- Greenberg, J., Simon, L., Harmon-Jones, E., Solomon, S. et al. (1995). Testing alternative explanations for mortality salience effects: Terror management, value accessibility, or worrisome thoughts? *European Journal of Social Psychology*, 12(4), 417-433.
- Greenberg, J., Simon, L., Pyszczynski, T., Solomon, S. et al. (1992). Terror management and tolerance: Does mortality salience always intensify negative reactions to others who threaten one's worldview? *Journal of Personality and Social Psychology*, 63(2), 212-220.
- Greenberg, J., Solomon, S. and Pyszczynski, T. (1997). Terror management theory of self-esteem and cultural worldviews: Empirical assessments and conceptual refinements. *Advances in Experimental Social Psychology*, 29, 61-139.
- Haines, E. L. and Jost, J. T. (2000). Placating the powerless: Effects of legitimate and illegitimate explanation on affect, memory, and stereotyping. *Social Justice Research*, 13(3), 219-236.
- Hallowell, A. I. (1956). The Structural and Functional Dimensions of a Human

- Existence. *Quarterly Review of Biology*, 31, 88 - 101.
- Hallowell, A. I. (1963). Personality Culture and Society in Behavioral Evolution. In F. e. al. (Ed.), *Contributions to Anthropology: Selected Papers of AI Hallowell*. Chicago: University of Chicago Press.
- Hamilton, W. D. (1964). The Genetical Evolution of Social Behaviour. *Journal of Theoretical Biology*, 7, 1-16.
- Hardin, C. D. and Conley, T. D. (2001). A relational approach to cognition: Shared experience and relationship affirmation in social cognition. In G. B. Moskowitz (Ed.), *Cognitive social psychology: The Princeton Symposium on the Legacy and Future of Social Cognition* (pp. 3-17). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Hardin, C. D. and Higgins, E. T. (1996). Shared reality: How social verification makes the subjective objective. In R. M. Sorrentino and E. T. Higgins (Eds.), *Handbook of motivation and cognition, Vol. 3: The interpersonal context. Handbook of motivation and cognition* (pp. 28-84). New York, NY: Guilford Press.
- Harmon-Jones, E., Greenberg, J., Solomon, S. and Simon, L. (1996). The effects of mortality salience on intergroup bias between minimal groups. *European Journal of Social Psychology*, 26(4), 677-681.
- Harmon-Jones, E., Simon, L., Greenberg, J., Pyszczynski, T. et al. (1997). Terror management theory and self-esteem: Evidence that increased self-esteem reduced mortality salience effects. *Journal of Personality and Social Psychology*, 72(1), 24-36.
- Hewstone, M. and Lord, C. G. (1998). Changing intergroup cognitions and intergroup cognitions and intergroup behavior: The role of typicality. In C. Sedikides and J. Schopler (Eds.), *Intergroup cognition and intergroup behavior* (pp. 367-392). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Hewstone, M., Rubin, M. and Willis, H. (2002). Intergroup bias. *Annual Review of Psychology*, 53(1), 575-604.
- Hirschberger, G., Florian, V. and Mikulincer, M. (2003). Strivings for romantic intimacy following partner complaint or partner criticism: A terror management perspective. *Journal of Social and Personal Relationships*, 20(5), 675-687.
- Human Rights Watch. (2002). *U.S. Officials Should Have Been Better Prepared For Hate Crime Wave*. Human Rights Watch. Retrieved 20 February, 2004 from Human Rights Watch website: <http://hrw.org/press/2002/11/usahate.htm>
- Izard, C. E. (1977). *Human emotions*. New York: Plenum Press.
- Johnston, V. S. (1999). *Why we feel : the science of human emotions*. Reading, MA: Perseus Books.
- Jost, J. T., Overbeck, J. R., Guermendi, G., Rubini, M., Mosso, C. and Kivetz, Y. (in press). System-justifying functions of complementary status stereotypes: Evidence from Italy, England, Israel, and the United States. *Journal of Personality and Social Psychology*.

- Kierkegaard, S. (1844). *The Concept of Dread*. Princeton, NJ: Princeton University Press. (Reprint 1959).
- Kirkpatrick, L. A. (1999). Toward an evolutionary psychology of religion and personality. *Journal of Personality*, 67(6), 921-952.
- Kirkpatrick, L. A. and Ellis, B. J. (2001). Evolutionary perspectives on self-evaluation and self-esteem. In G. Fletcher and M. Clark (Eds.), *The Blackwell handbook of social psychology: Vol. 2: Interpersonal Processes*. Oxford, U.K.: Blackwell.
- Kirkpatrick, L. A., Waugh, C. E., Valencia, A. and Webster, G. D. (2002). The functional domain specificity of self-esteem and the differential prediction of aggression. *Journal of Personality and Social Psychology*, 82(5), 756-767.
- Kurzban, R., Tooby, J. and Cosmides, L. (2001). Can race be erased? Coalitional computation and social categorization. *Proceedings of the National Academy of Sciences*, 98(26), 15387-15392.
- Leary, M. R. (2001). Toward a conceptualization of interpersonal rejection. In M. R. Leary (Ed.), *Interpersonal rejection* (pp. 3-20).
- Leary, M. R., Cottrell, C. A., and Phillips, M. (2001). Deconfounding the effects of dominance and social acceptance on self-esteem. *Journal of Personality and Social Psychology*, 81(5), 898-909.
- Leary, M. R., and Schreindorfer, L. S. (1997). Unresolved issues with terror management theory. *Psychological Inquiry*, 8(1), 26-29.
- Leary, M. R., Tambor, E. S., Terdal, S. K., and Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, 68(3), 518-530.
- Levy, R. I. (1973). *Tahitians: Mind and experience in the Society Islands*. Chicago: University of Chicago Press.
- Lyons, A. and Kashima, Y. (2003). How Are Stereotypes Maintained Through Communication? The Influence of Stereotype Sharedness. *Journal of Personality and Social Psychology*, 85(6), 989-1005.
- Markus, H. R. and Kitayama, S. (1999). Culture and the self: Implications for cognition, emotion, and motivation. In R. F. Baumeister (Ed.), *The self in social psychology. Key readings in social psychology* (pp. 339-371). Philadelphia, PA: Psychology Press.
- McElreath, R., Boyd, R. and Richerson, P. J. (2003). Shared norms lead to the evolution of ethnic markers. *Current Anthropology*, 44(1), 122-129.
- McGregor, I., Zanna, M. P., Holmes, J. G. and Spencer, S. J. (2001). Compensatory conviction in the face of personal uncertainty: Going to extremes and being oneself. *Journal of Personality and Social Psychology*, 80(3), 472-488.
- Mikulincer, M. and Florian, V. (2000). Exploring individual differences in reactions to mortality salience: Does attachment style regulate terror management mechanisms? *Journal of Personality and Social Psychology*, 79(2), 260-273.
- Mikulincer, M., Florian, V., Birnbaum, G. and Malishkevich, S. (2002). The death-anxiety buffering function of close relationships: Exploring the effects of

- separation reminders on death-thought accessibility. *Personality and Social Psychology Bulletin*, 28(3), 287-299.
- Milinski, M., Semmann, D. and Krambeck, H. J. (2002). Reputation helps solve the 'tragedy of the commons'. *Nature*, 415(6870), 424-426.
- Navarrete, C. D. (in press). Mortality concerns and other adaptive challenges: The effects of coalition-relevant challenges on worldview defense in the U.S. and Costa Rica. *Group Processes and Intergroup Relations*.
- Navarrete, C.D., Fessler, D.M.T., & Eng, S.J. (2005). Disease-avoidance and Intergroup Bias: The Effects of Disgust Sensitivity and Pregnancy on Ethnocentric Attitudes. Paper presented at the 6th Annual Meeting of the Society for Personality and Social Psychology, New Orleans, LA.
- Navarrete, C. D., Kurzban, R., Fessler, D. M. T., and Kirkpatrick, L. A. (2004). Anxiety and intergroup bias: Terror management or coalitional psychology? *Group Processes and Intergroup Relations*, 7(4), 370-397.
- Nesse, R. M. (1990). Evolutionary explanations of emotions. *Human Nature*, 1(3), 261-289.
- Nettle, D., and Dunbar, R. I. M. (1997). Social Markers and the Evolution of Reciprocal Exchange. *Current Anthropology*, 38, 93-99.
- Noel, J. G., Wann, D. L., and Branscombe, N. R. (1995). Peripheral ingroup membership status and public negativity toward outgroups. *Journal of Personality and Social Psychology*, 68(1), 127-137.
- Oehman, A., and Mineka, S. (2001). Fears, phobias, and preparedness: Toward an evolved module of fear and fear learning. *Psychological Review*, 108(3), 483-522.
- Panchanathan, K. and Boyd, R. (2004). Indirect reciprocity can stabilize cooperation without the second-order free rider problem. *Nature*, 432, 499-502.
- Paulhus, D. L. and Trapnell, P. D. (1997). Terror management theory: Extended or overextended? *Psychological Inquiry*, 8(1), 40-43.
- Pelham, B. W. (1997). Human motivation has multiple roots. *Psychological Inquiry*, 8(1), 44-47.
- Peres, Y. (1971). Ethnic relations in Israel. *American journal of sociology*, 76, 1021-1047.
- Pinker, S. (1997). *How the Mind Works*. New York: W.W. Norton.
- Pyszczynski, T., Greenberg, J. and Solomon, S. (1997). Why do we need what we need? A terror management perspective on the roots of human social motivation. *Psychological Inquiry*, 8(1), 1-20.
- Pyszczynski, T., Solomon, S., and Greenberg, J. (2002). *In the wake of 9/11: The psychology of terror*. New York: American Psychological Association.
- Rank, O. (1936). *Will therapy and truth and reality*. New York: Knopf.
- Rosenblatt, A., Greenberg, J., Solomon, S., Pyszczynski, T. et al. (1989). Evidence for terror management theory: I. The effects of mortality salience on reactions to those who violate or uphold cultural values. *Journal of Personality and Social Psychology*, 57(4), 681-690.

- Rozin, P. (1976). The evolution of intelligence and access to the cognitive unconscious. In J. a. E. Sprague, AN. (Ed.) (Ed.), *Progress in Psychobiology and Physiological Psychology* (Vol. 6, pp. 245-280). New York: Academic Press.
- Schachter, S. (1959). The psychology of affiliation: Experimental studies of the sources of gregariousness.
- Schaller, M., and Conway, L. G., III. (1999). Influence of impression-management goals on the emerging contents of group stereotypes: Support for a social-evolutionary process. *Personality and Social Psychology Bulletin*, 25(7), 819-833.
- Sherif, M. (1936). *The psychology of social norms*. Oxford, England: Harper Torchbooks.
- Sherif, M. (1936/1966). *The psychology of social norms*. Oxford, England: Harper Torchbooks.
- Sherif, M. and Sherif, C. (1953). *Groups in Harmony and Tension*. New York: Harper.
- Solomon, S., Greenberg, J., Schimel, J., Arndt, J. and Pyszczynski, T. (2004). Human Awareness of Mortality and the Evolution of Culture. In M. Schaller and C. S. Crandall (Eds.), *The psychological foundations of culture* (pp. 15-40). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Symons, D. (1992). On the use and misuse of Darwinism in the study of human behavior. In J. H. Barkow, L. Cosmides and J. Tooby (Eds.), *The Adapted Mind: Evolutionary Psychology and the Generation of Culture* (pp. 137-159). New York: Oxford.
- Tajfel, H., Billig, M., Bundy, R. and Flament, C. (1971). Social categorization and intergroup behavior. *European Journal of Social Psychology*, 1, 149-178.
- Taubman Ben-Ari, O., Findler, L. and Mikulincer, M. (2002). The effects of mortality salience on relationship strivings and beliefs: The moderating role of attachment style. *British Journal of Social Psychology*, 41(3), 419-441.
- Taylor, S. E., Klein, L. C., Gruenewald, T. L., Gurung, R. A. R. and Fernandes-Taylor, S. (2003). Affiliation, social support and biobehavioral responses to stress. In J. Suls and K. A. Wallston (Eds.), *Social psychological foundations of health and illness. Blackwell series in health psychology and behavioral medicine* (pp. 314-331). Malden, MA: Blackwell Publishers.
- Tooby, J. and Cosmides, L. (1988). *The evolution of war and its cognitive foundation*. Paper presented at the Evolution and Human Behavior, Univ. Michigan, Ann Arbor. April 8-10.
- Tooby, J. and Cosmides, L. (1992). The psychological foundations of culture. In J. H. Barkow and L. Cosmides (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 19-136).
- Tooby, J. and Cosmides, L. (1996). Friendship and the banker's paradox: Other pathways to the evolution of adaptations for altruism. In W. G. Runciman and J. M. Smith (Eds.), *Evolution of social behaviour patterns in primates and*

- man. Proceedings of The British Academy, Vol. 88* (pp. 119-143).
- Triandis, H. (1995). *Individualism and Collectivism*. Boulder, CO: Westview.
- van Dijk, T. A. (1998). *Ideology: A multidisciplinary approach*. London: Sage.
- Vohs, K. D. and Heatherton, T. F. (2001). Self-esteem and threats to self: Implications for self-construals and interpersonal perceptions. *Journal of Personality and Social Psychology, 81*(6), 1103-1118.
- Vohs, K. D. and Heatherton, T. F. (2003). The Effects of Self-Esteem and Ego Threat on Interpersonal Appraisals of Men and Women: A Naturalistic Study. *Personality and Social Psychology Bulletin, 29*(11), 1407-1420.
- Weisfeld, G. E. (1997). Discrete emotions theory with specific reference to pride and shame. In N. L. Segal, C. C. Weisfeld and G. E. Weisfeld (Eds.), *Uniting psychology and biology: Integrative perspectives on human development*. Washington, DC: American Psychological Association.
- Williams, G. (1966). *Adaptation and natural selection*. New Jersey, NJ: Princeton University Press.
- Wilson, M. and Daly, M. (1985). Competitiveness, risk taking, and violence: The young male syndrome. *Ethology and Sociobiology, 6*(1), 59-73.
- Wisman, A. and Koole, S. L. (2003). Hiding in the crowd: Can mortality salience promote affiliation with others who oppose one's worldviews? *Journal of Personality and Social Psychology, 84*(3), 511-526.