Perspectives on Psychological Science

Toward an Integrative Theory of Psychological Defense

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Abstract

According to theories of "psychological defense," humans are motivated to protect themselves against various types of psychological threat, including death awareness, uncertainty, and other inherently anxiety-provoking experiences. Protective mechanisms include strengthening close relationships; maintaining appraisals of self-worth, accomplishment, and agency; and cultivating meaningful views of the world. Thus, defensiveness theories incorporate research from many areas of psychology (e.g., information-processing biases, attitudes, and interpersonal and intergroup relations), to help explain why people think, feel, and act in the diverse ways that they do. Currently, the study of psychological defense is hindered by contradictory empirical results and a proliferation of theories that make very similar predictions. This article examines a cross-section of defensiveness theories and research, highlighting conclusions that can be drawn and areas where conceptual and research problems linger. It suggests that the field needs methodological innovation (e.g., more reliable and valid manipulations and measures of unconscious constructs, more diverse methodological approaches), a more complete and reliable body of data, and some fresh new ideas from psychological scientists across disciplines.

"Certainly the anxiety of death overshadows all concrete anxieties and gives them their ultimate seriousness. They have, however, a certain independence and, ordinarily, a more immediate impact than the anxiety of death." (Tillich, 1952, p. 43)

"I admit with a sense of scientific uneasiness that whatever angle you use, you don't get at the actual fear of death; and so I reluctantly agree. . . . [T]he argument can probably never be cleanly 'won.'" (Becker, 1973, p. 24)

"[I]t is inevitable that psychologists of differing disciplines will question the utility of offering wholly 'distinct' motivational accounts. . . . [G]enerating a new theory for each and every instantiation has meant that we know remarkably little about why we engage in [defensive] efforts." (Proulx, Inzlicht, & Harmon-Jones, 2012, pp. 289–290)

Why do people yearn for intimacy, to feel special, and to embrace a cogent view of life and reality? One answer is that these aspirations assist with individuals' "defensive" regulation of anxiety or other psychological uneasiness. Indeed, recent decades have seen a surge of research supporting theories depicting people as uniquely motivated to defend themselves from psychological threats, just as humans and other organisms have mechanisms to prevent or counteract physical threats. Although the surge was facilitated by the conceptualization of a "cognitive unconscious" (e.g., Kihlstrom, 1987), the advent of priming and reaction-time methods used to probe its contents, and a steady accumulation of empirical studies validating mainstream theories with psychodynamic roots (e.g., adult attachment theory; Mikulincer & Shaver, 2007a; Shaver & Mikulincer, 2005), probably the most significant generator of contemporary ideas about psychological defense has been terror management theory (TMT), beginning in the mid-1980s (Greenberg, Pyszczynski, & Solomon, 1986; Solomon, Greenberg, & Pyszczynski, 1991).

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Despite a contentious history (see, e.g., *Psychological Inquiry*, Vol. 8, Issue 1; and Vol. 17, Issue 4), TMT has generated an exponentially increasing number of experiments suggesting that many of humans' defining higher-order psychological motives may be partly attributed to complex nonconscious defenses against their awareness of their own mortality (i.e., *mortality salience*) and the potential for anxiety that such awareness entails. More recently, adjacent theoretically guided investigations have emphasized various sources of agitation apart from death as causing defensiveness (e.g., Heine, Proulx, & Vohs, 2006; McGregor, 2006). Therefore, the "experimental existential psychology" (Greenberg, Koole, & Pyszczynski, 2004) that TMT was largely responsible for inspiring now encompasses several different lines, each seeking to explain a common set of laboratory effects—and, ostensibly, the psychological phenomena these effects are purported to represent.

Nine years ago, I and my colleagues contributed to this proliferation by noting that many theories about interpersonal relationships, self-esteem, and beliefs and attitudes, TMT included, seemed similarly patterned and were probably addressing the same phenomenon, which we viewed, following attachment theory, as *security* maintenance (Hart, Shaver, & Goldenberg, 2005). We argued that a broad variety of threats activate defenses that are, in turn, roughly interchangeable; and, though we did not know it at the time, other researchers had reached the same conclusion (e.g., Heine et al., 2006). Similar sentiments continue to be articulated (e.g., Proulx et al., 2012). Yet, the analogously patterned theories persist in parallel, notwithstanding their extensive conceptual overlap. Apparent discrepancies in research findings give air to the most burning question: What, precisely, are people defending against when they exhibit seemingly compensatory responses to a range of real or imagined threats?

Meanwhile, progress toward illuminating the structure and process of psychological defense has largely stalled while researchers have become engrossed in nuanced theoretical arguments or in enumerating the sundry outcomes of defensiveness. This is an unfortunate circumstance, because diligent exploration of *empirical* nuances and *mechanisms* of defense might go further toward resolving theoretical disagreements than partisan arguments made in the general discussions of journal articles.

What sense can be made of such a rich area of inquiry when it seems to have resulted in a muddle of conclusions? What is known and unknown, and how might theorists and researchers proceed? I attempt to answer these questions here. I present an overview of relevant theoretical frameworks and findings, so as to consolidate, in a single article, the essential elements of the field.

Along the way, I draw several overarching conclusions around which I think some consensus can be built (see Table 1). I propose, with more detail than provided previously, a "security system" integration of defensiveness theories (cf. Hart et al., 2005). Finally, I highlight outstanding conceptual questions and related methodological concerns (some of which apply to psychological science more generally) and make specific suggestions for the field of existential psychology or, as I prefer, the study of *psychological defense*.[1]

Theories of Psychological Defense

Theories of psychological defense are neither new nor limited to psychology. Indeed, TMT is based on the work of an anthropologist, Ernest Becker (e.g., 1973), whose ideas were, in turn, a revision of Freudian psychoanalysis that integrated contributions from philosophers (e.g., Soren Kierkegaard), psychologists (e.g., William James, Sigmund Freud, Otto Rank), biologists, and others.

Defensiveness theories view humans as motivated to maintain psychological resources (e.g., self-esteem, meaning) to counteract anxiety, confer equanimity, and allow people to function without lapsing into psychological disarray. (Hence, mental illness reflects failed anxiety-buffering psychological resources.) The theories offer different answers to the question of why people are motivated to maintain anxiety-assuaging resources; in other words, they differ concerning the source of anxiety and therefore in their construal of precisely why various defensive

Table 1. Summary of Conceptual Conclusions

Conclusions Around Which to Build Consensus

(1) Mortality salience causes defensiveness, and

(2) so do other kinds of threats, at least some of the time.

(3) There is vast conceptual overlap among findings concerning the defensive function of relationships, self-esteem, and worldviews; and

(4) thus far, no evidence definitively suggests that the overlap can be explained exclusively by either a relational or "self-centered" perspective.

(5) Epistemic equilibrium theories are generative but seem not to completely account for defensiveness. A comprehensive theory of psychological defense will ideally be more integrative (of existing theories and data) than insular.

(6) Processes related to maintaining close relationships, self-esteem and agency, and worldviews are highly connected and contribute, at times interchangeably, toward maintaining overall psychological security, which in turn is a heterogeneous resource undermined by threats to its supportive elements.

responses are effective. Roughly speaking, though, the theories agree that defensiveness involves the overlapping domains of close relationships, self-esteem and agency, and worldviews (i.e., beliefs and attitudes).

In sum, people strive to find intimacy, to regard themselves as good and efficacious,[2] and to view the world as stable, orderly, predictable, benevolent, and meaningful, partly because these things provide comfort in the face of life's barrage of psychological threats. Defensiveness theories try to ascertain how these processes work and how to interpret and articulate them. Below, I summarize extant theories and research, arbitrarily limited to those whose impact resonates most strongly or recently in the literature. I organize my review of the theories according to the general thrust of each one's answer to the question of what constitutes the nucleus of defensiveness. These include existential theories (e.g., TMT), relational theories, self-focused theories, epistemic theories, and the security system theory. I begin with TMT.

Terror management theory

TMT's central tenet describes people as motivated to avoid the terror of inevitable death by envisioning themselves as "good" members of a meaningful, existentially satisfying universe. The theory was originally devised to explain humans' ardent and assiduous striving for self-esteem and tendency toward intergroup conflict, proposing that self-esteem (feeling good about oneself) and internalized cultural worldviews (meaningful systems of belief, which differ across groups) palliate death concerns by providing a sense of symbolic and/or literal immortality (see Fig. 1, left panel). People can "live on" in heaven or nirvana or simply by leaving a legacy—a distinctive personal imprint—in an enduring cultural community.

According to TMT's dual-process model (Pyszczynski, Greenberg, & Solomon, 1999), self-esteem and worldview defenses are *distal* mechanisms—they are not always logically related to death concerns per se, and they tend to occur when death thoughts are active but subconscious. Indeed, part of their efficacy lies in operating without conscious death-related affect; they keep death concerns submerged by focusing cognitive resources on themes that are symbolically incompatible with death (e.g., potency, purpose). However, when mortality is consciously salient, people must instead use *proximal* defenses, which are obviously and logically oriented toward minimizing the threat of death (e.g., denial, rationalization, suppression; resolving to live a healthy lifestyle), allowing distal defenses to resume operation once conscious death thoughts are suppressed.

TMT's allure is in potentially explaining proclivities ranging from the mundane (e.g., reading the Bible) to the monumental (e.g., building a cathedral) to the monstrous (e.g., genocide). Its main weakness is the difficulty of definitively confirming or falsifying the proposition that self-esteem and worldview pursuits stem from complex psychodynamic efforts to deny death. In other words, most critics do not take issue with the bulk of TMT's insights about self-esteem and worldview striving, or with the empirical findings showing that mortality salience causes self-esteem and worldview striving, but rather with the notion that death concerns, per se, figure as a primary distal impetus for those strivings (e.g., Muraven & Baumeister, 1997).

TMT's history is a veritable exhibition of its strength and weakness. Indeed, even detractors would probably concede the elegance of a theoretical solution that unifies under the self-esteem and worldview rubrics such diverse phenomena as

> prejudice, nationalism, social judgments, interpersonal attraction, romantic love, charitable giving . . . support for preemptive wars and suicide bombings . . . stereotyping, evaluations of one's mother, attraction to the physical aspects of sex, reactions to simple physical sensations, cancer prevention, and health promotion behavior, risk taking, legal decision making, material consumption, attributional biases, and other forms of behavior. (Pyszczynski, Greenberg, Solomon, & Maxfield, 2006, p. 329)

Moreover, a recent meta-analysis confirms abundant empirical support for the causal influence of mortality salience on a vast range of psychological outcomes (Burke, Martens, & Faucher, 2010). This research supports the *mortality salience hypothesis*—that reminders of their own mortality increase people's desire to augment psychological structures that palliate death anxiety. Typical studies involve randomly assigning research participants to respond to open-ended questions about their own death or a control topic, followed by a delay or distraction and some measure of self-esteem striving or worldview defense (e.g., evaluating a person who disparages participants' affiliations or ideologies). Another body of research supports the complementary *anxiety buffer hypothesis*: that bolstering self-esteem or worldviews lessens the effects of death awareness, whereas threatening self-esteem or worldviews increases susceptibility to death anxiety. These studies typically use experimental manipulations that raise or lower participants' self-esteem or praise or condemn their beliefs, followed by either a measure of the accessibility of death thoughts (see Schimel, Hayes, Williams, & Jahrig, 2007) or a mortality salience paradigm.

Yet before these two research lines had gained much mass, reviewers and other critics argued that mortality
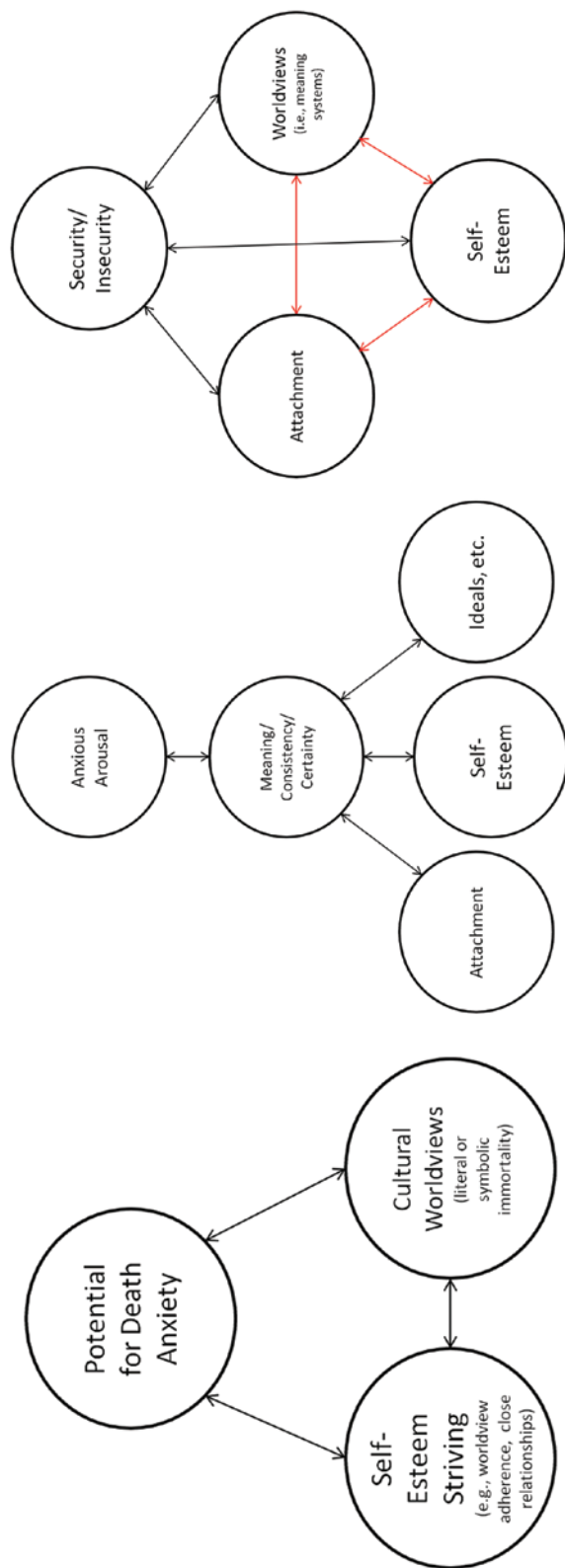
1. TMT: The potential for death-related anxiety motivates (1) development and endorsement of worldviews that provide meaning and symbolic or literal immortality and (2) striving for self-esteem (which qualifies individuals for a sense of immortality directly or via worldviews). Attachment and close relationships are seen as worldview-relevant contributors to self-esteem.

2. Epistemic equilibrium: Anxious arousal caused by meaning disruptions (including death awareness) motivates restoration of meaning, consistency, and certainty. Attachment, self-esteem, and other defenses are primarily relevant because they comprise expectations about how things in the world relate to one another. Note that some epistemic equilibrium theories vary slightly from this structure.

3. The security system: Insecurity (appraisal of threat, including the potential for anxious arousal [death-related or otherwise] motivates attachment and close relationship, self-esteem/agency, and worldview strivings. In turn, these fundamentally interdependent structures augment psychological security when bolstered or cause insecurity when threatened.

Fig. 1. A structural comparison of terror management theory (TMT), epistemic equilibrium, and the security system. These are rough conceptual schematics intended to highlight key structural differences between theories. They are not comprehensive or strictly definitive. Arrows signify associative relations between constructs and do not represent a statistical model. Red arrows signify approximate functional equivalence. Relational and self-focused theories (not pictured) cast belongingness and self-esteem concerns, respectively, as the centerpiece of defensiveness.

salience effects were more parsimoniously explained by some constituent factor, such as general negative affect or anxiety (e.g., Pelham, 1997) or the feeling of not having control over events (e.g., Snyder, 1997). These critics had a structural advantage because TMT was a sophisticated theory about notoriously difficult-to-observe unconscious processes being tested using comparatively primitive laboratory methods. The mortality salience paradigm was the most straightforward test of TMT's tenet that death concerns underlie self-esteem and worldview striving—that is, ask study participants to think about death, then measure strivings—but the bigger challenge lay in devising suitable comparison conditions. Death threatens everything in life. What other dismal subject has matching properties but does not result in death?

This challenge led to experiments comparing mortality salience with a myriad of other upsetting thoughts, ranging from dental pain to physical paralysis, none of which seemed to produce the same effects as mortality salience (Greenberg et al., 1995). TMT's authors do not believe that only mortality salience will cause people to defend their self-esteem and worldviews (in fact, they deem that hypothesis "absurd"; Pyszczynski et al., 2006, p. 331). But in establishing the uniqueness of mortality salience effects, they have occasionally appeared to endorse this strict form of the "uniqueness" hypothesis, for instance, by stating that "mortality salience effects seem to result exclusively from thoughts of death" (Greenberg et al., 1995, p. 418).

To some degree, this central dynamic resulting from TMT's early battles with critics still defines the territory being contested in laboratories. New theories seem to crop up perennially, laying claim to the laboratory effects generated under TMT's auspices by attempting to explain them in simpler, more intuitive ways, which usually involves positing that the true cause of defensiveness is not death but something that death represents or that death thoughts instill. The disagreements have played out elsewhere, so I will not fully reiterate them here but instead conclude from it all that

1. mortality salience causes defensiveness, and
2. so do other kinds of threats, at least some of the time.

The second conclusion is pivotal. If mortality salience effects were absolutely unique, TMT's critics and competitors would have much less traction. But even without theoretical adversaries, threats beside death might eventually have been found to cause defensiveness, because that prediction *can be derived from TMT itself*. As noted above, TMT's anxiety buffer hypothesis predicts that threatening terror management structures (self-esteem and worldviews) should raise death concerns; in turn, the mortality salience hypothesis predicts that heightened death concerns will instigate self-esteem and worldview defenses. At the very least, then, self-esteem threats should cause worldview defense and vice versa, even if TMT is correct in every detail.

Indeed, some threats that cause defensiveness do increase the accessibility of death thoughts (e.g., worldview or epistemic threats, such as uncertainty salience, and self-esteem or relationship threats; see Hayes, Schimel, Arndt, & Faucher, 2010). But what is puzzling is that TMT experiments still frequently include such threats and find that they do not produce effects parallel to mortality salience. Not only do these results appear to contradict TMT's own hypotheses, but they also contradict the fact that each theory that can be considered a TMT alternative seems to come with a basket of studies suggesting that nonmortality threats *can* cause the same defensiveness as mortality salience.

In sum: ambiguity reigns. Later in the article, I will unpack these issues further; for now, it is enough to say that TMT's principal authors and detractors are understandably concerned about the exclusivity of mortality salience effects, because if defensiveness stems from diverse threats, it seems near impossible for TMT to cleanly win the argument, to paraphrase Ernest Becker. Before we leap to conclusions, though, let us consider some theoretical perspectives that cover similar ground as TMT.

Relational theories: Attachment and belonging

One of psychological science's axioms is that people share an innate need for close interpersonal relationships. Although frequently treated as a unitary motive (e.g., the "need to belong"; Baumeister & Leary, 1995), belongingness needs probably comprise distinct behavioral systems, such as attachment, affiliation, and sexual mating (Bowlby, 1969/1982; Weiss 1998). Nevertheless, all relational theories assume that humans' interpersonal needs are fundamental and pressing and that these needs exert broad influence on psychological functioning. Most relevant to defensiveness, it is clear that being liked, accepted, included, or loved fosters positive self-regard and psychological well-being (e.g., Baumeister & Leary, 1995; Denissen, Penke, Schmitt, & van Aken, 2008; Srivastava & Beer, 2005), whereas being disliked, rejected, excluded, or hated fosters the opposite (e.g., Gerber & Wheeler, 2009). Similarly, in the closest relationships, being consistently loved and supported contributes to dispositional attachment security, whereas inconsistency or rejection contributes to insecurity (anxiety and/or avoidance; Bowlby, 1969/1982; Mikulincer & Shaver,

Table 2. Summary of Methodological Goals, Questions to Be Answered, and Recommendations

Questions to Be Answered
(1) Worm at the core: One or more?
    a) Does defensiveness reflect a unitary process or multiple distinct processes?
    b) If unitary, what is the best way to characterize what is at the core of defensiveness?

(2) Mediating mechanisms
    a) Which structures and processes mediate defensiveness and how are they related?
    b) Does defensiveness always involve consistency violations?
    c) To what extent does defensiveness involve autonomic nervous system arousal and
       affective processes? What is the role of consciousness?
    d) Which brain structures and systems control defensiveness?
    e) How do defensive processes unfold over time?
    f) To what extent are basic emotion systems (e.g., fear, anger, sadness) involved?

(3) Boundary conditions and other moderating factors
    a) When, why, and how do individual differences and context moderate defensiveness?
    b) How does defensiveness develop and change across the life span?

Methodological Goals
(1) Develop more reliable and valid measures of unconscious constructs.
(2) Systematically validate experimental protocols.
    a) Create more targeted, confound-free manipulations and measurements.
    b) Conduct manipulation checks more routinely.
(3) Expand research to include larger-scale studies and more diverse methodological approaches.

Recommendations
(1) Prioritize methodological goals.
(2) Design studies that pit theoretical predictions against one another.
(3) Coordinate efforts to answer overarching questions and "drill down" into nuanced findings.

2007a). In sum, satisfied relational needs promote equanimity, and threatened needs engender adverse psychological outcomes.

Given that death represents a permanent separation from loved ones, it threatens relational needs. Therefore, mortality salience experiments, which do not typically include a control condition threatening participants' relationships, might be interpreted as demonstrating that people bolster their self-esteem to augment their perceived social value (cf. sociometer theory; see Leary & Baumeister, 2000, which argues that self-esteem functions as an internal gauge of a person's social desirability) or defend their worldviews as a way of ingratiating themselves (cf. coalitional psychology; Navarrete & Fessler, 2005). If so, these would be logical, socially oriented responses to social threats—no big surprise. Indeed, mortality salience activates attachment defenses (e.g., proximity seeking; see Mikulincer, Florian, & Hirschberger, 2003), and attachment threats, such as thinking about separation from a loved one, activate TMT-style worldview and self-esteem defenses (Hart et al., 2005), whereas attachment security attenuates these defenses (Hart, Shaver, & Goldenberg, 2013; Mikulincer & Shaver, 2001).

Are relational theories sufficient to explain defensive phenomena? Some evidence suggests not. First, it is unclear how primitive meaning threats—such as exposure to anomalous word pairings (Randles, Proulx, & Heine, 2011)—or control threats (i.e., thinking about being powerless) could be construed as relational (i.e., interpersonal); yet both meaning threats and control threats produce defensiveness. Second, attachment threats increase the accessibility of death thoughts (Florian, Mikulincer, & Hirschberger, 2002), which is consistent with (though not directly supportive of) a model whereby relational threats cause compensatory self-esteem and worldview defenses *because* they elicit mortality salience.

Of course, it is possible that different threats cause defensiveness for different reasons. And one could argue that attachment and belongingness concerns are paramount because they emerge early in the life span—well prior to death awareness. These issues will remain unsettled in the near future; but for the meantime, psychological defense theorists should attend carefully to attachment theory's well-developed and densely researched insights, which have somewhat underappreciated potential to contribute to defensiveness theories. Attachment theory is a mature theory, built on extensive biological and comparative (i.e., ethological) foundations, with over 40 years of systematic research in developmental, personality, social, and clinical psychology. In some ways, it is

the original psychological defense theory of the modern era, describing how young children literally defend themselves from threats using, essentially, an emotion-regulation strategy: the "turning to" supportive others for security when distressed. The attachment system's mechanics continue into adulthood, and though they are far from being precisely identified (e.g., via neurobiology), they are relatively well delineated (see Mikulincer & Shaver, 2007a).

To its credit, TMT has already begun to integrate attachment theory by weaving it into a developmental analysis of terror management processes. Specifically, TMT posits that young children's relationship with care-givers creates the template for regulating existential distress; initially, children regulate anxiety by turning to supportive caregivers, but caregivers' provision of affection becomes increasingly conditional during socialization, and children eventually learn to associate safety and security (in an attachment sense) with good behavior and self-esteem (e.g., Solomon, Greenberg, & Pyszczynski, 2004). Later, cultural worldviews provide an additional source of self-esteem, in addition to addressing existential concerns more directly, making them analogous to a caregiver in at least two ways.

Hence, according to TMT, the palliative function of self-esteem and worldviews is developmentally rooted in attachment processes. And research integrating attachment theory and TMT reveals that among adults, close relationships serve a terror management function, and attachment style is a key personality trait influencing terror management processes (Mikulincer et al., 2003). In fact, attachment theory's thorough accounting of individual differences may be particularly illustrative of how it can contribute to defensiveness theories. Attachment anxiety and avoidance (and their combinative opposite, security) reflect different modes of attachment system functioning resulting from experiences in close relationships. Attachment anxiety reflects chronic hyperactivation of the attachment system due to experiences with close relationship partners who are unpredictable or ambivalent caregivers, leading to anxiety about abandonment and a needy or "clingy" interpersonal style. By contrast, attachment avoidance reflects chronic deactivation of the attachment system due to experiences with close relationship partners who are rejecting, leading to discomfort with intimacy and excessive self-reliance. In addition to sometimes producing qualitatively different patterns of behavior in response to the same circumstances (e.g., in romantic relationships; see Mikulincer & Shaver, 2007a, for a review), these attachment styles influence the likelihood and mode of defensiveness (Hart et al., 2005; McGregor, Nail, Marigold, & Kang, 2005; Mikulincer et al., 2003). Such personality differences, or ones like them, may help resolve some inconsistencies in defensiveness research, which often emphasizes normative processes and neglects consideration of individual differences.

Some terror management theorists have leaned toward interpreting attachment's anxiety-buffering properties as proximal defenses, or as subsidiary to self-esteem and worldviews, rather than as an independent symbolic mechanism (e.g., Greenberg, 2012). As with many areas of conceptual disagreement, data are mixed regarding this point, with some evidence suggesting that attachment defenses can trump self-esteem or worldview ones, implying partial autonomy (e.g., Hirschberger, Florian, & Mikulincer, 2003). In my view, attachment's developmental precedence should afford it extra deference in TMT's structural hierarchy. In adulthood, attachment involves drawing emotional strength not only from close relationship partners but also from symbolic mental representations of their loving support (Mikulincer & Shaver, 2007b). This lack of literalness persuades me that it should be counted as a distal, symbolic defense, not just a proximal one.

In sum, attachment theory and other relational theories may help illuminate the structure and process of psychological defense, both normatively and as moderated by personality variables. Although it appears that defensiveness is not wholly reducible to an interpersonal process, there can be no doubt that relational concerns play an important role in it.

Self-focused theories: Self-affirmation and control

If the developmental precedence of relational needs puts them near the core of defensiveness, then surely it is plausible that defensiveness revolves around some motive even more central to the psychological self. Self-affirmation theory (Steele, 1988) seems to assert this most directly. The concept of self-integrity as an overarching motivation echoes TMT's description of a "valuable member of a meaningful universe" (Solomon et al., 1991, p. 97) or the compound conception that one is good (self-esteem) in relation to cultural norms (i.e., worldviews). And self-affirmation research has established that affirming cherished values mitigates defensiveness (e.g., Sherman & Cohen, 2002), consistent with terror management research. Similarly, Tesser (2000) argued that the "self-zoo" of theories pertaining to self-esteem maintenance could be neatly integrated if one allows that, notwithstanding superficial differences, diverse self-esteem regulation mechanisms (e.g., self-affirmation, social comparison, and even dissonance reduction) are essentially interchangeable and reflect a single motive oriented toward "augmenting, protecting, or repairing" (p. 290) self-esteem.

Does the assumption that human beings are innately driven to maintain something like self-integrity or

self-esteem obviate TMT? Death threatens self-esteem by undermining a person's apparent significance and capacity to demonstrate enduring value, and though a few TMT studies include control conditions designed to threaten self-esteem, they are by far the exception. The self-esteem solution requires only that one reinterpret attachment/belongingness and worldview defenses as oriented toward protecting self-esteem. That argument is easily made, because people's close relationships can provide self-esteem (Leary & Baumeister, 2000), as can their beliefs and identifications (Tajfel & Turner, 1986). Yet similar rebuttals apply here as to the case of relational theories: Meaning threats via exposure to "uncanny" stimuli, such as absurd Monty Python humor or peculiar word pairings, cause self-esteem, worldview, and relational defenses (e.g., Proulx, Heine, & Vohs, 2010), but they are difficult to construe as threatening self-esteem directly. Moreover, self-esteem threats increase the accessibility of death thoughts (Hayes, Schimel, Faucher, & Williams, 2008), consistent with TMT's analysis that self-esteem motivation is related to death denial (and perhaps difficult to explain otherwise).

Possibly, then, rather than self-esteem or self-integrity on the whole, people seek control (i.e., a sense of agency) per se, which is why they become defensive when exposed to existential, relational, self-esteem, worldview, or meaning threats (e.g., Snyder, 1997; cf. the compensatory control model; Kay, Gaucher, Napier, Callan, & Laurin, 2008). Arguably, each of these threats undermine individuals' sense of personal control, and subsequent defensiveness could be understood as efforts to restore that sense (directly or vicariously). Indeed, recent studies showed that thoughts of uncontrollable death caused worldview defense, but thoughts of controllable (self-determined) death did not (Fritsche, Jonas, & Fankhänel, 2008). Although both controllable and uncontrollable death thoughts increased the accessibility of death thoughts, only the uncontrollable-death manipulation increased implicit control motivation. However, this latter finding was essentially a manipulation check—there was no direct evidence that implicit control motivation accounted for the effects of thoughts of uncontrollable death—and otherwise, one could interpret these findings as suggesting that increasing the sense of control over one's death buffers mortality salience effects.[3] Perhaps this indicates a boundary condition for mortality salience effects, but it cannot definitively establish that mortality salience effects are attributable to a control threat.

Again, then, we reach an impasse because both TMT and a "deathless" version of it—one that construes worldview defense as self-esteem defense or compensatory control—make largely the same predictions; where their predictions differ, a dearth of research prevents confident conclusions. However, research on relational theories, self-esteem maintenance, and control motivation suggests two conclusions worth articulating here in addition to those asserted earlier:

3. There is vast conceptual overlap among findings concerning the defensive function of relationships, self-esteem, and worldviews; and
4. thus far, no evidence definitively suggests that the overlap can be explained exclusively by either a relational or "self-centered" perspective.

Agreement with these conclusions has inspired yet another integrative effort that views psychological defense through an epistemic lens (Proulx et al., 2012); I now turn to consider this kind of perspective.

Epistemic theories: Meaninglessness, inconsistency, and anxious uncertainty

In some respects, contemporary defensiveness research was presaged by cognitive dissonance theory (Festinger, 1957). If death disrupts people's sense of the way the world works (i.e., dissonance), and self-esteem and worldview defenses confer a sense of "rightness" (i.e., consonance between cognitions or between expectations and reality), then dissonance theory works reasonably well as a predictor of the defensiveness effects generated by TMT and its theoretical relatives (save, perhaps, that mortality salience effects seem to occur without palpable arousal).

Although dissonance theory has not been invoked much in this realm recently (but see Gawronski, 2012, and Proulx et al., 2012), the meaning maintenance model (MMM; Heine et al., 2006) similarly posits that the integrity of mental representations plays a central motivational role in defensive phenomena. According to the MMM, people want to maintain meaning, defined as expected relations between mental representations; threats like mortality salience upset meaning, and self-esteem and worldview defenses aim to restore it. Likewise, uncertainty compensation theories (e.g., Tritt, Inzlicht, & Harmon-Jones, 2012; van den Bos, 2001) and inconsistency compensation theories (Proulx et al., 2012) seek to explain defensiveness as "palliative responses to a basic, biologically based pattern of aversive arousal that follows from any given prediction error" (Proulx et al., 2012, p. 285). Despite the different terminology used by these theories (i.e., "meaning" vs. "uncertainty" vs. "inconsistency"), they share several author–researchers, and there is little substantive difference between them—so for brevity's sake, I treat them as a single *epistemic equilibrium* perspective (see Fig. 1, middle panel). (Proulx and Inzlicht [2012] acknowledged that despite semantic

differences across some of their articles, they intend to refer to the same underlying process, which they have mirthfully termed "disanxiousuncertilibrium.")

That these theories pose the strongest challenge to TMT is attested by the relative frequency with which TMT studies include uncertainty manipulations and by a meta-analysis suggesting that the effect of meaning threats on defensiveness rivals the effect size of mortality salience (Burke et al., 2010). The theories are evolutionarily plausible because organisms must reliably interface with the environment to reproduce; for more complex animals, this means building clear, coherent, and consistent representations of reality. If organisms could not adapt to a reality that continually changes in unpredictable ways, neither could they function in a stable reality if their mental representations were chaotic. A motivation to construct practicable mental representations and to maintain them by becoming attentive and making swift adjustments if they seem lacking would therefore be advantageous across species and developmental stages. Even infants who have yet to develop more complex behavioral systems like attachment could benefit from a rudimentary preference for certainty and consistency (e.g., a newborn who has come to expect the steady pressure of contact with a caregiver's body will cry when set down and consequently get picked up again). Finally, epistemic equilibrium theories have made generative connections to biological and neurological literature, namely, by identifying threat responses with a general behavioral inhibition–anxiety system that detects threats and initiates anterior cingulate cortex activation and physiological arousal, followed by compensatory behavioral approach systems governed by the dorsalateral prefrontal cortex (e.g., Tritt et al., 2012).

Insofar as mortality salience violates expectations (of continued life) or elicits uncertainty (e.g., about what happens after death), epistemic theories seem capable of explaining many TMT findings. Yet there are pitfalls in the temptation to construe all defensiveness as reflexive responses to expectancy violations, particularly because most epistemic equilibrium views are explicitly indiscriminating about the content of expectancies or of worldviews in a broader sense: "inconsistency compensation cannot be about any specified content (e.g., the self). . . . Rather, [threat-compensation] behaviors are palliative responses to the aversive arousal that follows from any experience that is inconsistent with expected relationships" (Proulx et al., 2012, p. 288).

Ergo, death violates expectations by disrupting the network of associations connecting oneself to the world (Heine et al., 2006). But following this logic to its conclusion leads to the ironic predictions that (a) people will respond defensively when their expectancies are violated in a salutary way (I expected that attractive woman not to date me, but she did; I expected a 3% salary raise, but it was 4% instead; despite expectations, the tumor on my thyroid turned out to be benign), and (b) people will not respond defensively when their negative expectancies are confirmed, as when my belief that the New York Jets would get trounced by the San Francisco 49ers one weekend turned out to be magnificently consistent with the outcome. (Try convincing my wife that this did not cause defensiveness.)

In fairness, some research does suggest that people show signs of threat when their positively valenced expectations are violated (e.g., Townsend, Major, Sawyer, & Mendes, 2010) and that they appear to take some comfort in negatively valenced expectation affirmations (e.g., Plaks & Stecher, 2007; Swann, Wenzlaff, Krull, & Pelham, 1992; Townsend et al., 2010). Yet other research points to opposite conclusions. In one example, atheists exposed to information supporting the existence of an afterlife became less defensive in response to a subsequent mortality salience prime (Heflick & Goldenberg, 2012). In another study, mortality salience increased belief in "culturally alien" supernatural agents (Norenzayan & Hansen, 2006).

Epistemic equilibrium theorists acknowledge that the content of mental representations can influence defensive processes but only as a moderator of defense against inconsistency, something that alters the process but does not drive it (Proulx, 2012; Proulx & Inzlicht, 2012). For example, perhaps intrinsically religious individuals do not respond defensively to mortality salience (Jonas & Fischer, 2006) because, even though death disrupts mental representations connecting them to the world, it is nevertheless consistent with their religious beliefs—death is "part of God's plan," just another stage in an everlasting spiritual existence.

In my view, this stance toward mental representations misplaces the role of specific motivational systems that are integrally relevant to defensiveness and that care very much about representational content—systems that mediate, or drive, the defensive process, instead of influencing it from outside. Regarding attachment, for example: By definition, individuals higher in attachment anxiety or avoidance both harbor negative relationship expectations (e.g., as evidenced by greater physiological response to stressors when their romantic partners are present versus absent; Carpenter & Kirkpatrick, 1996). This does not mean that they are not hopeful that close relationship partners will unconditionally love and support them. Hence, it is not surprising, from an attachment perspective, that thoughts of separation—despite ostensibly confirming (negative) expectations—cause both anxious and avoidant individuals to defend their worldviews or self-esteem (Hart et al., 2005). Nor is it surprising that being subliminally primed with intimacy words or led to

think about sensitive, responsive, and loving others—ostensibly violating insecure individuals' expectancies about how close others typically behave—mitigates both anxious and avoidant individuals' worldview defense (e.g., Mikulincer & Shaver, 2001). An epistemic equilibrium perspective does not seem to straightforwardly account for such findings, in which desires, not expectations, appear to be the mechanisms driving defensive processes.[4]

We do not yet know whether the content of mental representations is better understood as a mediator or as a moderator of defensiveness. I argue that meaning is important to defensiveness but is not an exclusive (nor always the most important) mediator; other motivations are centrally involved in maintaining equanimity. In other words, I am skeptical that defensiveness can always be understood as a consistency-maintenance phenomenon. It seems that a more comprehensive defensiveness theory is needed, one that explicitly incorporates the various motives and goals that other theories suggest people would be likely to pursue and defend, in addition to meaning maintenance.

McGregor and colleagues (2010; Nash, McGregor, & Prentice, 2011) have advanced a reactive approach motivation (RAM) theory that comes close to such a resolution by specifying that defensiveness occurs when meaning violations and inconsistency specifically threaten "active goals," arousing anxious uncertainty and, in turn, defensive approach motivation. This version of epistemic equilibrium helpfully allows for the role of specific motivational systems that are sensitive to conflict with reality.

But the *worldview content* problem remains, because the RAM theory appears largely silent about why individuals carry around with them the specific goals they do. It is also unclear how the RAM concept explains defensive avoidance (not approach) goals, as when low self-esteem individuals try to preserve rather than augment self-esteem after mortality salience (Landau & Greenberg, 2006) or when individuals high in neuroticism respond to mortality salience by avoiding physical sensations (Goldenberg et al., 2006).

In sum, epistemic equilibrium perspectives offer impressive explanatory potential, scholarship, and insight. However, they seem to fall short of a full accounting of defensive phenomena, especially when they imply that *expecting* trumps *wanting*. Magical thinking, superstition, and similar well-documented human quirks seem to suggest that at least sometimes, people choose senseless-but-comforting meanings over sensible-but-terrifying ones.

If I am correct that defensiveness is about compensating for the violation of *desired, equanimity-providing* meanings, in addition to meanings per se, then epistemic equilibrium theories will be most successful if they more explicitly preserve and assimilate insights from related theories to account for why people hold the representations they do and why, at least sometimes, defensiveness seems more a reflection of how people think reality ought to be than how they expect it to be. This brings me to my next conclusion:

5. Epistemic equilibrium theories are generative but seem not to completely account for defensiveness. A comprehensive theory of psychological defense will ideally be more integrative (of existing theories and data) than insular.

The security system

My formal input to this "zoo" of defensiveness theories may offer some small advantages. A relatively accommodating integration of insights from TMT, attachment theory, and consistency theories, among others, the security system model (Hart et al., 2005; see also Hart, 2013) hypothesizes that the core of defensiveness is insecurity, or "apprehension and anxiety about personal vulnerability" (Hart et al., 2005, p. 999). That is, people are motivated to be vigilant about various threats, and appraising a threat—to health or well-being or to the system's constituent subsystems that maintain close relationships, self-esteem and agency, or meanings and worldviews—potentiates anxiety, activating the system and its supportive elements and motivating compensatory responses. Insecurity is not fear (i.e., an acute response to danger) but rather the potential for full-blown felt anxiety (cf. Greenberg et al., 2003), a lack of confidence that "everything will be okay" (which can certainly be triggered by fearful experiences). Security, then, reflects psychological durability in the face of threats.

Conceptually patterned on the attachment system, the security system includes an assemblage of more basic emotion-regulation and self-protective behavioral systems and an elaborated symbolic associative network comprising attachment, self-esteem, and worldview-related representations. These elements are organized around the security motivation, related to such an extent as to be practically inextricable (not to say totally indissociable) in the context of defensiveness. Because of attachment's putative role in early "terror management" (i.e., regulation of distressing emotions) and self-esteem processes, attachment and self-esteem are seen as largely fungible. Consequently, in contrast to TMT, "symbolic immortality" does not always fully explain self-esteem augmenting defenses; instead, similar to sociometer theory, self-esteem is seen, in part, as a proxy for close relationships ("good me" = loved and secure; close relationships, in turn, are a source of self-esteem—see also Cox & Arndt, 2012). The same applies to worldviews, which, in addition to directly addressing existential concerns (i.e., by providing order,

consistency, predictability—meaning—as well as symbolic and literal immortality), also contextualize self-esteem and close relationships, even as worldviews and meaning are themselves constructed from close relationships (e.g., via socialization) and individuals' own proclivities (i.e., people tend to place epistemic emphasis on domains where they think they excel; Dunning, Perie, & Story, 1991).

This "fluid compensation" view (Allport, 1943) is consistent with epistemic equilibrium theories but departs from them in suggesting that no one of the system's interacting constituent elements (e.g., meaning or consistency) sits atop a hierarchy above the others; rather, it casts the system's elements as roughly on the same plane (see Fig. 1, right panel)—moderated by individual differences and context, as I describe below. The "worm at the core" of defensive efforts to shore up relationships, self-esteem, and worldviews is *appraised threat itself* and resulting insecurity. Threats to relationships, self-esteem or agency, and meaning undermine perceptions of security; and robust relationships, self-esteem and agency, and meaning themselves form a bulwark against such threats. (Death—the ultimate security threat—may well be "centrally" represented within this network of terrifying concepts: aloneness, humiliation, weakness, epistemic chaos.)

This perspective explains why it is easy to construe close relationships and self-esteem as integral aspects of meaningful worldviews—they are—or to construe close relationships and worldviews as relevant to self-esteem and agency concerns—they are—or to construe self-esteem and worldview concerns as having relational implications: To weaken one is to weaken all; to strengthen one is to strengthen all, albeit indirectly. Perhaps it also explains why there is evidence to support each of the defensiveness theories. They are all correct, to an extent; they fall short when they insist on making their favorite construct the whole explanation.

I might be accused of the same, but the security concept is encompassing rather than exclusive; it unites the least tenuous parts of other theories. The notion of an overarching, adaptive motive to feel secure and free of appraised threats has ample precedent in neurobiology (e.g., Halpern & O'Connell, 2000; McNaughton & Corr, 2004; Tritt et al., 2012; Woody & Szechtman, 2011). Indeed, "insecurity" seems similar to Proulx and colleagues' (2012) *aversive arousal* (see also Tritt et al., 2012), McGregor and colleagues' *anxious uncertainty* (e.g., McGregor et al., 2010; McGregor, Prentice, & Nash, 2012), and Holbrook and colleagues' *unconscious vigilance* (Holbrook, Sousa, & Hahn-Holbrook, 2011).

A final aspect to recommend the security system concept is that it conforms to my view that a unified defensiveness theory should explicitly preserve the best elements of its progenitors. Specifically, it borrows from other theories a taxonomy of defensive motives, an analysis of their development and evolutionary origins, a theory of cognitive architecture, and predictions about individual differences.

Taxonomy of motives, development, and evolutionary origins. Though the tripartite structure of defense mechanisms is provisional, close relationships, self-esteem, and existentially satisfying worldviews seem to encompass most examples of psychological defense, and a long history of theorizing supports their central role in psychology, going at least as far back as Maslow (1943), who covered them all (despite framing some of them in terms of growth rather than defense). These motives certainly have independent evolutionary value and ontogenetic foundations, but as I hope to have made clear by now, they do not remain discrete for long because of their developmental and functional interdependence. Meaning systems comprise attachment and self-esteem content, just as attachment is nourished by internalizing attachment figures' meanings, and exemplifying them (self-esteem), and just as self-esteem is predicated on confident knowledge of good and bad, or right and wrong (meanings), and the extent to which one is loved (attachment). In other words, meaning is not only consistency but consistent satisfaction of other core motives; attachment is not only a relational system but also comes to depend on meaning and personal virtue; and self-esteem is about not only mastery and agency but also mastering meaningful things and performing acts that will be valued by others whose affection is prized.

Developmentally, these interrelations precede death awareness, but death concerns must increase pressure to preserve and elaborate them. Death awareness forces meaning systems to expand to assuage mortality concerns, not just mundane childhood fears, and creates extra impetus for symbolic security sources—whether relational, egoistic, or epistemic—to be more potent. Perhaps it is no longer enough to be the leader of one's peers; one wants to be a world leader, instead. It is no longer enough to be loved by one's parents—for they, too, are mortal—but cultures can live on, so attachment to groups confers auxiliary symbolic immortality.

Similarly, motives related to meaning making, attachment, and something akin to striving for personal goodness (e.g., status striving) have phylogenetic antecedents that predate our species' death awareness. However, as TMT suggests, death awareness may have accentuated these motives because they provide psychological (i.e., emotional) security. Ancient hominids who duly maintained a bearable but reasonably realistic level of security would have advantages over those who were unable or unwilling to engage in security maintenance, leading to chronic stress, or who denied threats to the extent that

their fear systems did not respond reliably. Therefore, it seems plausible that security regulation has been shaped by natural selection.[5]

Cognitive architecture and process. The security system integration provisionally preserves TMT's dual-process model, suggesting that consciously appraised threats elicit relatively direct efforts to eliminate the threat; accessible but not-quite-conscious threats elicit more fluid, symbolic defenses whose function is palliative. Operationally, this distinction may be reflected in low-immediate but high-delayed accessibility of security concerns, something that has been observed of death-thought accessibility after mortality salience (Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997), and uncertainty accessibility after uncertainty salience (Wichman, Brunner, & Weary, 2008). However, recent research casts doubt on this temporal accessibility pattern (Trafimow & Hughes, 2012), so consciousness may not be the key factor determining when proximal versus distal defenses occur. One promising alternative idea contends that the level at which threats are construed (i.e., concrete vs. abstract) influences the use of direct versus indirect defensive strategies (Tullett, Teper, & Inzlicht, 2011).

Once construed, the security system model predicts that threats to any security system component should spread activation throughout the entire system, causing insecurity and compensatory defense. But where, exactly, is the insecurity? How does one measure the potential for anxiety? Although it seems bizarre that thoughts of death, relationship breakups, failure, meaninglessness, and so on should have no impact on consciously experienced emotions—or that consciously experienced emotions would not influence defensiveness—most studies find precisely that (with some exceptions; e.g., McGregor, Zanna, Holmes, & Spencer, 2001). I suspect that under naturalistic conditions, emotion plays a role in the selection of the kinds of defenses people activate when threatened (e.g., threats that cause sadness may generate more passive defenses than ones that cause anger). But clearly, research is needed to develop more direct measures of insecurity and related constructs; such advances may need to await more refined neuroimaging methods.

Finally, following Jonas and colleagues (2008; see also Giannakakis & Fritsche, 2011), I assume that context influences the activity and effectiveness of security system defenses, thus limiting the security system's fungibility hypothesis. Specifically, contextually salient norms and identifications as well as personality differences (discussed below) mean that some defenses will be preferred in some circumstances (or by certain people) but not in (or by) others. As yet there is not enough evidence at present to distill discrete principles, particularly in light of the widespread methodological shortcomings that I address below.

Individual differences. In a similar vein, though defensiveness is frequently discussed in normative terms, individual differences need to be considered. Many personality traits could be brought to bear; TMT research has examined how mortality salience interacts with trait self-esteem, attachment style, and worldview differences such as political orientation and personal need for structure. (Neuroticism is also examined, especially in the context of TMT research on health and the body [see Goldenberg & Arndt, 2008].)

In short, security maintenance processes are sometimes influenced by personality variables relevant to one or more of the system's components. For example, attachment avoidance predicts defensive self-esteem augmentation and evasion of intimacy (e.g., Hart et al., 2005; Mikulincer, 1998). Similarly, high-self-esteem individuals have been shown to respond to mortality salience by trying to boost self-esteem even when there is a risk of failure; by contrast, low-self-esteem individuals responded by avoiding risk and thus preserving self-esteem (Landau & Greenberg, 2006).

According to the security system model, attachment style, self-esteem, and variables like personal need for structure reflect essential dimensions of a person's overall psychological security across domains. These traits generally influence (a) proneness to threat and (b) selection of preferred defenses, although there is empirical inconsistency on the first point, with some studies suggesting that dispositional insecurity increases the likelihood of defensiveness (e.g., Mikulincer et al., 2003) and others suggesting that dispositional security does (e.g., high self-esteem; McGregor et al., 2005). Some evidence suggests that insecurity increases avoidance-oriented responses, whereas security increases approach-oriented responses to threat (e.g., Cavallo, Fitzsimons, & Holmes, 2009; consistent with Murray, Holmes, and Collins's [2006] risk regulation theory). Still other evidence suggests that implicit insecurity combined with explicit security heightens the likelihood of defensiveness (e.g., McGregor et al., 2005; Schmeichel et al., 2009). Obviously, no single conclusion can neatly tie up all the relevant findings, making this one of the key areas for future research (see Table 2).

Empirical support and unanswered questions. The security system model's basic predictions are amply supported by evidence (much of it reviewed by Hart et al., 2005, and Heine et al., 2006, among others) that threats to close relationships, self-esteem, and worldviews cause compensatory defensiveness in the other (unthreatened) domains. Conversely, bolstering close relationships, self-esteem, and worldviews appears to mitigate defensiveness among the other security system components.

These "fluid compensation" processes extend well beyond the obvious examples. For instance, some evidence suggests that comfort food—security at an embodied level—satisfies belongingness needs (Troisi & Gabriel,

2011). Similarly, physical warmth has been shown to increase interpersonal kindness and attributions of kindness to others (Williams & Bargh, 2008), both of which are outcomes that are likely to emanate from psychological security but not insecurity. Money, too, may have implications for security regulation. Interpersonal security reduces the monetary value people assign to their possessions (Clark et al., 2011), suggesting that possessions contribute to security; and having money mitigates the deleterious consequences of social exclusion, whereas thoughts of spending money have the opposite effect (Zhou, Vohs, & Baumeister, 2009). These effects are interpretable within the security system framework: Comfort food is likely associated with close relationships (as is physical warmth), and money can symbolize an individual's personal and social value and potency (i.e., self-esteem). These findings demonstrate the explanatory range of a security system perspective.

Although recent research has suggested that defensive processes may involve unconscious vigilance toward affectively laden stimuli (Holbrook et al., 2011; cf. Gyurak & Ayduk, 2007), as I indicated, many process-related and individual-difference questions and predictions remain unanswered, either because they have not been examined or because evidence is mixed. Issues such as the extent to which security maintenance involves affect or arousal or associated brain regions are paramount to operationally defining security and insecurity more directly.

For now, I view the security system model as coming closest to accommodating existing data, and I tentatively conclude that

6. Processes related to maintaining close relationships, self-esteem and agency, and worldviews are highly connected and contribute, at times interchangeably, toward maintaining overall psychological security, which in turn is a heterogeneous resource undermined by threats to its supportive elements.

That being said, a fuller understanding of defensive processes requires identifying important questions and devising better ways to answer them.

The Worm at the Core: Conceptual Issues to Be Resolved and Methodological Obstacles Preventing Their Resolution

Manipulations, measurements, and mechanisms

Whence comes defensiveness? As much of the foregoing suggests, the primary conceptual issues to be resolved concern mechanisms (i.e., mediators) and moderating conditions. The most vexing question, perhaps, is the mechanistic one: What is it that people are defending against?

I have argued that the answer is insecurity stemming from a range of threats to equanimity-providing structures and processes that constitute a coordinated security system. Other frameworks specify a more distinct psychological concern around which defensive processes are organized. But we have yet to see definitive evidence of a singular process underlying defensiveness, a shortcoming that I attribute to methodological problems.

Consistent with TMT's contention that death concerns lie at the root, several studies find that the accessibility of death-related thoughts corresponds to defensiveness. Specifically, threats to close relationships, self-esteem, or worldviews elevate death-thought accessibility, whereas boosting those structures reduces or prevents death-thought accessibility after mortality salience (see Hayes et al., 2010, for a review). However, measures of death-thought accessibility almost never control for negative words unrelated to death, so many of the relevant findings may simply reflect the accessibility of negative themes in general, thus calling into question conclusions from the vast majority of death-thought accessibility studies.

Just as troubling, to my knowledge only a single, small study ($N = 26$) has found that the effect of mortality salience on a defensive outcome was statistically mediated by the accessibility of death thoughts (Vail, Arndt, Motyl, & Pyszczynski, 2012, Study 4). Statistical mediation may be a high bar, because implicit measurements can make conscious the very constructs they are measuring—which may disrupt defensive processes (cf. Spencer, Zanna, & Fong, 2005). I suspect a bigger problem: Measures of construct accessibility are not very good, particularly when used to detect remote associations.

A good handful of examples from my laboratory file drawer support these concerns. Similarly, Hughes (2013) meticulously conducted numerous death-thought accessibility studies using the most common measure, a word-fragment completion task in which some word stems can be completed either with death or nondeath words. In four of the studies, mortality salience produced no hint of an expected increase in the accessibility of death thoughts (i.e., after a delay period). In two of the studies, compared with dental pain salience, mortality salience did not increase the accessibility of death thoughts with or without a delay. Several additional studies using alternative indirect measures also found no effect of mortality salience on the accessibility of death thoughts. Lexical decision tasks do not seem much better; in one (unpublished) study, I used Schimel et al.'s (2007) measure and gathered over 100 participants per experimental cell,

finding only a nonsignificant trend—death-thought accessibility was highest in the mortality salience condition—and the trend also occurred for negative, nondeath words.

To be clear, I am not saying that thought-accessibility measures are completely unfruitful (for particularly impressive examples, see Kosloff, Greenberg, Sullivan, & Weise, 2010, Study 3; and Schimel et al., 2007). But implicit measures have a long history of questionable reliability and low replication rates in experimental studies (LeBel & Paunonen, 2011). Indeed, if such methods were sensitive and reliable, there would be no reason for defensiveness researchers not to use them in every study to provide direct support for mediating processes. (The word-fragment measures are particularly easy to administer and score.) That this is far from the norm further suggests that the measures are wanting and that it may be futile to apply existing construct-accessibility measures to solving the "worm at the core" riddle.

Difficulties also plague attempts to tap mechanisms by manipulating them—which is the approach most experimental defensiveness studies use (e.g., by manipulating mortality salience or meaninglessness). As noted earlier, how can researchers exclusively target death concerns when mortality salience threatens nearly everything people care about? Moreover, if the security system model is accurate, then it is also true that threats to attachment will threaten self-esteem and meaning and elicit death thoughts; threats to self-esteem will threaten attachment and meaning and elicit death thoughts; and threats to meaning will threaten attachment and self-esteem and elicit death thoughts!

If so, then it might matter less that researchers usually fail to ensure that their manipulations are free of confounds (Leary, Terry, Allen, & Tate, 2009) and have the intended impact (e.g., as confirmed by manipulation checks). Yet these are widespread omissions: Those of us who use open-ended prompts to prime particular themes (e.g., death, uncertainty) almost never code participants' narrative responses, either to screen for the intrusion of unrelated topics or to examine other properties of the narratives (e.g., length, complexity, distinctiveness). Any of these properties, mundane or not, could at least sometimes help explain experimental effects (see Hart & Burns, 2012) or, just as important, null findings.

A similar problem applies to measuring defensive outcomes, which is typically done using instruments that assess multiple concerns. Measures of worldview defense involve self-esteem and relational (e.g., ingroup) concerns; measures of relationship striving also seem to necessarily entail self-esteem and meaning concerns; and so on.

We defensiveness researchers habitually make a related internal validity assumption that qualitatively different threat manipulations are equivalently robust. Comparing mortality salience with uncertainty salience to "control" for uncertainty assumes that thinking about uncertainty outside a specified context is as psychologically affecting as thinking about uncertainty related to death. There is little or no evidence to support this assumption. Perhaps some threats simply need to be more strongly instantiated to produce defensive effects. (A pervasive dearth of "true," no-treatment control conditions compounds this problem.)

Nor should we assume equivalence among threats within a given domain. Thinking about a relationship breakup is not necessarily the same as thinking about a permanent breakup (Mikulincer, Florian, Birnbaum, & Malishkevich, 2002), and neither of these are the same as being excluded or ostracized (cf. Gerber & Wheeler, 2009), to say nothing of actually enduring a breakup or rejection experience. Likewise, reflecting on past (known) experiences may not be psychologically equivalent to reflecting on future (possible) ones.

The problems discussed above are not limited to defensiveness research, though they are perhaps especially encumbering there, given the narrow grounds on which theoretical disagreements play out. Exceptions can be found, but on the whole, neither our manipulations nor measurements of defensiveness-relevant constructs have much claim to discriminant validity, which makes parsing them essentially impossible. Even more realistic or well-controlled manipulations may have different weight across different kinds of threats or insufficient strength to produce an effect, and our measures of mechanisms seem lacking. Consequently, existing data are open to a wide range of interpretations, sustaining the circular firing squad of competing theories.

Moderating factors and the evidentiary morass

Given the widespread methodological problems, it is no wonder that many process issues remain unresolved. It is easier to understand why one research group's findings contradict another's.

Methodological problems may also help explain ongoing confusion regarding moderating factors: why sometimes high self-esteem intensifies threat-induced defensiveness (see Burke et al., 2010), whereas sometimes low self-esteem does instead (e.g., Das, Bushman, Bezemer, Kerkhof, & Cermeulen, 2009; Harmon-Jones et al., 1997); why sometimes high explicit self-esteem combined with low implicit self-esteem best predicts defensiveness (e.g., McGregor et al., 2005) or why, as often as not, self-esteem does not influence defensiveness (e.g., Hart et al., 2005). They may help explain why sometimes specific goals must be experimentally primed before a threat elicits defensiveness (Nash et al., 2011), whereas most studies do not require such priming; or why threats to individuals' sense of control cause different defenses than mortality salience (Kay et al., 2008;

Shepherd, Kay, Landau, & Keefer, 2011) even though mortality salience is ostensibly a control threat (Fritsche et al., 2008).

What boundaries limit defensive processes? In particular, how do individual differences influence defensiveness? These issues inform process questions, too—defensiveness might rely on different mechanisms or work differently in different contexts depending on personality—but they, too, remain opaque. Frequently, personality differences moderate threat responses to such an extent that if they were not accounted for, no effects would be observed. In addition to the examples of high or low self-esteem, studies show that political liberalism (Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992), intrinsic religiosity (Jonas & Fischer, 2006), belief in symbolic immortality (Florian & Mikulincer, 1998), attachment security (Mikulincer & Florian, 2000), and a sense of self-control (Gailliot, Schmeichel, & Baumeister, 2006) all completely eliminate certain mortality salience effects. But if these findings always hold, how are the effects ever obtained when these variables are not measured, particularly in studies with small sample sizes? After accounting for liberals, secure individuals, the intrinsically religious, those who have a sense of symbolic immortality or self-control, and individuals with either high or low self-esteem, how many people are left?

Clearly, personality and contextual factors sometimes influence the extent of interchangeability, the selection of different defenses, and their efficacy. Yet many studies show robust defensive effects without accounting for personality differences. I am led to conclude that there is no satisfying understanding of why personality differences sometimes matter and sometimes do not. Presumably, methodological factors are partly to blame.

As long as manipulations remain messy and unchecked, mediating mechanisms unreliably or invalidly measured, and procedures heterogeneous (or homogeneous but unscrutinized), such empirical contradictions seem bound to persist (and Daniel Patrick Moynihan's dictum will seem to be violated: We can have our own opinions *and* our own facts)! Fortunately, methodological problems help explain an evidentiary morass; it seems likely that differences in the strength of manipulations or subtle contextual factors or sample characteristics are responsible for some empirical inconsistencies. The bad news is that the inconsistencies obscure answers to many pressing questions: Which defenses do people use (and who uses them), when do they use them, and how do they work?

Toward a Clearer Understanding of Psychological Defense

If there is an upbeat conclusion to be drawn about the status quo, it is that the modern field of psychological defense remains conceptually vibrant, creating a steady flow of empirical findings, each interesting in their own right and speaking in some degree to the larger questions that inspire them. An integrated defensiveness framework promises exceptionally broad explanatory potential for psychological scientists and practitioners interested in virtually any aspect of the vast diversity of human psychological functioning.

Still, real progress depends on research proceeding in a more organized and collaborative fashion. First, we should systematically explore and standardize materials and procedures instead of relying on largely unprobed manipulations (e.g., open-ended prompts) and vague procedural nuances (e.g., delays and distractions of varying nature and length; efforts to induce "experiential" modes of processing; Simon et al., 1997). We should make manipulations more precise, use manipulation checks (e.g., using coding schemes), and develop more reliable and discriminantly valid measures of latent constructs (e.g., death-thought accessibility, insecurity, affect) and defensive outcomes. These changes will lead to a better understanding of how defensiveness is mediated, psychologically and in the nervous system. Presumably, neurobiological approaches (e.g., Quirin et al., 2012) will help and increasingly illuminate such factors as the timing and selection of particular defenses and the involvement of emotional systems; although presently, neuroscience studies are too frequently underpowered and burdened by similar discriminant validity problems as self-reports and behavioral methods.

Second, we should earnestly seek to disconfirm theoretical assumptions by reporting the results of studies that violate researchers' expectations along with the ones that confirm them. At least, studies should be designed so that in addition to verifying one theory's predictions, they can disconfirm another's. This quality seems especially important in a field where competing theories make nearly identical predictions.

Ideally, researchers would simultaneously compare multiple different manipulations of different strengths against neutral baseline conditions and measure relevant individual differences, using large participant samples. Converging methods should be used within study sets. Finally, researchers should complement experimental approaches with traditionally undervalued methods. Case studies, naturalistic longitudinal studies, and other within-subjects designs may have an important place in defensiveness research. The standard nomothetic approach may overstate the extent to which defensive processes are generalizable; each individual's life history likely engenders idiosyncratic security concerns, corresponding semantic networks, and so on. Perhaps death is the worm at the core for one person; for another, it may be meaning or self-esteem instead. Examining defensive processes within individuals and/or across time could

prove valuable (and could illuminate the development of defensiveness, a barely touched research area).

These goals demand extensive resources, so research groups should combine their efforts in a common mission, irrespective of their theoretical preferences or alignments. Advances in science often depend on such large-scale projects (see Simonton, 2013), and it may be time that defensiveness researchers suspend our differences to settle some outstanding questions in ambitious "adversarial collaborations" (Mellers, Hertwig, & Kahneman, 2001).

The Next Frontier

We may be nearing an answer to the question of what is the "worm at the core" of defensiveness. But it is also worth asking whether we need a unified or comprehensive theory at all. Perhaps no unitary process explains all defensive responses (e.g., Hennes, Nam, Stern, & Jost, 2012; Sullivan, Landau, & Kay, 2012). Instead, different threats might cause defensiveness for different reasons, only appearing to overlap because manipulations or measurements often conflate multiple psychological domains.

A reductive approach is tempting, but several recent investigations highlight complexities involving context, personality, and other moderating factors, and we should not ignore evidence that some threats might elicit highly specific defenses, not generalized ones (e.g., DeCremer, Brebels, & Sedikides, 2008). Therefore, in addition to large-scale studies aimed at generating definitive overarching conclusions, we should follow Sullivan et al.'s (2012) advice and "drill down" into the nuances within circumscribed inquiries. There are several good examples of such studies (e.g., Jonas et al., 2008; Kosloff et al., 2010; Landau, Greenberg, & Sullivan, 2009; Schoel, Bluemke, Mueller, & Stahlberg, 2011), and we need more of them—although such focused investigations need not preclude larger-scale efforts to answer big questions.

Of course, if a unified theory appears to work, then clearly we should embrace it. Such a theory will probably include several extant theories, more or less intact, while accommodating new information about contextual and individual-difference factors. No current theory wholly accomplishes these feats, and each tends to oversimplify defensive processes for the sake of parsimony.

On the horizon of psychological inquiry, theories and research concerning psychological defense are well situated to forge connections to other areas. Defensiveness is but a component of psychological functioning, and relationships, self-esteem, and meaning probably reflect growth-oriented motives operating in tandem with defensive ones. Indeed, people sometimes respond rationally to threats instead of defending against them, but such processes have yet to be reconciled with defensive ones. A mature understanding of psychological defense will eventually contain an integrative extension to theories and research deriving from complementary perspectives. Such work has already begun (e.g., Nussbaum & Dweck, 2008; Pyszczynski, Greenberg, & Solomon, 2000) and promises to be a valuable new direction.

Conclusion

In the field of psychological defense, theoretical proliferation has outpaced pragmatic innovation, as generating data to support favored perspectives gained precedence over tackling difficult outstanding questions. Small sets of studies are rarely definitive, and too often we are content to marshal data that are consistent with a theory but not exclusively supportive of it (in relation to other, similar theories). Perhaps we are also too tolerant of studies with basic methodological defects.

The point of this article is not to discourage theoretical innovation or suggest that new theories should be reflexively quashed. Overlapping theories may well have independent value, but it does seem that most are beating around the same bush. This is not a new problem; indeed, it seems to be an iteration of the "jangle fallacy" (Block, 1995; i.e., multiple names for the same phenomenon)— and though we must, too, be cautious of the "jingle fallacy" (i.e., oversimplifying), at this point, more than theories, the field needs reliable data.

To that end, we need greater methodological innovation and cross-fertilization.

More unification might help tame the "zoo" of competing theories and ease the discombobulation caused when researchers talk past one another and work at cross-purposes rather than together. I hope the present article will be a useful primer for those interested in the far-reaching topic of psychological defense and a guidepost that will inspire at least some course correction and heterogeneous collaboration among those of us who already study it.

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Notes

1. I use "psychological defense" instead of "existential psychology" because my focus is somewhat broader than the latter term implies and includes any process that functions to buffer anxiety. I also opt against using a term invoked (but not adopted)

by Proulx et al. (2012), among others—"ego defense"—because of its laden history and ambiguity (cf. Leary, Terry, Allen, and Tate's [2009] review of the "ego threat" concept, in which they recommend discarding the term). "Psychological defense" is broad, descriptive, and neutral in that it is unaffiliated with any particular theoretical perspective. I also use the term "defensiveness" throughout this article as shorthand.

2. Because "efficacy" seems such a necessary element of "goodness"—it is difficult to imagine people feeling globally good about themselves if they also feel useless—and research suggests that self-esteem, self-efficacy, and locus of control represent a common factor (Judge, Erez, Bono, & Thoresen, 2002), from here on I often refer simply to "self-esteem," which should be taken to include a sense of personal agency or control.

3. The only finding inconsistent with this interpretation is that the "self-determined death" manipulation caused elevated death-thought accessibility but not worldview defense. However, because the death-thought accessibility measure did not control for nondeath negative words, the finding must be interpreted tentatively.

4. This does not mean that epistemic equilibrium theories cannot explain such findings, but such explanations seem improvisational. This points to an ambiguity inherent (but not exclusive) to epistemic equilibrium theories: People's mental representations are complex, so it seems that most perceptions should violate some expectations while confirming others. Other defensiveness theories encounter a similar problem in cases where emotional goals conflict (e.g., self-verification vs. self-esteem). Researchers can resolve this by using priming to activate one theme over another (e.g., Proulx et al., 2010), but the problem persists when trying to interpret phenomena outside the laboratory.

5. Some have argued—in my view, unconvincingly—that terror management is incompatible with evolutionary theory. These arguments appear to rest largely on theorists' differing views of the ways natural selection is apt to "tinker" with psychological processes. The dialogue is too involved and tangential to my purpose to summarize here, but interested readers might consult Landau, Solomon, Pyszczynski, and Greenberg's (2007) article and commentary on the topic.

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