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Testing the Impact of Post-Traumatic Stress on Existential Motivation for Ideological Close- and Open-Mindedness

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TESTING THE IMPACT OF POST-TRAUMATIC STRESS ON EXISTENTIAL MOTIVATION FOR IDEOLOGICAL CLOSED- AND OPEN-MINDEDNESS

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ABSTRACT

The present thesis builds on terror management theory and anxiety buffer disruption theory to propose that although existential motivation normally leads people to become more certain of their worldviews, traumatic experiences can disrupt those belief systems and cause people to respond to death-awareness by making an open-minded search for alternative belief systems instead. To test that hypothesis, groups of participants with low and high levels of traumatic stress were reminded of death (vs. a control topic condition), followed by an assessment of closed- and open-mindedness. Thus, the present research explored the previously untested hypothesis that increased awareness of mortality will boost ideological dogmatism among those with low levels of traumatic stress (for whom established worldview buffers are unchallenged), but that MS will lead to *reduced* ideological dogmatism (open-minded approach to alternative belief systems) among those with high levels of traumatic stress (for whom established worldview buffers are challenged). The data failed to replicate data that suggest low levels of traumatic stress lead to higher dogmatism after a mortality salience. However, the data does align with the idea that higher levels of trauma do lead to more ideological open-mindedness.

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CHAPTER I

THEORETICAL INTRODUCTION

September 11, 2001. The World Trade Center was under terrorist attack. It is a story everyone knows, two hijacked planes crashed into the towers and 2,753 WTC workers, firefighters, and police officers died. Of course, far greater numbers of family members, friends, and witnesses were affected that day. Nationally and globally, longitudinal research (Peterson & Seligman, 2003) ongoing at the time showed that in the immediate days and months following 9/11, people generally invested more heavily in common values, such as gratitude, hope, kindness, love, and spirituality. However, when it came to specific survivors, those who directly experienced the attacks and their consequences were sometimes not so easily able to rely on such values. For example, the otherwise religious Ruth Green, whose son Josh was killed in the attacks, found herself challenged to understand how any god could allow such a deep and personal tragedy. Unable to rely on her religious worldview to help cope, she eventually abandoned her spirituality and began searching for alternative ways to make sense of the world around her. The present thesis sought to investigate the role of traumatic experience as one potential determinant of these two very different reactions—where, on the one hand, the awareness of death might lead some to more heavily invest in their extant beliefs and

values, yet on the other hand lead others to abandon those beliefs in search of more meaningful alternatives.

To investigate the issue, the present thesis builds on terror management theory (Greenberg, Pyszczynski, & Solomon, 1986) and anxiety buffer disruption theory (Pyszczynski & Kesebir, 2011) to suggest that although existential motivation might normally lead people to become more certain of their worldviews, traumatic experiences can disrupt those belief systems and may cause people to respond to death-awareness by making an open-minded search for alternative belief systems instead. Investigating this idea could potentially unearth useful insights about the motivational process of recovering from traumatic experience.

Terror management theory and research

Building on the works of Ernest Becker (1962; 1973), TMT offers that much of human behavior is motivated by the human awareness of death. As humans developed and evolved, they also gained the cognitive capacity for heightened self-awareness and symbolic thought. But, alongside considerable adaptive benefits (e.g., planning, anticipating future outcomes), those abilities also produced the capacity for the awareness of mortality. To cope with that development, TMT posits that several psychological systems have also developed to help manage our awareness of death and control the anxiety it might otherwise bring. According to TMT, people can manage the awareness of mortality by adopting a meaningful cultural worldview, and attaining self-esteem by living according to the beliefs and values of those worldviews.

From this perspective, then, *cultural worldviews* are socially constructed and validated systems of beliefs about the world that promise symbolic death transcendence if

followers uphold certain cultural values or meet certain standards. For example, a culture might offer its members an enduring secular legacy (e.g., by writing a book, raising children, or leaving a mark in the sports world) and/or supernatural afterlife (e.g., heaven, paradise). *Self-esteem*, then, is a reflection of how well or poorly a person believes themselves to be living up to the standards and values of that cultural system. Thus, TMT offers that the awareness of mortality can be effectively managed by strongly investing oneself in one's cultural worldview beliefs and striving to live up to the standards and values of that system.

One of the most common methods of testing TMT stems from the *mortality salience hypothesis* (Greenberg, Vail, & Pyszczynski, 2015), which states that if cultural worldviews and self-worth help manage concerns about death, then increased mortality salience (MS) should motivate people to strive for self-esteem and bolster and defend their cultural worldviews. A large body of research has shown, for example, that participants assigned to MS conditions (e.g., writing about death, exposure to death-related imagery or words), compared to those assigned to other psychologically aversive conditions (e.g., dental pain, uncertainty, failure, public speaking), show increased worldview defense and increased self-esteem striving. For example, MS has been shown to increase participants': affinity for those who share important cultural beliefs and against those who hold opposing beliefs (Greenberg et al., 1990); aggression toward those who threaten important cultural beliefs (McGregor et al., 1998); reluctance to misuse sacred cultural icons (e.g., American flag, crucifix; Greenberg et al., 1995); and desire for material wealth (Kasser & Sheldon, 2000). MS has also been shown to motivate people to strive for self-esteem by making self-serving attributions (Mikulincer

& Florian, 2002), or by making efforts to actually live up to salient/dominant cultural standards of value such as compassion, physical attractiveness, or displays of strength, among many others (see Greenberg et al., 2015).

TMT and ideological dogmatism

Not only has research investigated the impact of awareness of mortality on worldview defense and self-esteem striving, it is also beginning to investigate whether MS motivates dogmatic belief. Such cognitive orientations as ideological dogmatism make sense conceptually, as efforts to attain a sense of personal value (self-esteem) within a seemingly long-lasting way of life (cultural worldview) must be built on the relatively certain belief that one's worldview is the most righteous and inevitable way of life (Harmon et al., 1997). Thus, MS may also lead to stronger ideological dogmatism, in the form of: stronger belief that one's extant worldview beliefs and values are correct, good, and the best way of life; avoidance of critical analysis of those beliefs; and reluctance to engage in open-minded consideration of alternative worldviews.

Indeed, emerging evidence suggests MS orients people to be more dogmatic: less analytical and more closed-minded about worldview-relevant information. For example, in one study (Jonas, Greenberg, & Frey, 2003), when participants made a worldview-relevant decision and then were offered an opportunity to get more information about that decision, MS increased their tendency to select supporting (vs. critical) information for further review. Further, research shows that after being reminded of mortality, people tend to perform better on academic tasks (e.g., reading comprehension) when correct answers affirm, rather than threaten, their extant worldview beliefs (Landau, Greenberg, & Rothschild, 2009; Williams, Schimel, Hayes, & Faucher, 2012). Still other work (Vail,

Arndt, Motyl, & Pyszczynski, 2012) has shown that images priming death-thought accessibility increased scores on a measure of ideological dogmatism, specifically. Together, these findings suggest an existentially motivated closure on one's own worldview beliefs, and point to a corresponding reduction both in critical thinking and in open-mindedness toward alternative perspectives.

However, such processes have thus far only been investigated in settings and samples in which one's established worldview beliefs are likely viewed as valid and effective, in which case increased investment in such belief systems might indeed be an effective method of terror management. However, it is likely that not everyone views their belief systems as especially valid and effective; some people may experience circumstances that undermine their worldview belief's ability to serve as a valid platform for effective terror management, and in those cases MS might lead instead to a more open-minded search for alternative beliefs, values, and standards as new platforms for existential security. We turn next to consider one such possibility.

Anxiety buffer disruption theory

As mentioned above, people are often able to manage the awareness of mortality by upholding and defending their worldviews. Yet, there may also be unfortunate circumstances in which people may be exposed to very real and intensely traumatic events that challenge the foundational assumptions of those worldviews (Janoff-Bulman, 1992)—from natural disasters, to combat, sexual assault, terrorism, or extreme illness, among no doubt many others. Thus, when trauma is experienced, the buffering effectiveness of one's extant worldview beliefs and assumptions about the world may be challenged and disrupted—and emerging theoretical and empirical work suggests that

such disrupted worldviews may lead to negative consequences and symptoms by preventing effective terror management.

Specifically, anxiety buffer disruption theory *(*ABDT) suggests that although people can typically manage the awareness of death by relying on their cultural worldviews to make sense of the world as meaningful and benevolent, traumatic experiences can shake the foundations of those worldviews (Pyszczynski & Kesebir, 2011). As a result, people with greater traumatic experience may be less able to manage death-related anxieties, becoming more susceptible to symptoms like increased anxiety sensitivity, negative affect, dissociation, traumatic nightmares, intrusive memories, and estrangement potentially even resulting in diagnosed post-traumatic stress disorder (American Psychiatric Association, 2013).

Research investigating ABDT has most often done so by testing a *disruption-symptom* hypothesis, which essentially posits that: if traumatic experiences challenge one's worldview beliefs and assumptions, thus disrupting effective terror management, then a reminder of mortality will not be effectively managed and will provoke anxiety-related symptoms. For example, Chatard et al., (2011) studied the impact of mortality reminders on trauma symptoms in the context of the Cote d'Ivoire civil war. Consistent with the disruption-symptom hypothesis, when reminded of death (vs. control topic), participants with high (but not low) exposure to the war reported increased post-traumatic stress symptoms. A number of other studies have obtained similar results in samples of earthquake survivors and those with clinically diagnosed PTSD, and with a variety of measures of relevant symptoms such as negative affect and dissociation, and with cognitive measures of death thought accessibility (e.g., Abdollahi et al., 2011;

Edmondson, Chaudoir, Mills, Park, Holub, & Bartkowiak, 2011 Pyszczynski & Kesebir, 2010).

Still other research has more directly addressed the core idea of ABDT via the *trauma-disruption* hypothesis. The trauma-disruption hypothesis predicts that if traumatic experiences do indeed undermine people's worldview beliefs and assumptions, thus disrupting effective terror management, then prompts to bolster self-esteem based on one's extant worldview beliefs and values would be ineffective (disrupted) for people with stronger traumatic experiences. Indeed, in one study, Vail, Morgan, and Kahle (2016) recruited participants with high and low levels of post-traumatic stress symptoms, manipulated MS (vs. control topic), and then randomly assigned half of them to engage in a self-affirmation task (affirming their personal value on previously held cultural standards, vs. a control topic) before measuring death-thought accessibility. Among the low PTSD symptom group, MS led to increased death-thought accessibility in the absence of self-affirmation, but not when they engaged in self-affirmation—suggesting the terror management system effectively managed death-thought accessibility among that low-trauma sample. However, among the high PTSD symptom group, MS led to increased death-thought accessibility regardless of whether or not they engaged in self-affirmation—suggesting that the terror management system was rendered ineffective (disrupted) for the high trauma group.

The above research demonstrates that high trauma individuals are likely unable to effectively manage the awareness of death, and suffer as a result. However, as the case with Ruth Green, mentioned at the outset of this paper, suggests—when one's buffer

fails, people may potentially be motivated to search for alternatives, which is the possibility we turn to next.

Trauma, anxiety-buffer disruption, and the potential for open-mindedness

Among non-traumatized individuals, for whom the established worldview buffer remains effective, research has shown that MS causes participants to become more dogmatic about the veracity of their decisions and their worldview beliefs (e.g., Jonas et al., 2003; Landau et al., 2009; Vail et al., 2012). However, if such worldview buffers are challenged and sufficiently disrupted by traumatic events, then recuperating from those disruptive traumatic experiences may require searching for alternative worldviews—which likely means a *more open-minded* (less dogmatic) perspective on various cultural beliefs, values, and standards. Although there is no directly-related research on that latter possibility, there does exist some suggestive work that could help inform the issue.

Most notably, in a major review of the literature on meaning-making after stress, Park (2010) concluded that people respond to highly stressful situations by seeking new ways of making meaning, and that successful meaning-making can lead to better adjustment. For example, when people are exposed to disease (Fife, 1995), loss of a loved one (Currier et al., 2006) or sexual assault (Kross & Figueredo, 2004), they often attempt to understand the world in new ways by taking a more open-minded approach to their various beliefs, standards, and values— leading to personal growth after stress in terms of improved life-satisfaction (Russell et al, 2006), reduced depression (Farran et al., 1997), and increased self-esteem (Hayes et al., 2005). This work suggests that people who experience stressful events may leave their old views behind and take a more open-

minded approach to alternative conceptualizations of their world and their place in that world.

Thus, theory and research both point to the present thesis: that when people with high trauma symptoms are reminded of mortality they may become more open-minded in a search for meaningful alternatives to one's previously established system of cultural beliefs, standards, and values.

CHAPTER II

THE PRESENT HYPOTHESES

Given the above review, the present research explores the previously untested hypothesis that increased awareness of mortality will boost ideological dogmatism among those with low levels of traumatic stress (for whom established worldview buffers are unchallenged), but that MS will lead to *reduced* ideological dogmatism (open-minded approach to alternative belief systems) among those with high levels of traumatic stress (for whom established worldview buffers are challenged). To test that hypothesis, groups of participants with low and high levels of traumatic stress, assessed via a posttraumatic stress checklist, will be randomly assigned to either a mortality salience condition or a control topic condition. Then, all participants will complete a measure of ideological dogmatism (Altemeyer, 1996. 2002), to assess fluctuations in closed- and open-mindedness.

CHAPTER III

METHOD

Estimation of minimum required sample size

Meta-analyses of mortality salience effect sizes were consulted to estimate the sample sizes necessary to achieve a sufficient level of power to detect MS effects within each category, should such effects be present. Burke, Martens, and Faucher (2010) found an overall MS effect size of $r = .35$ ($d = .75$) on a broad range of studies using a wide variety of outcomes (defense of national identity, attitudes toward animals, health risk evaluations, sports team affiliations, physical aggression, attitudes toward women, self-complexity, academic test scores, etc). Assuming $r = .35$ ($d = .75$), an a-priori power analysis (G*Power; Faul, Erdfelder, Buchner, & Lang, 2009) prescribed a minimum of 29 participants per each of the four conditions, for a minimum total sample size of 116.

Participant selection procedure

Due to the difficulty of locating and recruiting sufficient numbers of local patients who meet or exceed the PTSD threshold, a research panel company was used to reach participants throughout the USA. Participants will first be administered the Post-traumatic stress Check List – Civilian version (PCL-C), via an online survey medium

(Qualtrics, Provo, UT), building a panel of possible participants. Then, the following week, the critical study materials was administered to a group of panel members with sub-threshold PCL-C scores and to a group scoring above the PCL-C threshold.

The PCL-C (Weathers, Litz, Herman, Huska, & Keane, 1993) is a 17-item self-report measure adapted from the 17 PTSD symptoms listed in the DSM-IV (American Psychiatric Association, 2000). Each item assesses the presence and severity of symptoms corresponding to one of the three DSM-IV PTSD symptom clusters: re-experiencing, avoidance, and arousal. Participants were asked to rate on a scale of 1 (not at all) to 5 (extremely) the degree to which they were bothered in the past month by each symptom (e.g., "Repeated, disturbing memories, thoughts, or images of a stressful experience from the past."). PCL-C item responses were summed, with scores ranging from 17 to 85. The PCL-C has strong psychometric properties, including good internal consistency and test-retest reliability, and good diagnostic efficiency using a cutoff/threshold score of 44 for PTSD pre-diagnostic "caseness" (e.g., Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Norris & Hamblen, 2004, for review).

In this study, the PCL-C was administered to 4,056 respondents, in exchange for US$0.20, establishing the initial panel of possible participants. An attentiveness-check item ("For this item, please select the 'Quite a Bit' response.") was inserted in the middle of the PCL-C to check whether respondents were attending to item content; 3,919 respondents provided accurate responses and were retained as valid panel members. The PCL-C demonstrated good internal consistency ($\alpha = .94$), with a positively skewed distribution of scores (skewness = .67, skewness *SE* = .04; kurtosis = -.27, kurtosis *SE* = .08) such that respondents most often reported lower PCL-C severity with score

frequency gradually tapering off at the higher end of the scale (Median = 34; *M* = 36.05, *SD* = 13.73), with scores ranging up to 83.

The upper quartile score was 44, exactly matching the PTSD "caseness" threshold score; therefore, panel members with scores of 44 or above were eligible for the "high posttraumatic stress" stress group. The lower quartile score was 25; panel members with PCL-C scores of 25 or below were designated as eligible for the "low posttraumatic stress" stress group. Those designated in both the "low posttraumatic stress " and "high posttraumatic stress " groups were contacted and invited to participate in the primary study with an additional US$1.00 incentive.

Participant characteristics

An initial 385 participants accepted the invitation and completed the relevant materials. Of these, 55 did not accurately complete an attentiveness-check item embedded in the primary study (indicating that they were not paying attention to the content; item described below) and so were excluded.

Thus, the final sample consisted of 330 participants. Of those, 164 were recruited from the "low-trauma" stress group (PCL-C: Median = 21; *M* = 20.48, *SD* = 2.63) and 166 were recruited from the "high-trauma" stress group (PCL-C: Median = 51; *M* = 53.69, *SD* = 7.90) Descriptive and frequency statistics for each group's demographics are presented in Table 1.

Primary materials and procedure

In all cases, the study link was distributed using a neutral title and description (e.g., "Social attitudes survey") to conceal its true purpose and associated hypotheses. Upon obtaining informed consent, participants completed a brief set of filler items (e.g., a

personality measure) and then the following materials in the following order:

Mortality salience. Following previous research (Rosenblatt et al., 1989), participants were randomly assigned to respond to either MS or a negative event topic prompts. In the MS condition, two prompts asked participants to, "Please briefly describe the emotions that the thought of your own death arouses in you," and "Jot down, as specifically as you can, what you think happens to you as you physically die." The negative event topic prompt asked participants to, "Please briefly describe the emotions that the thought of dental pain arouses in you," and "Jot down, as specifically as you can, what you think happens to you as you physically experience dental pain." This comparison topic was chosen because the dental pain prompt evokes a negative/anxiety-provoking event, and thus enabled us to test whether MS causes effects on dogmatism beyond simply being reminded of a negative event.

Delay and distraction. Next, the 26-item positive and negative affect schedule (PANAS, Lambert et al., 2014) and a brief 3-5 minute reading task (an excerpt taken from Albert Camus' *The Growing Stone)* provided the delay and task-switching distraction needed to observe distal terror management effects (see Pyszczynski, et al., 1999).

Dogmatism. Participants then completed the 20-item (α = .91) dogmatism scale (Altemeyer, 1996. 2002) to assess the extent to which they either viewed their beliefs as absolutely correct (high scores) or remained open-minded (low scores). This 10-point Likert-type scale (1 = *very strongly disagree*, 10 = *very strongly agree*) included items such as "The things I believe in are so completely true, I could never doubt them" and "My beliefs are right and will stand the test of time."

Attention-check item. An attentiveness-check item ("For this item, please select the Strongly disagree response.") was again be inserted in the dogmatism measure to help detect respondents who do not attend to item content; only respondents who provide accurate responses to that item will were retained.

Demographics. At the end of the survey, a demographics questionnaire collected basic information, such as age, sex, race, ethnicity, and education level.

CHAPTER IV

RESULTS

Dogmatism

A 2 (Group: low vs. high traumatic stress) x 2 (MS vs. pain) ANOVA revealed no main effect of MS (F[1, 326] = 1.04, $\eta_p^2 < .01$, p =.31), and a marginally significant main effect of posttraumatic stress group (F[1, 326] = 2.88, $\eta_p^2 < .01$, p = .09) such that dogmatism scores were higher in the high posttraumatic stress group (M = 4.16, SD = .70) than in the low posttraumatic stress group (M = 4.03, SD = .69). However, as depicted in Figure 1, these were qualified by the expected interaction effect, (F[1, 326] = 5.51, $\eta_p^2 = .02$, p = .02), which was explored further using pairwise comparisons.

Among the low posttraumatic stress group, dogmatism was higher in the MS condition (M = 4.08, SD = .60) than in the pain condition (M = 3.98, SD = .80) (t[162] = .94, d = .15 [95%CI: -.16, .46], p = .35). However, among the high posttraumatic stress group, dogmatism was lower in the MS condition (M = 4.03, SD = .74) than in the pain condition (M = 4.29, SD = .64) (t[164] = 2.39, d = -.37 [95%CI: -.68, -.06], p = .02).

CHAPTER V

DISCUSSION

The present study investigated whether individuals with posttraumatic stress may become more open-minded when managing the awareness of death. It was hypothesized that 1) among healthy, non-traumatized individuals, MS would lead to increased ideological dogmatism; but 2) among individuals reporting high posttraumatic stress, MS would lead to *lower* ideological dogmatism (open-mindedness toward alternative belief systems). The first hypothesis testing that low-traumatized individuals would be more dogmatic was not support by the results. However the second hypothesis was supported by the data: high-traumatized individuals presented with mortality salience were more ideologically open-minded (lower ideological dogmatism).

Implications for TMT and ideological dogmatism

This data still stand to contribute to broader TMT literature. The reasoning for the first hypothesis has come from prior terror management theory research. First being that, much of human behavior is motivated by our awareness of our impeding death. Humans are unique from other animals because we are able to think abstractly. This explorative thinking includes a heightened self-awareness and can also include symbolic thought.

That awareness can lead us to foresee our future and the ending of our own lives producing mass uncertainty and nervousness. To cope with these anxieties, people might adopt a sense of meaning and form cultural worldviews and establish self-esteem within them. One might be heavily involved with the church because doing so would result in an afterlife in heaven. Another might engage in activists groups to hopefully make a lasting impact on future generations. There are many ways to establish a death buffer and doing so validates living experiences and can help calm feelings caused from death threat.

TMT research has also demonstrated the important effects from manipulating the awareness of mortality. Assessment can be done through an assortment of ways. From standing in front of a funeral home to outright inquiring about feelings associated with death as seen done in this study. The mortality salience hypothesis claims that increased mortality salience should provoke people to preserve their establish worldviews and refute any threats to it. People even shape their world so that those who possess the same beliefs surround them and those who challenge are at a distance.

At which point, it is logical to incorporate ideological dogmatism into the equation thinking that mortality salience may trigger an increase in dogmatic belief. When posed with a awareness of mortality, people should strive to form a stronger belief that their worldview is appropriate and best while becoming less open-minded to alternative worldviews. Prior work has shown that MS leads people to me more closed-minded about worldview relevant information (Jonas, Greenberg, & Frey, 2003). Not only seeking out information that will confirm their values, but scoring higher on dogmatism scales after an administered threat.

However, our data are not consistent with these prior findings. There are many reasons that this inconsistency may have occurred. It is quite possible that prior literature was wrong, and these are the correct data. The problem could be with the dependent variable. The prior research (Vail et al., 2012) used the exact same measure of dogmatism, but the dogmatism measure may not behave the way that was hypothesized here. Alternatively, a history effect could also have played a role in our conflicting data. With recent political turmoils, it may be that people have become more critical since the prior work conducted in 2012, and therefore do not respond to MS with increased dogmatism. Acknowledging that a history effect is a possibility, but setting that consideration aside for the moment, the present study had a substantially larger sample size than was included in the prior 2012 research (Vail et al., 2012). This consideration adds weight in favor of the present data.

On the other hand, the prior data were collected in a controlled laboratory environment while this present study was done online. Prior research also used image-based MS primes, whereas we used a text-base prime. Although, the materials and settings were not identical, it is difficult to know exactly why the study failed to replicate. However the importance of this failed replication seems minimal since the theory applies equally to a variety of methods; it would be a weak theory indeed that could not apply across these sorts of methodological variations.

Implications for abdt and ideological dogmatism

This research all also adds to the expanding body of research surrounding ABDT. Because people are able to manage the awareness of mortality through building a buffer with cultural worldviews, there are times that it may become ineffective. Though most

people are able to live their lives with minor trauma, there are those who experience intense trauma. Sexual assault, military involvement, natural disasters, and terrorism are just a few examples that can potentially render a buffer ineffective. These trauma potentially challenges the foundations of the worldviews and brings them crashing down. This downfall may produce negative consequences, such as being unable to manage death-related anxieties. People are also more susceptible to increased anxiety, intrusive memories, flashbacks, insomnia, and possibly resulting in diagnosed PTSD.

The anxiety buffer disruption theory is most often used in studying this rendered buffer. If traumatic experiences challenge one's worldview beliefs, disrupting a buffer, then reminders of mortality will not be effectively managed and will produce anxiety related symptoms. This disruption is seen in cultures that are exposed to war zones (Chatard et al., 2011). When reminded of mortality, those who had high exposure to the war had increased PTSD symptoms. Similarly, earthquake survivors also displayed PTSD symptoms after a MS manipulation.

Based on the trauma-disruption hypothesis, if low-traumatized individuals were given a chance to bolster self-esteem of worldview beliefs and values, then a mortality salience would have no effect. However, if individuals who experienced high-trauma and a mortality salience, were given the same chance to bolster self-esteem, we would not see an effective solution to managing death-anxiety.

In combination with prior research our data might suggest that high-traumatized individuals, who are presented with a death reminder, may be motivated to abandon their previous worldview beliefs and be in search of a more effective buffer system. The

present study showed that when we reminded high-trauma individuals of their mortality, dogmatism decreased.

Implications for mental health

These finding could bear on mental health assessment. TMT research gives light to the idea that effectively buffer mortality awareness is connected to well-being, and to ineffectively do so can potentially result in increased anxiety, depression, anxiety-related disorders, and decrease self-regulation (e.g., Edmondson et al., 2009; Routledge et al., 2010; Strachan et al., 2007). Consistent with that data, the present study demonstrates that high posstraumatic stress is associated with an ineffective buffer and leading people to have increased anxiety, have intrusive thoughts, and isolate themselves from reminders of the source of anxiety.

The present findings also have implications for therapeutic treatment of posttraumatic stress. When treating PTSD, cognitive behavior therapy (CBT; e.g., Galovski & Gloth, 2015) and cognitive processing therapy (CPT; e.g,. Galovski, Wachen, Chard, Monson, & Resick, 2015) are often used. These approaches include repeated mental "exposure" and ask clients to think about and write down the most distressing elements of their traumatic experience and have been found to be effective in treatment (e.g., Monson & Shnaider, 2014). Thus, if the diagnosis of PTSD stems from a disruption of a buddering system, as ABDT suggests, then successful treatment would restore effective anxiety-buffer functioning. The present data suggest that highly traumatized individuals may actually be more ideoloigcally open-minded and treatment could potentially involve helping patients to discover an alternative belief system to adopt and therefore regain and effective buffering system. Reestablishing a buffering system will

help the clients to effective manage death awareness and therefore decrease any resulting anxiety, triggering behaviors, or intrusive thoughts.

Limitations

There are several possible limitations to the present study, primarily involving the collection of our low and high posstraumatic stress system groups, and the accompanying interpretation of results. First, the measure used to collect our high and low sample, the PCL-C (Weathers et al., 1994), corresponds to the DSM-IV and has not yet been re-evaluated for the DSM-V. Future work should update this posttraumatic stress symptom assessment to match the DSM-V. It is also fair to consider the limitations included withint the PCL-C, which assess post-traumatic sympotmology, not the occurrence of a traumatic event, the number or severity of said events, or participants' appraisals of such events. It is likely that individuals vary in resilience and not all will suffer PSTD symptomology after a traumatic event. Future ABDT research might try to incorporate the influence of traumatic events and individual resilience factors.

Further differences include that the data were collected from an online sample which produced lower experimental control. Though attention checks were administered, they cannot completely account for the absorbtion of material. Another limitation of the data is that our low- trauma sample does not align with a rather large body of research. Future research may investigate whether larger samples decrease mortality salience effects.

It is also important to note that the high-traumatic stress group may also experience effects from our control condition. Though prior research has used dental pain for control and succeeded, a person dealing with PTSD symptomolgy might be avoidant

to this 'pain' prime and possibly still respond to it the same as a mortality salience. This avoidance could also potentially effect the impact of the duration of the maipulation.

Alternative perspectives would consider the effects of the mortality salience manipulation between low-traumatic stress groups and high-traumatic stress groups. The present data investigated effects of mortality seperately within trauma groups. Other considerations would examine cross-analysis of groups.

Conclusion

The present research sought to explore ideological dogmatism in high-traumatized individuals (for whom established buffers are challenged) while also replicating prior research. First, the study failed to replicate work showing that low-traumatized individuals (for whom established buffers are unchallenged) presented with a mortality salience would be highly dogmatic (closed off to alternative worldviews). However, this study did present new, unexplored data on high-traumatized individuals finding that traumatized individuals presented with a mortality salience were more ideologically open-minded than those who were not reminded of their own mortality. This open-mindedness could in turn explain Ruth Green's experience after her son was killed in 9/11. The trauma experienced after the loss of her son was so great that it forced her to give up on her worldview and find an alternative.

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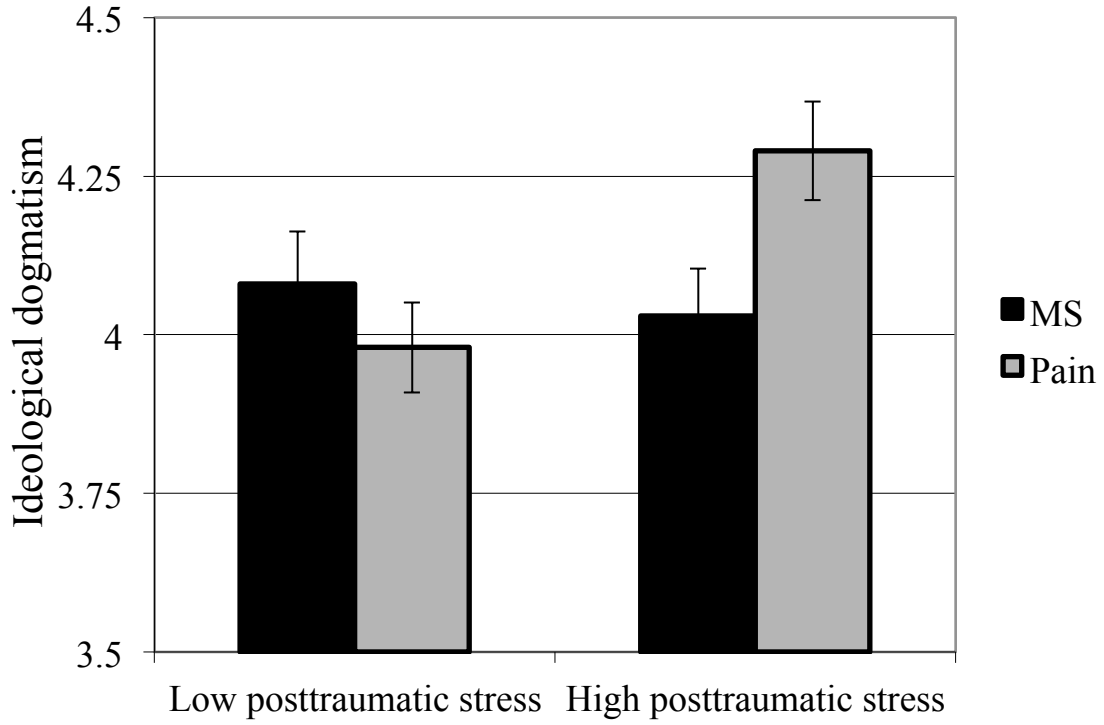
Appendix A

Participant descriptive and frequency statistics.

Demographic	Low trauma	High trauma	Total sample
Age	38.37 (12.30)	31.94 (9.19)	35.15 (11.31)
Did not report	8	6	14
Sex			
Male	88	68	156
Female	78	99	177
Did not report	8	6	14
Ethnicity			
Hispanic or Latino	7	11	18
Non-Hispanic or Latino	158	155	313
Did not report	9	7	16
Race			
Caucasian	128	132	260
African American	17	16	33
Native American/Native Alaskan	0	1	1
Asian/Pacific Islander	17	14	31
Other	4	4	8
Did not report	8	6	14
Years of education	15.34 (2.30)	15.21 (1.97)	15.28 (2.14)

Note. Sums and means are presented with standard deviations following means in parentheses.



Appendix B. The effect of MS on ideological dogmatism, among low posttraumatic and high posttraumatic stress groups.

Appendix C

PERSONALITY MEASURE

Please read each of the following items carefully, thinking about how it relates to your life, and then indicate how true it is for you. Use the following scale:

1	2	3	4	5	6	7	8	9	10
Not True at all									Completely true

_____ 1. I feel like I am free to decide for myself how to live my life.
_____ 2. I really like the people I interact with.
_____ 3. Often, I do not feel very competent.
_____ 4. I feel pressured in my life.
_____ 5. People I know tell me I am good at what I do.
_____ 6. I get along with people I come into contact with.
_____ 7. I pretty much keep to myself and don't have a lot of social contacts.
_____ 8. I generally feel free to express my ideas and opinions.
_____ 9. I consider the people I regularly interact with to be my friends.
_____ 10. I have been able to learn interesting new skills recently.
_____ 11. In my daily life, I frequently have to do what I am told.
_____ 12. People in my life care about me.
_____ 13. Most days I feel a sense of accomplishment from what I do.
_____ 14. People I interact with on a daily basis tend to take my feelings into consideration.
_____ 15. In my life I do not get much of a chance to show how capable I am.
_____ 16. There are not many people that I am close to.
_____ 17. I feel like I can pretty much be myself in my daily situations.
_____ 18. The people I interact with regularly do not seem to like me much.
_____ 19. I often do not feel very capable.
_____ 20. There is not much opportunity for me to decide for myself how to do things in my daily life.
_____ 21. People are generally pretty friendly towards me.

PERSONALITY MEASURE

The following are things that some individuals hope to accomplish over the course of their lives. In this section, you will find a number of life goals, presented one at a time, and we ask you, "How important is this goal to you?"
Please use the following scale in answering each of the three questions about each life goal.

How important is this to you…

1	2	3	4	5	6	7	8	9	10
Not at all				Moderately					Very

_____ 1. To be a very wealthy person.
_____ 2. To grow and learn new things.
_____ 3. To have my name known by many people.
_____ 4. To have good friends that I can count on.
_____ 5. To successfully hide the signs of aging.
_____ 6. To work for the betterment of society.
_____ 7. To have many expensive possessions.
_____ 8. At the end of my life, to be able to look back on my life as meaningful and complete.
_____ 9. To be admired by many people.
_____ 10. To share my life with someone I love.
_____ 11. To have people comment often about how attractive I look.
_____ 12. To assist people who need it, asking nothing in return.
_____ 13. To be financially successful.
_____ 14. To choose what I do, instead of being pushed along by life.
_____ 15. To be famous.
_____ 16. To have committed, intimate relationships.
_____ 17. To keep up with fashions in hair and clothing.
_____ 18. To work to make the world a better place.
_____ 19. To be rich.
_____ 20. To know and accept who I really am.
_____ 21. To have my name appear frequently in the media.
_____ 22. To feel that there are people who really love me, and whom I love.
_____ 23. To achieve the "look" I've been after.
_____ 24. To help others improve their lives.
_____ 25. To have enough money to buy everything I want.
_____ 26. To gain increasing insight into why I do the things I do.
_____ 27. To be admired by lots of different people.
_____ 28. To have deep enduring relationships.
_____ 29. To have an image that others find appealing.
_____ 30. To help people in need.

The Projective Life Attitudes Assessment

This assessment is a recently developed, innovative personality assessment. Recent research suggests that feelings and attitudes about significant aspects of life tell us a considerable amount about the individual's personality. Your responses to this survey will be content-analyzed in order to assess certain dimensions of your personality. Your honest responses to the following questions will be appreciated.

1. PLEASE BRIEFLY DESCRIBE THE EMOTIONS THAT THE THOUGHT OF YOUR OWN DEATH AROUSES IN YOU.

_____
_____
_____
_____
_____
_____
_____
_____

2. JOT DOWN, AS SPECIFICALLY AS YOU CAN, WHAT YOU THINK HAPPENS TO YOU AS YOU PHYSICALLY DIE AND ONCE YOU ARE PHYSICALLY DEAD.

_____
_____
_____
_____
_____
_____
_____
_____

The Projective Life Attitudes Assessment

This assessment is a recently developed, innovative personality assessment. Recent research suggests that feelings and attitudes about significant aspects of life tell us a considerable amount about the individual's personality. Your responses to this survey will be content-analyzed in order to assess certain dimensions of your personality. Your honest responses to the following questions will be appreciated.

1. PLEASE BRIEFLY DESCRIBE THE EMOTIONS THAT THE THOUGHT OF DENTAL PAIN AROUSES IN YOU.

_____
_____
_____
_____
_____
_____
_____
_____

2. JOT DOWN, AS SPECIFICALLY AS YOU CAN, WHAT YOU THINK PHYSICALLY WILL HAPPEN TO YOU AS YOU EXPERIENCE DENTAL PAIN.

_____
_____
_____
_____
_____
_____
_____
_____

PANAS

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now. Use the following scale to record your answers.

1	2	3	4	5
Very slightly or not at all	a little	moderately	quite a bit	extremely

____ cheerful	____ sad	____ active	____ angry at self
____ disgusted	____ calm	____ guilty	____ enthusiastic
____ attentive	____ afraid	____ joyful	____ downhearted
____ bashful	____ tired	____ nervous	____ sheepish
____ sluggish	____ amazed	____ lonely	____ distressed
____ daring	____ shaky	____ sleepy	____ blameworthy
____ surprised	____ happy	____ excited	____ determined
____ strong	____ timid	____ hostile	____ frightened
____ scornful	____ alone	____ proud	____ astonished
____ relaxed	____ alert	____ jittery	____ interested
____ irritable	____ upset	____ lively	____ loathing
____ delighted	____ angry	____ ashamed	____ confident
____ inspired	____ bold	____ at ease	____ energetic
____ fearless	____ blue	____ scared	____ concentrating
____ disgusted with self	____ shy	____ drowsy	____ dissatisfied with self

Verbal Cues Questionnaire: Literature

Please read the following short passage and answer the questions below it.

The automobile swung clumsily around the curve in the red sandstone trail, now a mass of mud. The headlights suddenly picked out in the night—first on one side of the road, then on the other—two wooden huts with sheet metal roofs. On the right near the second one, a tower of course beams could be made out in the light fog. From the top of the tower a metal cable, invisible at its starting-point, shone as it sloped down into the light from the car before disappearing behind the embankment that blocked the road. The car slowed down and stopped a few yards from the huts.

The man who emerged from the seat to the right of the driver labored to extricate himself from the car. As he stood up, his huge, broad frame lurched a little. In the shadow beside the car, solidly planted on the ground and weighed down by fatigue, he seemed to be listening to the idling motor. Then he walked in the direction of the embankment and entered the cone of light from the headlights. He stopped at the top of the slope, his broad back outlined against the darkness. After a moment he turned around. In the light from the dashboard he could see the chauffeur's face, smiling. The man signaled and the chauffeur turned off the motor. At once a vast cool silence fell over the trail and the forest. Then the sound of the water could be heard.

1. Do you think the author of this story is male or female?
   _____ male _____ female

2. Do you think the narrator is "part" of the story (a character), or simply a third person voice?
   _____ The narrator *is* a story character _____ The narrator *is not* a story character

3. What age might the author have been at the time this passage was written?
   _____ 15-20 years old _____ 41-50 years old
   _____ 21-30 years old _____ 51-60 years old
   _____ 31-40 years old _____ 61-70 years old

4. How do you feel about the overall descriptive qualities of the story?

1	2	3	4	5	6	7	8	9
not at all descriptive				somewhat descriptive				very descriptive

DOGMATISM MEASURE

This survey investigates your opinions on a variety of social issues. You will probably find that you *agree* with some of the statements, and *disagree* with others, to varying extents. Please indicate your reaction to each statement by writing in the appropriate number in the space provided for each statement from the scale below:

1 2 3 4 5 6 7 8 9 10

Strongly Disagree *Strongly Agree*

_____ 1. Someday I will probably think that many of my present ideas were wrong.
_____ 2. Anyone who is honestly and truly seeking the truth will end up believing what I believe
_____ 3. There are so many things we have not discovered yet, nobody should be absolutely certain his beliefs are right.
_____ 4. The things I believe in are so completely true, I could never doubt them.
_____ 5. I have never discovered a system of beliefs that explains everything to my satisfaction.
_____ 6. It is best to be open to all possibilities and ready to reevaluate all your beliefs.
_____ 7. My opinions are right and will stand the test of time.
_____ 8. Flexibility is a real virtue in thinking, since you may well be wrong.
_____ 9. My opinions and beliefs fit together perfectly to make a crystal-clear "picture" of things.
_____ 10. There are no discoveries or facts that could possibly make me change my mind about the things that matter most in life.
_____ 11. I am a long way from reaching final conclusions about the central issues in life.
_____ 12. The person who is absolutely certain she has the truth will probably never find it.
_____ 13. I am absolutely certain that my ideas about the fundamental issues in life are correct.
_____ 14. The people who disagree with me may well turn out to be right.
_____ 15. I am so sure I am right about the important things in life, there is no evidence that could convince me otherwise.
_____ 16. If you are "open-minded" about the most important things in life, you will probably reach the wrong conclusions.
_____ 17. Twenty years from now, some of my opinions about the important things in life will probably have changed.
_____ 18. "Flexibility in thinking" is another name for being "wishy-washy"
_____ 19. No one knows all the essential truths about the central issues in life.
_____ 20. People who disagree with me are just plain wrong and often evil as well

Demographics

1.) What is your sex? _____Male _____Female 2.) Age? _____

3.) What is your ethnicity? _____Hispanic or Latino _____Not Hispanic or Latino

4.) What is your race? (check only one)

_____1. Caucasian/White _____4. Asian

_____2. African American/Black _____5. Native Hawaiian/Pacific Islander

_____3. American Indian/Native Alaskan _____6. Other (specify): _____

5.) Please rate your political orientation:

1 2 3 4 5 6 7 8 9 10

Progressive Moderate Conservative

6.) How strongly do you identify with your political orientation, indicated in #5 above? (circle one)

1 2 3 4 5 6 7 8 9 10

Very Weak Moderate Very Strong

7.) With which political party do you most strongly identify? (circle one)

Democrat Republican Don't know None Other _____

8.) How strongly do you identify with the political party indicated in #7 above? (circle one)

1 2 3 4 5 6 7 8 9 10 N/A

Very Weak Moderate Very Strong

9.) Please indicate your religious affiliation, if any (please circle one):

1. Christian
2. Muslim
3. Jewish
4. Buddhist
5. Hindu
6. Atheist (I do not believe supernatural beings exist)
7. Spiritual (I believe supernatural beings exist, but I do not follow a specific religion)
8. Agnostic (I'm not sure whether, or it is impossible to know whether, supernatural beings do or do not exist)
9. Other: _____

10.) Please indicate the strength of your religious/philosophical belief:

1 2 3 4 5 6 7 8 9 10

Very Weak Moderate Very Strong

11.) Please indicate the total number of years of education you have completed: _____ (for example: high school graduation is 12yrs., so two years of college is 14yrs.)

What do you think this study is about? _____

What thoughts/feelings do you have about this study? _____