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## The true self and existential structure? Unexpected effects of mortality salience and personal need for structure on belief in a true self

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### ABSTRACT

Two studies examined (what seemed to be) a relatively straightforward prediction that mortality salience would increase belief in a true self. This hypothesis was based on existing evidence that the idea of a true self helps people organize the world as well as evidence suggesting that people are particularly likely to rely on such organizing structures when death is salient. We further hypothesized that this effect would be pronounced for individuals high in personal need for structure (PNS). However, our results revealed a pattern in the opposite direction as predicted. While PNS did moderate the effect of mortality salience on belief in a true self, high PNS individuals were actually less likely to derogate the author of an essay suggesting the true self is an illusion (Study 1) and less likely to endorse items assessing explicit belief in the true self (Study 2) following MS. These findings contradict existing theory and evidence and suggest an interesting potential avenue for future research.

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Terror management theory; existential psychology; motivation; coherence; personal need for structure; true self

In everyday life, beliefs involving *true selves* seem to be quite commonplace. People make statements such as “I just don’t feel like my *real self*” and “I want to know who you *truly are*.” Research has revealed that true-self beliefs are implicit in many intuitive social-cognitive processes by which people make sense of and evaluate themselves and others (i.e. folk psychology), and that these beliefs contribute to the experience of meaning in life (Schlegel, Hicks, Arndt, & King, 2009; Schlegel, Hicks, King, & Arndt, 2011). Though research has shed light on the content of true-self beliefs and some of the consequences of holding them, it remains unclear where these beliefs come from and why they are so prevalent. Why do people harbor beliefs in true selves? After all, considering the pervasive influence of the environment on the self, the idea that people literally possess a single true self is tenuous. Indeed, Baumeister (1995) once characterized the true self as “almost certainly a myth” (p. 60).

We propose that the idea of a true self helps people organize the world in coherent ways, consequently lending meaning to existence (Schlegel, Vess, & Arndt, 2012). As such,

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and based on terror management theory's (TMT; Solomon, Greenberg, & Pyszczynski, 1991) account of how structures that meaningfully organize the world help people cope with concerns about mortality (Arndt, Landau, Vaill, & Vess, 2013), we specifically hypothesized that people may be motivated to believe in true selves as a way of dealing with underlying insecurities about death. In addition, we expected that people who show an enhanced need for simple and clear interpretations of the world (Landau et al., 2004) may be especially likely to turn to true self – beliefs in response to heightened death concerns. Two studies tested these seemingly straightforward predictions, but did not provide evidence in support of them. Instead, we observed patterns in the exact opposite direction of these predictions. In the following, we elaborate on our rationale for conducting these studies by providing a brief review of the literatures on true-self beliefs and terror management processes.

### True-self beliefs and the structuring of the world

Consistent with our proposition that true-self beliefs help structure ourselves and the social world, several independent lines of research suggest that these beliefs are instrumental in helping people achieve and maintain a sense of meaning in their lives. From a social-cognitive perspective, true-self beliefs have been implicated in reasoning about personal identity, authenticity, and morality. With respect to personal identity, a great deal of research suggests that people intuitively make a distinction between a relatively superficial level (who a person seems to be) and a more fundamental level of identity (who a person *really is*; e.g. Andersen & Ross, 1984; Johnson, Robinson, & Mitchell, 2004; Ullman, 1987). This suggests that ideas about a “true self” help people to organize and structure information about others as well as their own identities and self-concepts.

The fact that people seem to intuitively distinguish between true self-aspects and more superficial self-aspects may also reflect a broader cognitive propensity towards *psychological essentialism*, a tendency to infer the presence of underlying essences that explain individuals' observable features and similarities among category members (e.g. Christy et al., 2016; Gelman, 2003; Haslam, Rothschild, & Ernst, 2000; Schlegel & Hicks, 2011). Essentialism is thought to arise from basic explanatory processes by which people organize their experience in sensible ways (e.g. Cimpian & Salomon, 2014; Salomon & Cimpian, 2014). Essentialist thinking is also associated with greater stereotype endorsement and greater resistance to change (Prentice & Miller, 2007), outcomes that play an important role in how people structure and simplify social information (Jost & Hunyady, 2005; Neuberg & Newsom, 1993). Evidence that true-self beliefs are an instance of psychological essentialism (Christy et al., 2016) is consistent with the idea that true-self beliefs function to structure information about the world and ourselves in coherent ways.

The close relationship between true-self beliefs and moral reasoning lends further support to this idea. Moral character traits appear to be central elements of how people structure and understand information about others (Wojciszke, 2005) and also form the basis for making judgments about who someone truly is. For example, Strohminger and Nichols (2014), (2015) have found that judgments about the continuity of personal identity (i.e. whether a person remains the same person over time) are anchored by perceptions of the person's moral character. People are most likely to conclude that someone is no longer the same person that they once were if they perceive that that person's moral character has changed. Perceived changes to other kinds of personal characteristics (e.g. non-moral

personality traits, memories, interests) do not have as strong of an impact on judgments of identity continuity.

More direct links between morality and true-self beliefs have been documented by Newman, Knobe, and colleagues (Newman, Bloom, & Knobe, 2014; Newman, De Freitas, & Knobe, 2015), who have found that people seem to selectively attribute behaviors and states that they regard as morally good to others' true selves. Behaviors and states that are seen as morally bad tend not to be ascribed to the true self. Recent evidence suggests that this moral positivity bias is expressed more generally in reasoning about essences, further implicating belief in true selves as an instance of essentialism (De Freitas, Newman, & Knobe, 2016). This intuitive bias has downstream consequences for moral reasoning processes, including the assignment of blame (Newman et al., 2015). Given the centrality of morality for structuring society and people's perceptions of others, the link between true-self beliefs and morality further supports the idea that true-self beliefs likely serve coherence providing functions.

A final body of work illustrative of the link between true-self beliefs and structure demonstrates that the true self plays a critical role in perceptions of meaning in life. Prior to empirical investigations into this matter, many philosophers and psychologists developed theories that emphasized the importance of understanding and being true to one's self. This kind of theorizing can be traced at least as far back as the ancient Greek philosophy of Plato, who through the semi-fictionalized character of Socrates expounded on the meaning of the aphorism *Know Thyself* (Jowett, 1892), and of Aristotle, whose notion of *eudaimonia* refers to well-being that is achieved by living in accord with one's true nature (Kraut, 2014). Since these ancient origins, the importance of knowing and following one's true self has continued to be emphasized by philosophers, such as the American transcendentalists and the European existentialists, and has been implicit in the theories of psychologists such as Freud (1949) and Rogers (1961). In an analysis of the historical development of the human self-concept, Baumeister (1987) suggests that as traditional sources of structure and meaning in life (e.g. religion, inheritance of social/occupational roles) have declined, the self has taken on increasing importance as a source of meaning and direction. As such, the self may now be a more central component of people's meaning systems than at any prior point in human history.

These theoretical claims are borne out by empirical research demonstrating that perceptions and beliefs about the true self are related to the experience of meaning in life. For instance, Schlegel et al. (2009) found that the cognitive accessibility of participants' true self-concepts (i.e. how easily they could call these self-representations to mind) was positively associated with self-reported meaning in life, and established that this relationship is causal by demonstrating that a manipulation of true self-accessibility increased meaning in life. A subsequent set of studies yielded similar conclusions for subjective true self-knowledge; participants who reported knowing their true selves better reported greater meaning in their lives, and a manipulation of perceived true self-knowledge increased self-reported meaning in life (Schlegel et al., 2011). Schlegel and colleagues have also found that people strongly endorse a *true-self-as-guide* lay theory of decision-making, which entails that following one's true self is conducive to making optimal decisions (Schlegel, Hicks, Davis, Hirsch, & Smith, 2013). Thus, when taken together, multiple lines of research converge to suggest that true-self beliefs play an important role in sense-making, structuring the social world, and constructing meaning in life.

## True-self beliefs as terror management

The idea that true-self beliefs help structure the social world in meaningful ways suggests that people are motivated to harbor such beliefs in order to address psychological needs that meaning and structure appease. In other words, we might be able to understand why people hold true-self beliefs by examining them through the lens of a motivational framework that emphasizes the importance of structure and meaning. TMT is one such framework (Arndt, Landau, Vail, & Vess, 2013). Broadly speaking, TMT argues that many behaviors and psychological processes can be partially explained by the need to deal with underlying concerns about personal mortality. For example, the theory posits that subtle reminders of mortality (mortality salience; MS) will lead people to cling to culturally derived beliefs and values that give meaning, predictability, and permanence to existence. Research consistent with this view (for a review, see Greenberg & Arndt, 2011) has, among other things, found MS increases defense of cultural values (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989), the prioritization of religious beliefs among religious people (Vess, Arndt, Cox, Routledge, & Goldenberg, 2009), and behaviors consistent with culturally endorsed standards (Routledge, Arndt, & Goldenberg, 2004).

The predictions of TMT have also been used to understand the motivational processes that partially explain why people seek out and cling to simple structure and meaning, making TMT a potentially useful framework for understanding the roots of true-self beliefs. Indeed, research (Hirschberger, 2006; Landau et al., 2004) indicates that MS increases various responses reflective of a belief in a just world, such as assigning greater blame to innocent victims and expressing preferences for narratives characterized by “benevolent causality” (i.e. negative events ultimately leading to positive outcomes). Likewise, Davis, Juhl, and Routledge (2011) found that mortality salience increased endorsement of teleological beliefs (i.e. believing that things “happen for a reason”). Because just-world beliefs and teleological beliefs help structure and explain social events that might, in some cases, defy expectations, these studies provide suggestive evidence that people turn to structure providing beliefs as a way of coping with underlying concerns about mortality.

Of course, the use of clear and unambiguous structure as a terror management resource is especially prominent among people who show a relatively stronger need for simple and coherent knowledge about the world. A number of studies have found that individual differences in personal need for structure (PNS; Neuberg & Newsom, 1993), a variable that captures preferences for clear understanding, moderate the effects of MS. For instance, Schimel and colleagues (1999) found that people high (but not low) in a variable akin to PNS, need for closure (Webster & Kruglanski, 1994), responded to MS with an increased disliking of someone who violated pre-existing expectations (i.e. stereotypes). Juhl and Routledge (2010) similarly observed that it was people high (but not low) in PNS that responded to MS with increased defense of prominent nationalistic and religious belief structures. Similarly, making salient the threat of terrorism increased attitudinal rigidity concerning prominent cultural practices (e.g. having a traditional meal on Thanksgiving) among people high (but not low) in PNS (Routledge, Juhl, & Vess, 2010). Other research has found that MS leads people high (but not low) in PNS to prefer people who are behaviorally consistent (Landau et al., 2004), artwork that has clear and readily interpretable meaning (Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006), and particularly relevant to the present inquiry, clearly defined and structured self-conceptions (Landau, Greenberg, Sullivan,

Routledge, & Arndt, 2009). For example, Landau et al. (2009) found that MS led high PNS (but not low PNS) people's preferences for clear and unambiguous personal identities relative to a control condition, suggesting that MS may lead people high in PNS to embrace and strongly endorse beliefs that structure personal identities in the face of death concerns.

That people high in PNS appear to readily engage structure-providing resources in response to MS may help explain why these individuals are able to effectively maintain meaning in life (Vess, Routledge, Landau, & Arndt, 2009) and experience less death anxiety (Routledge, Juhl, & Vess, 2013) in response to mortality reminders. Regardless, research derived from TMT clearly indicates that people, particularly those high in PNS, cling to beliefs and resources that imbue the world with clear structure, coherence, and meaning.

### **Distinguishing true-self beliefs from self-esteem**

Self-esteem has been a focal point in much prior TMT research. As such, it is worth clarifying the theoretical distinction between self-esteem and the true-self beliefs we examined in the present studies. According to TMT, self-esteem is a sense of personal worth and significance that is achieved by living up to the prescriptions of one's cultural worldview (or at least perceiving that one has lived up to these standards; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). Different cultural worldviews will furnish their adherents with different criteria to evaluate their self-esteem; what it means to be a good member of the culture varies from one worldview to another. On our view, true-self beliefs are best seen as components of cultural worldviews that provide a framework for understanding and evaluating the self. Thus, true-self beliefs may inform the ways in which self-esteem is achieved, but these beliefs are not identical with self-esteem. For instance, in the context of a cultural worldview that includes a belief in true selves, prescriptions for good behavior will likely emphasize considerations of authenticity. In such a context, one's self-esteem may be partially contingent upon whether one perceives oneself as behaving authentically or being true to oneself. Of course, existing TMT work indicates that mortality concerns can motivate self-esteem strivings that are driven by standards derived from sources external to the true or "core" self (Arndt et al., 2009). We thus conceive of the present investigation as addressing beliefs about the self that constitute a background component of cultural worldviews that most likely have downstream implications for self-esteem, but should remain a theoretically distinct construct. Independent of their putative relationship with self-esteem, we believe that true-self beliefs can also serve existential functions by satisfying human epistemic needs.

### **The present research**

Based on the foregoing analysis, we propose that TMT offers a useful framework for understanding why people may be particularly likely to embrace true-self beliefs. True-self beliefs help people simplify and structure knowledge about themselves and others, and people high in PNS readily embrace resources that provide simple structure when coping with heightened concerns about death. Thus, we made the seemingly straightforward prediction that people high in PNS would respond to mortality reminders with a heightened belief in the legitimacy of the true self. We planned and conducted two convergent studies to test this prediction. In both studies, MS was induced using a rather subtle approach; participants were randomly assigned to complete either a death-related questionnaire or a pain-related

questionnaire at the outset of the study (Burke, Martens, & Faucher, 2010). After this manipulation, and adhering to standard procedures in TMT research (Abeyta, Juhl, & Routledge, 2014; Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994), participants completed a relatively long distractor task (the PANAS-X; Watson & Clark, 1994) prior to completing the primary dependent measures. In Study 1, the dependent measure consisted of participants' evaluations of an essay writer whose essay was hostile to the idea of true selves (evaluations of worldview-threatening essay writers are a standard measure in TMT research, e.g. Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992). We predicted that participants high (but not low) in PNS would evaluate this author less favorably in the mortality salience condition than in the control condition. In Study 2, the dependent measure consisted of a face-valid scale explicitly assessing participants' belief in true selves. We predicted that participants high (but not low) in PNS would endorse true-self beliefs more strongly in the mortality salience condition than in the control condition. As will soon become clear, these theoretically guided and seemingly straightforward predictions were not borne out in the data. Data, study materials, and Supplemental results from the present studies are available on the Open Science Framework (<https://osf.io/f58c3/>).

## Study 1

### Method

#### Participants

Adults ( $N = 303$ ; 131 females, 171 males, 1 gender non-conforming) adults living in the United States ( $M_{\text{age}} = 34.59$ ,  $SD_{\text{age}} = 11.01$ ) were recruited from MTurk (MTurk; Buhrmester, Kwang, & Gosling, 2011). Each participant was compensated \$.40 for completing the online survey. The study was presented as an investigation of the relationship between different personality characteristics. It took about 12 min to complete.

#### Materials and procedure

**PNS.** Participants first completed the 12-item Personal Need for Structure Scale (Thompson, Naccarato, Parker, & Moskowitz, 2001). This scale assesses preferences for clear and unambiguous knowledge about the world. Participants indicated their agreement with each item (e.g. "I enjoy having a clear and structured mode of life") on a 1 (*strongly disagree*) – 6 (*strongly agree*) scale. Responses were averaged into a PNS composite ( $M = 4.03$ ,  $SD = .93$ ,  $\alpha = .91$ ). Higher scores reflect greater PNS.

**Saliency manipulation.** MS was manipulated in accordance with previous TMT studies (Burke et al., 2010). Participants in the MS condition completed the 15-item Death Anxiety Scale (Templer, 1970) by indicating whether statements such as "I am not at all afraid to die" and "The subject of life after death troubles me greatly" were true (*the statement describes me*) or false (*the statement does not describe me*) of them. Participants assigned to the control condition responded to a parallel 15-item scale focused on anxieties about physical pain. Self-report death anxiety questionnaires, such as these, have been used successfully to induce MS in previous on-line MTurk studies (Morris & Goldenberg, 2015).

**Affect and delay.** Following the salience manipulation, participants completed the 60-item Positive and Negative Affect Schedule-Expanded Form (PANAS-X; Watson & Clark, 1994). Participants indicated the extent to which they were currently feeling each emotion (e.g. “sad,” “afraid,” “at ease”) on a 1 (*very slightly or nothing at all*) – 5 (*extremely*) scale. We computed general PA ( $M = 2.67, SD = .92, \alpha = .91$ ) and general NA composites ( $M = 1.44, SD = .71, \alpha = .94$ ). The PANAS-X served as the critical delay between the MS induction and the dependent variable (Burke et al., 2010; Pyszczynski, Greenberg, & Solomon, 1999).<sup>1</sup>

**Defense of the validity of the true self.** Our dependent variable in this study built upon classic approaches to studying cultural worldview defense (Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997; Goldenberg et al., 2001; Greenberg et al., 1992). We exposed participants to an ostensibly randomly selected essay that argued strongly against the validity of the true self. Participants were instructed to read the essay attentively so that they could answer some “memory” questions later in the study. The essay read:

In the book I've been reading, *The Self Illusion* by Bruce Hood, I've learned about how dumb the idea of a “true self” really is. The idea that every person possesses some characteristics deep inside them that makes them who they truly are just doesn't make sense. For one thing, it confuses me how anyone should be able to figure out which parts of them are “true” and which parts are “false.” For another thing, my impression from the book I am reading is that these ideas have very little validity or basis in fact. Even if people do have underlying traits that are not always expressed in their behavior, there is no evidence that these underlying traits are somehow more “true” to the person's identity, or that people are any better off when they are able to express these underlying traits compared to when they are not. Overall, I think the true self is imaginary and anyone willing to believe that it's a real thing has probably not thought about it too hard.

After reading the passage, participants completed an evaluation measure consisting of 6 items focused on participants' impressions of the author and his/her opinion (e.g. “How much do you agree with the author's opinion?” and “How much do you think you would like the author?”). Responses were made on a 1 (*not at all*) – 9 (*extremely, totally*) scale and averaged to form a single defense of the true self composite ( $M = 5.18, SD = 1.82, \alpha = .94$ ). These items were taken directly from previous studies that have utilized reactions to a worldview-challenging essay as the dependent variable (Goldenberg et al., 2001). Higher scores reflect more positive reactions to the author and thus greater endorsement of the idea that the true self is *not* real.

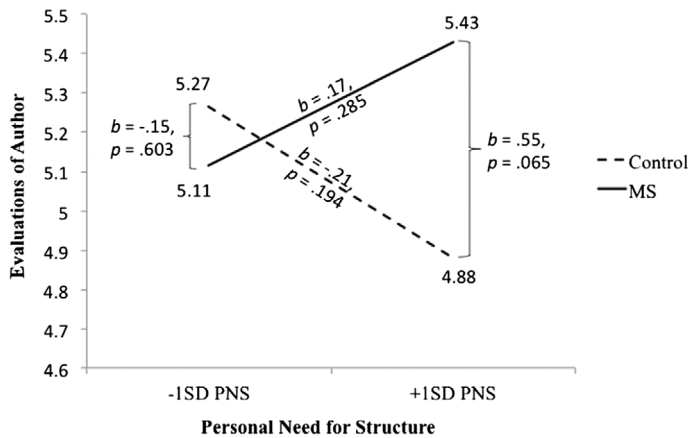
**Self esteem.** Following the dependent variable, we measured participants' self-esteem with the Single-Item Self-Esteem scale (Robins, Hendin, & Trzesniewski, 2001). Participants indicated their agreement with the single statement “I have high self-esteem” on a 1 (*strongly agree*) – 7 (*strongly disagree*) scale. Scores ( $M = 4.77, SD = 1.71$ ) were reversed such that higher scores reflect greater self-esteem.<sup>2</sup>

The survey ended with a brief demographics questionnaire.

## Results

We tested our hypothesis by regressing author evaluation scores on to salience condition (dummy-coded: MS = 1, control = 0), PNS (mean-centered), and the Salience  $\times$  PNS interaction. The main effects were entered in Step 1 and the interaction term was entered in Step 2. There were no main effects of salience condition,  $b = .20$  ( $SE = .21$ ),  $t(300) = .94, p = .348$ , 95% CI  $[-.22, .61]$ , or PNS,  $b = -.02$  ( $SE = .11$ ),  $t(300) = .15, p = .882$ , 95% CI  $[-.24, .21]$ . However,





**Figure 1.** MS  $\times$  PNS interaction on author evaluations in Study 1.

Notes: Higher author evaluation scores reflect greater agreement with an author who disparages the true self. Predicted means at  $\pm 1$  SD PNS are indicated next to the endpoint of each line, simple slopes between PNS and author evaluation in each condition are indicated along each line, and simple effects of mortality salience at  $\pm 1$  SD PNS are indicated by the brackets between the endpoints.

a marginal Salience  $\times$  PNS interaction did emerge,  $b = .38$  ( $SE = .23$ ),  $t(299) = 1.68$ ,  $p = .094$ , 95% CI  $[-.07, .83]$ .

We probed the interaction (Figure 1) by testing the effects of salience condition at high (+1SD) and low (-1SD) levels of PNS. Contrary to our initial hypotheses, at high levels of PNS, MS (vs. control) had a marginal positive effect on evaluations of an author arguing against the legitimacy of the true self,  $b = .55$  ( $SE = .30$ ),  $t(299) = 1.85$ ,  $p = .065$ , 95% CI  $[-.03, 1.13]$ . At low levels of PNS, there was no effect of salience condition,  $b = -.15$  ( $SE = .30$ ),  $t(299) = .52$ ,  $p = .603$ , 95% CI  $[-.74, .43]$ .

To probe this interaction in an alternative way, we also computed the simple slopes between PNS and author evaluations in each condition. In the control condition, PNS was non-significantly negatively related to author evaluations,  $b = -.21$  ( $SE = .16$ ),  $t(299) = -1.30$ ,  $p = .194$ , 95% CI  $[-.53, .11]$ . In the mortality salience condition, PNS was non-significantly positively related to author evaluations,  $b = .17$  ( $SE = .16$ ),  $t(299) = 1.07$ ,  $p = .285$ , 95% CI  $[-.14, .48]$ .

## Discussion

Contrary to our hypotheses, MS did not lead high PNS people to derogate an author who dismissed the idea of true selves. Instead, we found a marginal effect indicating that MS led people high (but not low) in PNS to show *greater* liking of the author of an essay dismissing true selves. This finding obviously runs counter to previous research showing that true-self beliefs provide psychological structure and meaning (Schlegel et al., 2011) and that people high in PNS cling to resources that provide psychological structure and meaning in response to MS. It is, of course, important to note that the patterns observed in Study 1, while seemingly inconsistent with theory, were only marginally significant. This may have to do with the indirect nature of the dependent variable. Rather than directly assessing participant's beliefs in the legitimacy of a true self, we asked them to evaluate an author of an essay

disparaging the idea of true selves. This approach connects with classic paradigms in the TMT literature (Burke et al., 2010), but a more direct approach would be to simply ask people to report their true-self beliefs following the MS induction. Study 2 utilized this more direct approach, but, again, our a priori and theoretically informed prediction was that MS should increase high-PNS people's belief in the true self.

## Study 2

### Method

#### Participants

Adults ( $N = 307$ ; 143 females, 161 males, 3 unreported) living in the United States ( $M_{\text{age}} = 35.82$ ,  $SD_{\text{age}} = 12.56$ ) were recruited from MTurk. Each participant was compensated \$.40 for completing the online survey. The study was described as an investigation of the relationship between personality traits, feelings, and people's beliefs. It took approximately 12 min to complete.

#### Materials and procedure

The procedure was identical to that of Study 1, with the exception of the dependent variable.

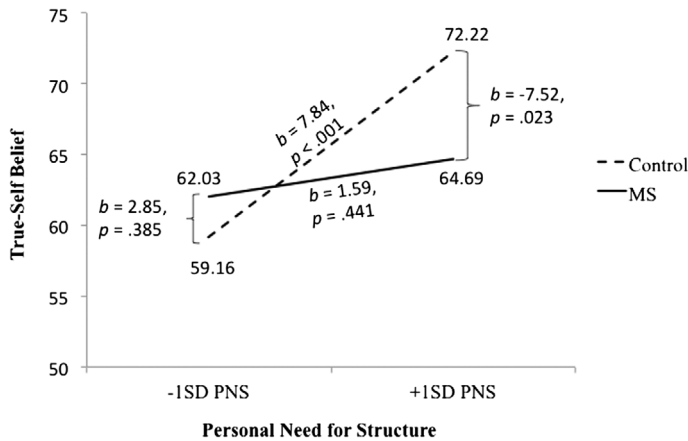
**PNS.** First, participants completed the Personal Need for Structure Scale (Thompson et al., 2001;  $M = 4.05$ ,  $SD = .83$ ,  $\alpha = .87$ ).

**Salience manipulation.** Next, participants were randomly assigned to conditions of the same MS induction featured in Study 1.

**Affect and delay.** The salience manipulation was followed by the PANAS-X (Watson & Clark, 1994), which served as the critical delay between the MS induction and the dependent variable. We again computed general PA ( $M = 2.76$ ,  $SD = .91$ ,  $\alpha = .90$ ) and general NA composites ( $M = 1.47$ ,  $SD = .76$ ,  $\alpha = .95$ ).

**True-self beliefs.** Our dependent variable in Study 2 was participants' self-reported belief in the true self. To assess this variable, we created a 10-item face-valid measure of true-self beliefs (Appendix 1). Example items included "I believe all people possess a true self" and "The true self is real." Participants indicated their agreement with each item by moving a slider on a scale ranging from 0 (*strongly disagree*) to 100 (*strongly agree*). Responses were averaged to create a single true-self belief composite ( $M = 64.72$ ,  $SD = 20.79$ ,  $\alpha = .91$ ). Higher scores reflect greater belief in the true self.<sup>3</sup>

**Self-esteem.** After the dependent measure, participants completed the Single-Item Self-Esteem scale (Robins et al., 2001;  $M = 4.85$ ,  $SD = 1.63$ ) and a final series of demographic questions.



**Figure 2.** MS  $\times$  PNS interaction on belief in the true self in Study 2.

Notes: Higher true-self belief reflects greater endorsement of the true self. Predicted means at  $\pm 1$  SD PNS are indicated next to the endpoint of each line, simple slopes between PNS and true-self belief in each condition are indicated along each line, and simple effects of mortality salience at  $\pm 1$  SD PNS are indicated by the brackets between the endpoints.

## Results

We tested our primary hypothesis by regressing true-self belief scores on to salience condition (dummy-coded: MS = 1, control = 0), PNS (mean-centered), and the Salience  $\times$  PNS interaction. The main effects were entered in Step 1 and the interaction term was entered in Step 2. There was no main effect of salience condition,  $b = -2.30$  (SE = 2.33),  $t(304) = .99$ ,  $p = .325$ , 95% CI [-6.89, 2.29]. However, a significant main effect of PNS emerged,  $b = 5.00$  (SE = 1.40),  $t(304) = 3.57$ ,  $p < .001$ , 95% CI [2.24, 7.76]. In addition, the Salience  $\times$  PNS interaction was also significant,  $b = -6.25$  (SE = 2.80),  $t(303) = 2.23$ ,  $p = .026$ , 95% CI [-11.75, -.74].

We probed the interaction (Figure 2) by testing the effects of salience condition at high (+1SD) and low (-1SD) levels of PNS. Similar to Study 1, and again contrary to our hypotheses, MS *decreased* true-self beliefs relative to the control condition at high levels of PNS,  $b = -7.52$  (SE = 3.30),  $t(303) = 2.28$ ,  $p = .023$ , 95% CI [-14.01, -1.04]. At low levels of PNS, there was no effect of salience condition,  $b = 2.85$  (SE = 3.27),  $t(303) = .87$ ,  $p = .385$ , 95% CI [-3.59, 9.28].

We also computed the simple slopes of PNS predicting true-self beliefs in each condition. In the control condition, PNS was significantly positively related to true-self beliefs,  $b = 7.84$  (SE = 1.89),  $t(303) = 4.15$ ,  $p < .001$ , 95% CI [4.13, 11.55]. In the mortality salience condition, PNS was unrelated to true-self beliefs,  $b = 1.59$  (SE = 2.07),  $t(303) = .77$ ,  $p = .441$ , 95% CI [-2.48, 5.66].

## Discussion

Study 2 conceptually replicated our unexpected findings from Study 1. In direct contradiction to our hypotheses, the results of Study 2 revealed that mortality salience actually decreased belief in a true self relative to control for individuals high in PNS. For low PNS individuals, there was no difference between conditions. Notably, Study 2 used a more direct measure of true-self beliefs than Study 1, suggesting the pattern observed in Study 1 was not only a function of the indirect measure (i.e. evaluation of an author).

## General discussion

In two studies, we examined whether mortality salience would interact with personal need for structure to predict belief in true selves. As outlined fully in the introduction, this work was based on evidence and theory that suggests people use true-self beliefs to help them make sense of their lives (e.g. Newman et al., 2014, 2015; Schlegel et al., 2009, 2011; Strohminger & Nichols, 2014), 2015, and a large body of evidence that reminders of mortality lead people (particularly those high in PNS) to embrace beliefs that serve sense-making functions (e.g. Landau et al., 2004, 2006, 2009; Schimel et al., 1999). Based on these two literatures, we made what seemed to be a fairly straightforward and theoretically informed prediction, that mortality salience would enhance belief in true selves, particularly among individuals high in PNS.

Results of the present studies did not accord with our a priori hypotheses. Rather, in both studies, a pattern opposite to our predictions was observed; high-PNS individuals became *less* favorable towards the idea of true selves under mortality salience. In Study 1, this pattern was observed using a paradigm in which participants evaluated the author of an anti-true-self essay. Under mortality salience, high-PNS participants expressed marginally more favorable attitudes towards this author and the position expressed in the essay relative to the control condition. In Study 2, a similar pattern was observed with a more direct dependent measure, a self-report scale consisting of face-valid statements regarding the existence of true selves. Under mortality salience, high-PNS participants endorsed these items less than they did in the control condition. While our initial reaction to this pattern was, and continues to be puzzlement, we do offer one speculative explanation for the unexpected findings.

## The challenge of self-knowledge

One possible account of the observed patterns of results rests on the potential indeterminacy or ambiguity that may arise when attempting to apply general true-self beliefs to oneself. Metaphorically, the true self is conceived of as a core-like entity encased in an external shell (Lakoff & Johnson, 1999; Landau et al., 2011). This provides an overarching structure that can be used to understand persons, whether ourselves or others, but what constitutes a person's "core" is not always clear. This is consistent with Baumeister's (1987) analysis that "the difficulty and desirability of self-knowledge were well established cultural attitudes by the beginning of the twentieth century" (p. 166). Whereas identity was bestowed upon individuals in previous historical eras, identity is now presumed to be hidden within the self and difficult, if not impossible, to completely attain. Thus, while people today generally agree that it is desirable and important to know themselves, trust themselves, and be themselves, figuring out how to accomplish these goals has become a problem in its own right. Exactly what parts of myself constitute the *true self* that I should know, trust, and be? Indeed, the concept of an *identity crisis* (Erikson, 1959) implies that searching for one's true self is an inherently problematic and potentially distressing process.

In this way, the general concept of a true self may ironically arouse the type of ambiguity that high PNS individuals eschew and explain why high-PNS participants responded less favorably to this idea under mortality salience in the present studies. Personal need for structure entails preferences for unambiguity, certainty, and simplicity (Neuberg & Newsom, 1993). TMT predicts, and has empirically demonstrated, that mortality salience generally

enhances whatever pre-existing tendencies people have to make sense of the world in certain ways (e.g. Landau et al., 2004). Thus, in the present studies, it may be that our mortality salience manipulation heightened high-PNS participants' pre-existing distaste for ambiguity, resulting in increased favorability towards the anti-true-self author and reduced endorsement of the true-self belief items.

Examining the simple slopes between PNS and the dependent measures in the present studies may be informative in evaluating this proposed account of the present results. Across both studies, PNS was associated with more favorable responses to true-self beliefs in the control condition (although this relationship was not significant in Study 1). This suggests that high-PNS individuals do not have any pre-existing antipathy towards the idea of true selves; if anything high-PNS individuals are more likely to endorse true-self beliefs at baseline. This is consistent with our original idea that true-self beliefs are a means by which people structure their experience in meaningful ways, and seems to speak against the ambiguity account. Thus, while an ambiguity account plausibly explains the negative effect of MS on TS beliefs at high PNS, the relationship between PNS and TS beliefs in the control condition seems to undermine its merits. It certainly doesn't solve the puzzle, but additional research guided by this view could be informative.

### Implications for theory and research on mortality salience

If the present findings are robust and reliable, they may carry some potentially interesting implications for research on terror management in general. One implication is that mortality salience may not affect all cultural worldviews in the same way. While prior research has typically found that mortality salience leads people (particularly high-PNS individuals) to adhere more closely to various structure-conferring beliefs (e.g. Landau et al., 2004; Routledge et al., 2010), in the present studies mortality salience seemed to erode faith in a structure-conferring belief, even one that people higher in PNS tended to endorse more strongly in the absence of mortality salience in Study 2. The present findings demonstrate that simply because a given belief may play a role in the meaning-making process, this belief may not necessarily be endorsed more strongly under mortality salience. In this way, the findings may have implications for teasing apart terror management theory, which emphasizes that people seek out particular *kinds* of meaning, from other frameworks (e.g. the Meaning Maintenance Model; Heine, Proulx, & Vohs, 2006) that emphasize that people respond to existential threats by *fluidly* affirming any other source of meaning. Perhaps there's something unique about the structure afforded by true-self beliefs that is undermined by concerns about death for people high in PNS. To the extent that death represents the ultimate annihilation of the self (Becker, 1973), self-related beliefs may be relatively impotent as a means of managing mortality concerns unless these beliefs bestow either literal or symbolic immortality upon the self. Likewise, aspects of the self that are untethered to social validations may not shield people from concerns about mortality, because social validation is thought to be critical to the symbolic immortality provided by worldviews. Future research comparing various existential threats will certainly be needed to assess such a possibility.

Of course, while we are, in accord with TMT, interpreting these effects as indicative of high-PNS individuals responding to MS by actively decreasing belief in the true self, the results could possibly reflect high-PNS individuals' psychological vulnerability to death concerns.<sup>4</sup> This possibility suggests that MS is undermining high PNS-individuals' ability to

maintain belief in the true self, rather than leading them to actively denounce it as a terror management defense. Such an interpretation appears to be at odds with earlier work showing that high-PNS individuals exhibit less death anxiety (Routledge et al., 2013) and higher levels of meaning in life (Vess et al., 2009) under mortality salience relative to low-PNS individuals. If high-PNS individuals are indeed especially vulnerable to the threat of mortality, it seems unlikely that these earlier results would have emerged. In our own studies, we tested whether high-PNS individuals showed an exaggerated negative affective response to the mortality salience induction and/or declines in self-esteem. Analyses of the PANAS scales (global PA and NA and the various specific subscales) and the single-item self-esteem measure suggested that this was not the case. Two-way interactions between condition and PNS were only observed for a few of the PANAS scales in Study 1 (namely global NA, fear, and sadness), and the pattern was such that negative affect was elevated among *low*-PNS participants under mortality salience (see Supplemental material on OSF for detailed results of these analyses). These results were not found in Study 2, suggesting that they may not be reliable effects. As footnoted earlier, no effects were observed on self-esteem in either study. These findings speak against the idea that high-PNS individuals are more vulnerable to reminders of mortality.

Determining exactly when and why mortality salience bolsters vs. undermines faith in structure-conferring beliefs poses an interesting challenge for future investigations. First, the features of the particular beliefs in question might determine how these beliefs fare under mortality salience. As discussed above, there may be some ambiguity inherent to the idea of true selves, motivating high-PNS individuals to reject these beliefs under mortality salience. This possibility could be addressed by manipulating the degree of ambiguity in the dependent measures and testing for a possible three-way interaction between mortality salience, PNS, and ambiguity. Another possibility mentioned previously is that self-related beliefs must in some way ascribe immortality to the self, whether literal or symbolic, in order to function effectively in terror management processes. This possibility could be addressed by comparing effects of mortality salience and PNS across different types of self-beliefs (i.e. those that ascribe literal immortality vs. those that ascribe symbolic immortality vs. those that simply provide structure to the self).

A second class of potential moderators includes features of the sample on which the studies were conducted. Both of the present studies were conducted on samples recruited from Mechanical Turk. The quality of MTurk samples is a subject of ongoing debate. Some authors have argued that these samples are at least as good as samples of undergraduates and other convenience samples commonly used by psychologists (e.g. Bartneck, Duenser, Moltchanova, & Zawieska, 2015; Buhrmester et al., 2011; Mason & Suri, 2012). However, others have urged caution in the use of MTurk samples, on the grounds that some MTurk users are effectively professional research participants, and that this relatively small group of “super Turkers” produces a disproportionate amount of the data collected on the site (Chandler, Mueller, & Paolacci, 2014). Setting issues of data quality and participant non-naïveté aside, there may be other ways in which MTurk samples differ from other samples that accounts for the present surprising findings. Seeking to replicate these studies in non-MTurk samples would be a good first step towards addressing this issue.

## Conclusion

A growing body of evidence has documented various ways in which true-self beliefs function in processes that provide structure and meaning to human experience. Few, if any, motivational accounts of why true-self beliefs arise exist in the literature. Based on terror management theory and the attendant body of evidence suggesting that reminders of mortality increase reliance on structure-conferring beliefs, particularly among individuals high in structure needs, we made a straightforward prediction that under mortality salience high-PNS individuals would embrace the idea of true selves more strongly, as evidenced by derogation of an anti-true-self essay writer and increased endorsement of statements like “The true self is real.” However, high-PNS participants unexpectedly responded in a manner opposite to predictions, becoming more favorable about the anti-true-self author and endorsing the true-self belief items less under mortality salience. While we have outlined one purely speculative explanation for the present findings, the current results clearly contradict existing theoretical and empirical accounts of the true self and suggest an interesting avenue for future research on one of the central concepts of folk reasoning about self and identity.

## Notes

1. Consistent with other TMT research, there were no main effects of MS on general PA or general NA in either study. Controlling for PA and NA also did not alter any of the results reported below. We therefore do not discuss affect further.
2. Although explicit SE moderates certain TMT effects (Burke et al., 2010; Routledge et al., 2010), we found no evidence that SE moderated the predicted MS  $\times$  PNS effects in Studies 1 or 2 ( $ps > .636$ ). Self-esteem was also not affected by the MS manipulation or the MS  $\times$  PNS interaction ( $ps > .249$ ). Finally, and consistent with our view that true-self beliefs and self-esteem are distinct, these constructs were empirically independent of one another ( $rs < .110$ ,  $ps < .057$ ). We therefore do not discuss SE further.
3. Belief in the true self was our primary interest in this study. However, after the true-self belief measure, participants also completed three items focused on the idea that the true self is discovered (e.g. “The true self is innate, waiting to be discovered”) and three items focused on the idea that the true self is created (e.g. “The true self is something people create for themselves”). These separate scales were included to explore the possibility that MS might affect people’s beliefs about where “true selves” come from (see Schlegel et al., 2012). We also included an additional exploratory item taken from previous work on the moral nature of the true self (Strohinger & Nichols, 2014). This question asked participants to indicate whether an individual was still “who he is” after losing his moral conscience. We do not report results focused on these items because they were secondary aims of the project and the same interaction was not observed with these measures. Critically, all of these exploratory measures came AFTER our primary dependent variable (true-self beliefs).
4. We thank an anonymous reviewer for raising this point.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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## Appendix 1. True-self belief scale (Study 2)

The *true self* is believed to be a part of the person that represents who they really are, even if they sometimes behave in ways that are not consistent with this part of themselves.

Philosophers, scientists, and lay people have long debated whether people really possess a true self. Some believe that people do possess a true self and that the true self is real, while others believe that the true self isn't a real thing that people actually possess.

Is the true self real? Do people really possess a true self at their core? We are interested in where you stand on the issue of true selves. The following items assess some of your opinions and beliefs about this idea.

- (1) The true self is real.
- (2) I believe all people possess a true self.
- (3) True selves do not really exist.
- (4) There is no such thing as a "true self" that makes people who they are.
- (5) It might turn out that true selves really do exist.
- (6) I am skeptical about the idea of true selves.
- (7) I am open to the possibility that true selves don't exist.
- (8) I am confident that true selves are real.
- (9) It is difficult for me to believe that true selves don't really exist.
- (10) I wouldn't be surprised to learn that true selves really exist.