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The Impact of Traumatic Symptomology and Social Support on the Effective Management of Death Anxiety

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THE IMPACT OF TRAUMATIC SYMPTOMOLOGY AND SOCIAL SUPPORT ON

THE EFFECTIVE MANAGEMENT OF DEATH ANXIETY

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THE IMPACT OF TRAUMATIC SYMPTOMOLOGY AND SOCIAL SUPPORT ON

THE EFFECTIVE MANAGEMENT OF DEATH-RELATED THOUGHT

EMILY COURTNEY

ABSTRACT

Terror management theory (TMT) posits that people function effectively in the world, in part, by relying on social anxiety-buffer systems to protect against death awareness; however, a new extension called anxiety buffer disruption theory (ABDT), posits that traumatic experiences can overwhelm those buffers, leaving people vulnerable to death anxiety and at increased risk for post-traumatic stress disorder (PTSD) symptoms. To test these hypotheses, participants with low and high posttraumatic stress symptoms were identified and recruited using a general population pre-screen, prompted to engage in a relationship threat priming task (vs. control topic), and then asked to complete a standard measure of death anxiety. The present research found that: 1) when posttraumatic stress symptoms were low, death anxiety was low in a control condition but increased following a threat to social relationships (a known death-anxiety buffer); but, 2) when posttraumatic stress symptoms were high, death anxiety was high in both the social threat *and* control condition, indicating overwhelmed/disrupted normative buffering. The present research could potentially bear new insights for the understanding of posttraumatic stress, how relate to others, to the world around them, and to their own mortality, and could provide some hints toward practical implications for improving the treatment of PTSD.

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CHAPTER I

Theoretical Introduction

> The victims of PTSD often feel morally tainted by their experiences,
> unable to recover confidence in their own goodness, trapped in a sort of
> spiritual solitary confinement looking back at the rest of the world from
> beyond the barrier of what happened.
>   -David Brooks, *The moral injury* (2015)

Posttraumatic stress is no simple obstacle to overcome. As David Brooks writes

about veteran soldiers and war correspondents, the traumatic events that unfold during

combat can seem to shake the moral world to its core—women and children might be

used as human shields, improvised explosive devices maim and kill indiscriminately, and

patriotism, faith, and bravery are unpredictably rewarded with pain, death, or disaster.

Such experiences are brutal reminders that the harshest of the worlds' realities pay no

respect to our beliefs, our loved ones, or any other moral fibers to which we might hold

dear. And in the aftermath, posttraumatic stress can continue to haunt one's basic

assumptions about the world, and—as Brooks noted—can threaten to leave one feeling

cut off from one's former comrades, in a sort of solitary confinement, with little

connection to the people who might previously have shared and supported one's view of

the world. The consequences of such posttraumatic stress are often malignant and

invasive, and sometimes deadly; the Department of Veterans' Affairs (2016) estimates

that an average of 20 US combat veterans commit suicide each day. Of course, these experiences are not limited to combat veterans, but also emerge among civilians experiencing abuse, accidents, loss, health issues, and natural disasters, among many other misfortunes.

Terror management theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986) suggests that one way that people are able to effectively function in the world is, in part, by effectively relying on various social anxiety-buffers to help protect them from the awareness that life is temporary. A new extension of TMT, anxiety buffer disruption theory (ABDT; Pyszczynski & Kesebir, 2011; Pyszczynski & Taylor, 2016), however, builds on that idea to suggest that major disruptions to those anxiety buffers can leave people potentially unprotected from the awareness of death, and thus prone to increased anxiety, views of the world as dangerous and chaotic, intrusive thoughts about the event, and avoidance of reminders of the event—the major symptom clusters of posttraumatic stress disorder (PTSD; American Psychiatric Association [APA], 2013).

Yet, although a growing body of research has been testing the implications of ABDT, no research has yet directly tested the idea that posttraumatic stress disrupts the utility of people's social anxiety buffers, leaving them—as David Brooks described it—in a sort of solitary confinement, rendering them unable to effectively protect against increased death awareness. The present research was therefore designed to test that idea by manipulating threats to social relationships (a known death anxiety buffer) among low and high posttraumatic stress samples, and testing in each sample whether that threat would effectively increase subsequent death-related cognitions. The present research could potentially bear new insights for the understanding of posttraumatic stress, how

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relate to others, to the world around them, and to their own mortality, and could bear practical implications for improving the treatment of PTSD.

Terror Management Theory and Close Relationships

"The last enemy to be destroyed is death."

-1 Corinthians 15:26, NKJV Bible

TMT builds on the writings of Ernest Becker (1962, 1975, 2007) and posits that the awareness of death is a core motivator of human thoughts and behaviors. Humans, like all animals, have a desire to survive, but humans have developed a set of uniquely sophisticated cognitive abilities that allow them to recognize that life is ultimately impermanent—that, in the end, their life is only temporary. Because this awareness of death is not due to a direct physical threat (e.g., starvation, thirst, illness, danger), it cannot be dealt with through direct physical means; instead, TMT posits that humans developed an indirect, psychological method of dealing with the awareness of mortality. First, TMT offers that humans create and cultivate social systems of beliefs and values (cultural worldviews) that offer a symbolic sense of permanence. Such cultural worldviews are diverse, and often informed by geopolitical surroundings, including various social, religious, ethnic, political, scientific, or other cultural milieu. Second, TMT holds that people strive to accrue culturally-relevant self-esteem by meeting or exceeding those relevant cultural standards; the resulting self-esteem signals whether or not one has made meaningful, valuable, lasting contributions. Such contributions might range from raising a successful family, contributing to one's church, or becoming a published author; whatever the context, self-esteem being an indicator of a life well-lived, qualifying for the culturally promised literal or symbolic permanence.

One's close relationships represent an important pillar of this psychological security, perhaps even the root of the broader benefits offered by social/cultural worldviews, because close relationships offer existential security far ahead of the developmental emergence of abstract thought (Bowlby, 1969, 1988; Mikulincer et al., 2003). Infants rely entirely upon a caregiver, and over time, the caregiver and others widen and build a foundation for interpersonal interaction, ensuring socialization and, perhaps, the eventual opportunity for proliferation of one's own genes and a partner through life (Buss & Schmitt, 1993; Bowlby, 1969, 1988). Thus, close relationships can help to both directly and indirectly/symbolically buffer existential threat (Mikulincer et al., 2003; Mikulincer, Hirschberger, Nachmias, & Gillath, 2001). In terms of symbolically buffering death anxiety into adulthood, close social relationships allow a broader sense of continuity with a larger community that will be impacted by one's activities and/or remembered after one dies; close romantic relationships often involve love, an immense self-esteem boost as one's partner holds one in exceptionally high regard; and starting and raising families, interacting with and supporting friends and colleagues, and becoming close with members of one's surrounding community are all ways in which close relationships can potentially carry aspects of one's biological and cultural self into the future (Lifton 1973, 1979). In this way, close relationships, whether romantic, platonic, or otherwise, often form a foundation for symbolically managing the awareness that one is temporary, and thus buffer against the threat of mortality (Mikulincer, Florian, & Hirschberger, 2003).

TMT Research on the Buffering Function of Close Relationships

A considerable body of research has tested TMT, making use of several simple experimental approaches: the mortality salience hypothesis, the buffer hypothesis, and the buffer disruption hypothesis. First, the *mortality salience hypothesis* (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989) posits that if adhering to cultural worldviews, attaining self-esteem, and engaging in close relationships help to buffer death awareness, then increasing the awareness of mortality (mortality salience, MS) should motivate people to uphold their cultural worldviews, seek self-esteem, and/or bolster their social relationships (for review, see Greenberg, Vail, & Pyszczynski, 2015). Additionally, close relationships, as mentioned above, provide a psychologically necessary outlet for belongingness and help reduce life stresses through comforting interpersonal connections, symbolic connections extending beyond oneself, and increased self-esteem based on higher relational regard from a partner (Leary & Baumeister, 2000; Murray, Holms, & Griffen, 2000). As such, research has found that mortality awareness can fuel motivation to initiate and maintain secure interpersonal relationships. For example, Mikulincer & Florian (2000, Study 5) prompted participants with either an MS or neutral prime, and then asked participants to complete Sharabany's Intimacy Scale (1994); MS led participants to report an increased sense of intimacy with their partners and a desire for further intimate involvement. Additionally, increased MS led to an increased effort to establish and maintain romantic relationships (Hirschberger, Florian, & Mikulincer, 2002, Study 1), especially when one's relationship partners are a source of positive regard (Cox & Arndt, 2012), and MS can fuel compromise in the qualities of a preferred mate, indicating that being part of a close romantic relationship with someone

less than perfect is a better buffer to death-related anxiety than lacking a close relationship entirely (Hirschberger, Florian, & Mikulincer, 2002, Study 2).

Secondly, the *buffer hypothesis* posits that if certain psychological constructs function to buffer against thoughts of death, then activating those constructs will attenuate death anxiety and thereby attenuate the need for other subsequent buffers against death thought. A considerable number of TMT studies testing the buffer hypothesis have capitalized on this hypothesis, finding that MS typically increases death anxiety, but that participants' death thought remains low (i.e., was *buffered*) if they first engage in self-esteem bolstering (Harmon-Jones et al., 1997) or affirm their worldview beliefs (Jonas & Fischer, 2006; Schmeichel & Martens, 2005). Previous research using this approach (Routledge & Juhl, 2010) has utilized the 14-item Revised Collett-Lester Fear of Death Scale (Lester, 1990), which asks participants to indicate, on a 6-point Likert-type scale (1= *strongly disagree*, 6= *strongly agree*), how disturbed or anxious they feel about several aspects related to death and dying (e.g., "…shortness of life", "…the thought of never experiencing anything again", "…the thought of the pain of dying"). Importantly, research has also explored close relationships using the buffering hypothesis. For example, research has shown that mortality reminders lead to increased worldview defense reactions, unless participants were reminded of their romantic partners (Florian et al., 2002) or recalled relationship experiences (Weise et al., 2008). Further, other work has found that MS can increase death anxiety, unless they first recalled feelings of positive regard from their relationship partners (Cox & Arndt, 2012) or activated thoughts of secure attachment partners (Mikulincer & Shaver, 2001).

Third, the converse of the second hypothesis, and the core focus of the present work, is the *buffer disruption hypothesis*, which proposes that if an element buffers against death awareness, then undermining it will increase the experience of death-related thoughts and anxieties (see Hayes et al., 2010 for a review). This hypothesis has been assessed within a variety of domains such as nationalism and religion. In one such study (Schimel, Hayes, Williams, & Jahrig, 2007), Canadian participants presented with a challenge to their nationalistic beliefs subsequently evidenced increased accessibility of death-related thought relative to those not confronted with a worldview threat. Across five studies, Schimel et al. found that worldview threat increased death-thought accessibility independent of anger, anxiety, and negative thoughts. Importantly for the present research, other work has found that contemplating relationship problems (Florian, Mikulincer & Hirschberger, 2002) or separation from an important relationship partner (Mikulincer, Florian, Birnbaum, & Malishkevich, 2002)—threats to the close relationships buffer—have been found to increase death anxiety.

Based on the above analysis, people normally buffer against thoughts of death using cultural worldviews, self-esteem, and—importantly—social relationships. The present thesis study therefore built upon and sought to conceptually replicate these prior findings (e.g., Florian, Mikulincer, & Hirschberger, 2002), hypothesizing that a reminder of a threat to social relationships (vs. control topic) will increase death anxiety. However, as noted at the outset, although buffering against death-anxiety (e.g., via social relationships) may be a normative and adaptive orientation, there may be important deviations from this otherwise typical pattern. The present research therefore also

explores the possibility that the above pattern might not occur among individuals with posttraumatic stress.

Anxiety Buffer Disruption and Post-Traumatic Stress

Building on TMT, *anxiety buffer disruption theory* (ABDT; Pyszczynski & Kesebir, 2011) proposes that traumatic events can disrupt the otherwise normal function of terror management buffers. Events such as natural disasters, war or violence, abuse, among others, according to ABDT, can overwhelm the psychological protections of one's cultural worldview, self-esteem, or close relationships against the awareness of mortality. When trauma occurs and damages or undermines those worldview assumptions (Janoff-Bulman, 1992), the world may no longer make sense to the victim, resulting in negative changes in beliefs and feelings (e.g., that the world is a dangerous place), increased anxiety/hyper-arousal, as well as reliving the event (e.g., flashbacks) and avoidance of reminders of the traumatic event, symptoms typically associated with posttraumatic stress (American Psychiatric Association [APA], 2013).

Indeed, the occurrence and experience of traumatic events—like the death of a parent (Schwartzberg & Janoff-Bulman, 1991), combat (Dekel, Solomon, Elklit, & Ginzburg, 2004), natural disasters and accidents (Solomon, Iancu, & Tyrano, 1997), and victimization of criminal acts (Denkers & Winkel, 1995)—can contribute to a decrease in perception of meaningful worldviews and increase anxiety/PTSD symptoms (e.g., Janoff-Bulman, 1989, 1992; Herman, 1997; Horowitz, 1976). And, such events can overwhelm and/or undermine one's close social supports, rendering ones close relationships buffers useless and therefore allowing anxiety to break through (Pyszczynski & Kesebir, 2011).

That is, in addition to the shattering of worldviews, posttraumatic stress has a negative impact on one's close relationships. Individuals with posttraumatic stress have significant difficulty in finding and maintaining healthy, close relationships (Riggs, Byrne, Weathers, & Litz, 1998). PTSD symptomology is negatively related to the strength of relationship attachments (Brewin, Andrews, & Valentine, 2000; Ozer et al., 2003), in that people with more severe PTSD symptoms had weaker interpersonal relationships. The symptoms of PTSD, including emotional numbing, emotional withdrawal, and angry outbursts, appear to be damaging to relationships and result in higher rates of separation and divorce, domestic violence, and difficulty raising children (Jordan et al., 1992; Riggs, Byrne, Weathers, & Litz, 1998). Traumatic stress also contributes to peritraumatic dissociation, which are unusual perceptions of time, space, and the self, following a traumatic event; peritraumatic dissociation has been described by sufferers as seeing things in slow motion, or feeling disconnected from his own body (Gershuny & Thayer, 1999) and add to the difficulty of maintaining healthy, close relationships with others and with the surrounding environment (Brewin et al., 2000; Ozer, et al., 2003).

Further, ABDT research has found that individuals suffering from posttraumatic stress do not respond to death reminders in the usual manner, nor are they protected from death awareness by activating their buffers, compared to those with low/no posttraumatic stress. For example, research has found that exposure to traumatic events (e.g., civil war) can render death-thought more cognitively accessible (Chatard et al., 2012) and that MS does not lead to the typical immediate reduction in death thought among those exhibiting

moderate and high PTSD symptomology (Edmondson et al., 2011), indicating a disruption of buffer functioning.

Additionally, in line with previous findings supporting the *mortality salience hypothesis* (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989), some research has explored whether MS would lead to otherwise typical worldview defenses among those with low and those with high levels of PTSD symptoms or prediagnostic vulnerabilities (e.g., peritraumatic dissociation, Ozer et al., 2003). One study, conducted among people who experienced a natural disaster (i.e., a 2005 earthquake in Iran, with 1,500 casualties), found that an MS prime and an earthquake prime (vs. control topic) led to stronger worldview defenses among survivors with low, but not high, levels of peritraumatic dissociation (Abdolhossein, Pyszczynski, Maxfield, & Luszczynska, 2011). A follow-up study conducted 2 years later replicated the earlier finding, with MS failing to produce worldview defense among survivors with higher PTSD symptom severity (Abdolhossein et al., 2011). Similarly, a study including female survivors of domestic violence in Poland found that MS led to increased worldview defense among those with low, but not high, levels of PTSD symptoms, (Kesebir, Lyzczynska, Pyszczynski, & Benight, 2011). Furthermore, research has also found that the failure to effectively buffer death awareness seems to contribute to the development/exacerbation of PTSD symptoms. In a study conducted during the recent civil war in Cote d'Ivoire, MS did not increase PTSD symptoms for those living far away from the war violence, but MS exacerbated PTSD symptoms among those living in the midst of the traumatic situation, where the war-related violence was a harsh day-to-day reality (Chatard et al., 2012).

Similar evidence comes from research testing the buffering hypothesis among those with low and high levels of posttraumatic stress. For example, some research explored whether self-affirmations (Sherman, Nelson, & Steele, 2000)—affirming one's personal value and one's cultural worldview beliefs—would function as an effective buffer among people with low vs. those with high levels of posttraumatic stress (Vail, Morgan, & Kahle, 2018). When reminded of death, those with low posttraumatic stress symptoms displayed higher death thought in a no-self-affirmation condition, but not in a self-affirmation condition—replicating prior TMT research (Schmeichel & Martens, 2005) and demonstrating that self-affirmation normally functions as an effective self-esteem-relevant anxiety-buffer. In contrast, however, when reminded of death, the high posttraumatic stress symptom group showed heightened death thought regardless of whether or not they engaged in self-affirmation—indicating that these participants' anxiety-buffer system had been disrupted and no longer effectively functioned to protect them against increased death anxiety.

However, no research has likewise explored whether social relationships—which have previously been found to effectively buffer against the awareness of death among a sample with presumably low/no posttraumatic stress (Mikulincer & Shaver, 2001)— might similarly fail to buffer against death anxiety among people with high levels of posttraumatic stress. As mentioned previously, PTSD symptomology is negatively associated with relationship functioning in social buffering of anxiety (Brewin, Andrews, & Valentine, 2000; Ozer et al., 2003), consistent with the idea that traumatic stressors may overwhelm one's social anxiety-buffer resources. Indeed, more severe symptoms of PTSD is associated with difficulty managing relationships, including associations with

divorce and separation, domestic violence, emotional withdrawal, and angry outbursts (Boscarino, 1995; Jordan et al., 1992; Riggs, Byrne, Weathers, & Litz, 1998; Glaovski & Lyons, 2004). These findings suggest that the buffering function of one's previously effective close relationships buffers may be disrupted among those with heightened levels of posttraumatic stress. Therefore, we would expect that, among a population with higher levels of posttraumatic stress, death anxiety would be increased regardless of whether or not individuals are exposed to a relationship-threat prime or a control topic prime.

To reiterate, some research has found that posttraumatic stress disrupts the ability to buffer against death thought, such as via self-affirmation. However, no research has yet explored whether posttraumatic stress elicits chronically high death anxiety in general, regardless of the presence or absence of a threat to a known death anxiety-buffer. The present thesis therefore not only hypothesized that: (hyp 1) among those with low posttraumatic stress, threats to social relationships (vs. control topic) would lead to increased death anxiety; but (hyp 2) among those with high posttraumatic stress, death anxiety will be increased, *regardless of the presence of a relationship threat,* which would indicate anxiety-buffer disruption.

CHAPTER II

The Present Research & Hypotheses

Given the above analysis, the present thesis sought to build on prior research by Florian, Mikulincer and Hirschberger (2002), which found that a reminder of a social relationships threat led to increased death-thought accessibility—indicating that whereas people typically buffer against it, a threat to that buffer increased death-related thought. But where Florian et al., found that death thought remained low in the no-threat condition and was increased in the social-threat condition, this was perhaps an effect limited to a sample with typically low posttraumatic stress; no research has yet tested whether posttraumatic stress symptoms are associated with disruption of buffer functioning against increased death anxiety.

The present research therefore sought to build on this prior research, but to also further extend it into novel territory by also investigating whether posttraumatic stress symptoms are associated with disrupted buffering against death anxiety. To do so, the project first recruited participants with low and high posttraumatic stress symptoms. Then, participants from each group were randomly assigned to either a relationship threat condition or a control topic condition, and then asked to complete a measure of explicit death anxiety. Specifically, a 2 (low vs. high traumatic-stress) x 2 (relationship threat vs.

control topic) experimental design was utilized, with death anxiety as the outcome. The present thesis hypothesized the following:

1)   among the low posttraumatic stress group, death anxiety would be higher after a relationship threat (vs. control topic)—suggesting people normally buffer against death anxiety and that it's only raised when buffers are undermined;

2)   among the high posttraumatic stress symptom group, death anxiety would be high in *both* the relationship-threat *and* the control condition—demonstrating general anxiety buffer disruption.

CHAPTER III

Method

Estimation of Minimum Sample Size Required

Meta-analyses of effect sizes regarding mortality salience were reviewed in order to estimate samples necessary to achieve a sufficient power level (.80) to detect effects within each grouping, should effects occur. Burke, Martens, & Faucher (2010) found the average effect size of death reminders to be $r = .35$ ($d = .75$), across a variety of outcomes (defense of national identity, aggression, objectification of women, health risk evaluation, etc). However, a more relevant meta-analysis (Steinman et al., 2015), focused specifically on studies that measured death thought and death anxiety as the outcome, found a slightly lower overall MS effect size of $g = .57$ (interpreted similarly to Cohen's d). Thus, assuming $g = .57$, an a-priori power analysis (G*Power; Faul, Erdfelder, Buchner, & Lang, 2009) prescribed a minimum of 50 participants per each of the four conditions, for a minimum total sample size of 200 participants.

Procedure for Selection of Participants/Preliminary Materials

Due to the difficulty of accessing a group of local patients who meet or exceed thresholds indicating diagnosable PTSD, a research panel company was used to reach participants across the country. All participants who signed up were administered the

Post-traumatic Stress Checklist-Civilian Version (PCL-C), using an online survey medium [Qualtrics]. The PCL-C (Weathers et al., 1994) is a self-report measure containing 17 Likert-style items, adapted from the 17 symptoms of PTSD as given in the DSM-V (APA, 2013). Each of the given items, rated on a scale of 1 (not at all) to 5 (extremely), assesses the presence and severity of three PTSD symptom clusters: re-experiencing, avoidance, and arousal as a result of traumatic experience, as the symptoms were experienced within the last month (e.g., "Repeated, disturbing memories, thoughts, or images of a stressful experience from the past"). The summation of all items ranges from 17 to 85. Because of strong internal consistency and test-retest reliability, paired with strong psychometric properties and good diagnostic efficiency, the cutoff/threshold score for PTSD pre-diagnostic "caseness" is a score of 44 (e.g., Blanchard et al., 1996; Norris & Hamblen, 2004).

The present study administered the PCL-C to roughly 2000 participants in exchange for monetary compensations (US$0.20). An attentiveness check question was included within the PCL-C as a screener. Participants who scored above the threshold for PTSD caseness, as well as those participants within the lowest quartile of scores, were deemed eligible for the primary materials, contacted, invited to participate, and offered another small compensatory reward (US$1.50) for doing so.

Participant Characteristics

An initial group of 478 participants accepted the invitation (and incentive) to continue the study beyond the initial PCL-C screener. Of those, 396 completed the primary materials. An attentiveness-check item was again embedded near the end of the primary study materials ("For this item, we ask that you please select the 'Strongly

Disagree' response.") to ensure that respondents were attending adequately to the content of each item. 373 participants provided accurate responses to the attentiveness check, and were therefore retained as valid participants.

Therefore, the final sample consisted of 373 participants. Of those, 187 were recruited from the "low posttraumatic stress" group (PCL-C: Median = 21; M = 21.09, SD = 2.61) and 186 were recruited from the "high traumatic stress" group (PCL-C: Median = 52; M = 53.33, SD = 7.77). Descriptive and frequency statistics for the demographics of each group are presented in Table 1.

Primary Materials and Procedure

The primary materials were presented using a link with a neutral title (e.g., "Social attitudes survey") and description to conceal its true purpose and hypothesis. Informed consent was obtained, and participants were given a brief set of filler items, (e.g., personality measure/assessment), and the following materials were presented:

Social relationship threat manipulation. Building on previous research (Florian, Mikulincer, & Hirschberger, 2002), participants from both low and high posttraumatic stress groups were randomly assigned to either a relationship-problems or control topic (academic problem) prime. In the relationship threat condition, two prompts asked participants to, "Please briefly describe some of the problems that you have experienced in your current, or most recent, romantic relationship," and "Please briefly describe the thoughts and emotions evoked when you consider some of the problems in your current, or most recent, romantic relationship." The negative-topic control condition presented similar primes, but instead regarding problems with academics (e.g., Please briefly

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describe some of the problems that you have experienced in your current, or most recent, academic studies").

Death anxiety. Similar to previous research (Routledge & Juhl, 2010), death anxiety was measured using the 14-item Collett-Lester Fear of Death Scale (Lester, 1990). This particular measure asked participants to indicate their current levels of disturbance or anxiety regarding several aspects of death and dying, including "… the shortness of life" "… the thought of never thinking or experiencing anything again" and "… the thought of the pain of dying." Participants used a 6-point Likert-type scale (1 = *Strongly disagree*, 6 = *Strongly agree*) to respond to each item. The aspects of death and dying of main interest in the current study are derived from two subscales within the original version of the Collett-Lester scale- the fear of death of self subscale, and the fear of death subscale. These scales were utilized due to the specificity placed by TMT on personal, individual mortality.

Attention check item. Within the death anxiety section, an attentiveness check question ("For this question, please select the 'strongly agree' response") was administered in order to detect respondents who are not responding or attenuating to item content; only respondents who provided the correct response were retained.

Demographics. At the end of the study, each participant was presented with a demographics questionnaire in order to collect demographic information, such as age, sex, ethnicity, race, and education level, their religion and political orientation, and their relationship history and status.

CHAPTER IV

Results

Death Anxiety

A 2 (group: low vs. high traumatic stress) x 2 (problem: romantic relationship vs. academic studies) ANOVA was conducted on mean death anxiety scores ($\alpha = .95$). The analysis revealed that there was an unqualified main effect of trauma group ($F[1, 369] = 92.46$, $\eta_p^2 = .20$, $p < .001$) such that death anxiety was higher among the high trauma group ($M = 4.20$, $SD = 1.08$) than among the low trauma group ($M = 3.09$, $SD = 1.15$). There was also a main effect of relationship threat ($F[1, 369] = 9.37$, $\eta_p^2 = .03$, $p = .002$), though it was qualified by the expected interaction, $F(1, 369) = 4.47$, $\eta_p^2 = .01$, $p = .035$ (*Figure 1*), explored below using pairwise comparisons.

Among the low trauma group, death anxiety was higher in the relationship-problem condition ($M = 3.40$, $SD = 1.24$) than in the academic-problem condition ($M = 2.81$, $SD = .99$) ($t[185] = 3.66$, $d = .53$ [95%CI: .24, .82], $p < .001$). In contrast, among the high trauma group, death anxiety was elevated in both conditions, and not statistically different between the relationship-problem condition ($M = 4.26$, $SD = 1.11$) and the academic-problem condition ($M = 4.15$, $SD = 1.06$) ($t[184] = .67$, $d = -.10$ [95%CI: -.19, .39], $p = .50$).

Demographics

At the end of the survey, participants reported their age, sex, ethnicity, race, and education level, their religion and political orientation, their relationship history and current relationship status. The distribution of these various indicators across posttraumatic stress groups was evaluated using independent samples *t*-tests on the continuous measures, and χ^2 tests of cross-tabulated categorical data. Descriptives and cell-count frequencies for each can be seen in *Table 1*.

Compared to the low posttraumatic stress group, the high posttraumatic stress group did not statistically differ in sex ($\chi^2[1] = 2.65, p = .10$), race ($\chi^2[4] = 1.66, p = .80$), or ethnicity ($\chi^2[1] = .42, p = .52$), but were about 6 years older ($t(370) = 5.02, p < .001$) with about ½ year less education ($t(368) = 2.22, p = .03$). Compared to the low posttraumatic stress group, the high posttraumatic stress group were more politically liberal ($t(371) = 3.20, p = .001$) and differed in religious status ($\chi^2[8] = 18.68, p = .02$) with proportionally fewer religious believers and proportionally more "other", "spiritual but not religious," and agnostics.

Compared to the low posttraumatic stress group, the high posttraumatic stress group did not statistically differ in whether they had prior ($\chi^2[1] = 1.99, p = .16$) or current ($\chi^2[1] = .11, p = .74$) romantic relationships. However, high posttraumatic stress group participants reported statistically shorter durations of their longest romantic relationship (~4.5 years shorter; $t(351) = 4.48, p < .001$) and of their current romantic relationship (~4 years shorter; $t(269) = 3.57, p = .001$), though note that these durations largely overlapped and were almost perfectly correlated $r(268) = .89, p < .001$. The high

posttraumatic stress group also differed in marital status ($\chi^2[4] = 16.65$, $p = .002$) with fewer married and more divorced, separated, or never married.

Ancillary analyses were conducted to explore the possibility that the moderating effect of posttraumatic stress group in the interactions were due to the observed differences in age, education level, political orientation, religion, duration of current relationship, and marital status of each group (described above). Each potential competing variable was either centered or dummy-coded, as appropriate, and Variable*Threat interaction terms computed; multiple regression methods were used, in which main effects were entered in step 1 and interactions in step 2. However, ancillary analyses on death anxiety revealed no significant interactions with any of these variables. These results indicate that although these demographic characteristics were associated with posttraumatic stress, none of them produced similar moderating effects and were thus not viable as possible underlying/explanatory factors.

CHAPTER V

Discussion

The present study consisted of a conceptual replication of prior research, and extended that work by investigating whether individuals with high posttraumatic stress might experience more intense death anxiety regardless of threats to a known close-relationship anxiety buffer. It was hypothesized that 1) among a normal sample with low post-traumatic stress symptoms, a threat to a close relationship buffer would yield higher death anxiety than a control prime; but 2) among those with higher reported posttraumatic stress symptoms, death anxiety would be high regardless of threat condition. The first hypothesis was supported here: a threat to an anxiety buffer led to higher death anxiety among those with low posttraumatic stress. The second hypothesis was also supported: death anxiety was high among participants with high posttraumatic stress, regardless of relationship-threat or control condition.

Implications for TMT and Close Relationships

The findings presented contribute to the broad spectra of TMT literature. The first hypothesis, a conceptual replication among those with low posttraumatic stress symptoms, tested the foundation of the present research, and converged with previous

TMT research showing that threatening a social relationship buffer leads to increased death awareness and anxiety.

Additionally, the present findings support the view of close relationships as an important, perhaps central, buffer against death anxiety in normally-functioning populations. Previous TMT research has focused more specifically on cultural worldviews and self-esteem as primary buffers to death-related cognitions. However, a growing body of research (i.e., Florian, Mikulincer, & Hirschberger, 2002; Mikulincer, Floridan, Birnbaum, & Malishkevich, 2002; Mikulincer & Shaver, 2001) has been emphasizing the importance of relationships and interpersonal connection. Florian, Mikulincer, & Hirschberger (2002) showed that the contemplation of relationship problems led to increased death thought accessibility, and contemplation of a healthy relationship decreased that accessibility. For that reason, the replication shown in the present study offers further support to the view that close relationships may play a similar role as a central pillar of anxiety buffering.

Implications for ABDT and Posttraumatic Stress

The second hypothesis contributes to the quickly-growing body of research based on anxiety buffer disruption theory. Humans, as abstractly-thinking, cognitively capable beings of higher intelligence, manage to build systems of meaningful buffers against the inherent awareness of their own impermanence. These buffers (cultural worldviews, self-esteem, and close relationships) serve as protectors against the conscious intrusion of mortality awareness. However, according to ABDT, posttraumatic stress disrupts those buffers (presumably regardless of the type or source of trauma) and individuals with high posttraumatic stress are less able to manage death-related cognitions and anxieties.

In that light, the present findings were consistent with this idea, finding a general lack of buffer efficacy among participants with high posttraumatic stress symptoms. This is shown by the elevated death anxiety in *both* the relationship-threat and the control conditions in the high posttraumatic stress group. This heightened death anxiety—even in the control condition—suggests that posttraumatic stress symptoms are indeed associated with disrupted anxiety buffer functioning. Previous research has shown that those exposed to traumatic events and experience more intense posttraumatic stress symptomology exhibit weaker anxiety buffer functioning (i.e., lessened worldview defensiveness; Abdolhossein et al., 2011; Kesebir, Lyzczynska, Pyszczynski, & Benight, 2011), and that threats to anxiety buffers lead to an increase in death anxiety (i.e., close relationships; Florian, Mikulincer & Hirschberger, 2002; Hayes et al., 2010). By incorporating the close relationships anxiety buffer, ABDT is supported through the significant increase in reported death anxiety between the low and high posttraumatic stress groups, especially due to the lack of significant difference among the high posttraumatic stress group in response to different threat types.

Implications for Mental Health and Treatment of PTSD

Post-traumatic stress, of course has, far-reaching implications for the wellbeing and health of its sufferers. This study brings forward the idea that this condition may very well be connected to a disruption in the ability to stave off death awareness and anxiety. Buffering against death anxiety is known to be related to overall emotional, physical, and social wellbeing (Routledge & Juhl, 2010; Vail et al., 2012), and the present research highlights how post-traumatic stress symptoms are associated with a breakdown in those buffers. This may help to explain why those with high levels of posttraumatic stress

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struggle with anxiety-related issues in so many areas of everyday life (e.g., Edmondson et al., 2009; Ozer et al., 2002).

These health implications are particularly important when considering the therapeutic approaches and treatment strategies for posttraumatic stress. Cognitive behavior therapy (CBT; e.g., Galovski & Gloth, 2015) and cognitive processing therapy (CPT; e.g., Galovski, Wachen, Chard, Monson, & Resick, 2015) are frequently utilized approaches, in which clients are asked to think about the worst parts of their respective traumas, write about them, and perform other thought-based tasks as a sort of mental exposure method. Though shown to be relatively effective (e.g., Monson & Shnaider, 2014), ABDT would add to this that a successful approach to treatment may involve attempting to rebuild the buffers broken by traumatic experiences, rather than simply focusing on reflections about the traumatic event itself. That is, CBT and other cognitively-based therapies may benefit from having a more buffer-focused approach to treatment. For example, rather than focusing on exposure to the trauma (i.e., asking clients to write about the traumatic experiences) it may be effective to focus instead on the effects of the trauma on one's prior socio-cultural anxiety buffers (e.g., recalling or writing about how a trauma impacted one's social relationships, the value of those relationships, ways to both rely on and avoid stressing relationships with one's close relationships partners). This potential method is supported by the Acceptance and Commitment Therapy model of treatment, in which clients engage in a type of cognitive reappraisal of their primary stressors through the use of context and one's own understanding of their individual cognition (Hayes et al., 2006). The ACT model states that psychological distress (i.e., symptoms related to posttraumatic stress) is due in part to

psychological inflexibility, where a client attempts to control and avoid unpleasant psychological states and ideas (Hayes et al., 2006; Butts & Guiterrez, 2018). This focus on psychological flexibility has been shown to encourage mindfulness techniques to help develop awareness of situations regardless of psychological distress- thus separating the trauma from the outside world, re-conceptualizing one's posttraumatic stress and the impact of that stress on surroundings.

Platt, Keyes, & Koenen (2014) conducted a study comparing the efficacy of support systems in buffering against PTSD symptoms and found that a diverse social network rather than the perception of strong support was more effective in protecting against PTSD onset. There is also potential for the introduction of new, more diverse social support systems to be more helpful than having clients rely on relationships that existed previously; after asking clients to recall a breaking of a buffer (e.g., a fight between partners), therapists could support the development of novel, diverse other relationships compared to relationships previously experienced. In presenting these new relationships, and building upon them post-trauma, there is perhaps a better chance of a previously disrupted anxiety buffer to be rebuilt elsewhere. Additionally, those with higher posttraumatic stress may be more open-minded to new ideologies and dogmatic constructs (Kahle & Vail, under review), so that introducing even new worldview constructs during CBT/CPT may aid in buffer reconstruction. We know that interpersonal relationships, worldviews, and self-esteem serve as excellent buffers against death anxiety, so long as they are functional. Building on the focus of CPT and CBT to mental exposure to the trauma, by adding to this a focus on the *effects* of trauma and the breakdown of these buffers may help preserve or rebuild the buffers themselves, thus

increasing potential for wellbeing by decreasing death anxieties. Based on the potential for close relationships as a pillar to the existential buffering system, as well as the ACT model, introducing and re-conceptualizing relationships following a traumatic event may prove helpful in treatment in years to come.

Limitations

Potential limitations to the present study include the utilized screening measures and some individual factors within the population and administration of the study. First, the PCL-C is specifically formulated to assess posttraumatic symptomology and severity in prediagnostic screening, and it is not meant to diagnose PTSD on its own. The PCL-C does not include questions regarding previous diagnoses, or ask participants to specify the type or timeframe of the traumatic experiences themselves. Additionally, comorbidity may also impact scores within the high posttraumatic stress condition. Death anxiety could arise from a variety of psychological illnesses and stressors, not isolated to posttraumatic stress disorder. It may also be beneficial for future studies surrounding ABDT and posttraumatic stress to not only specify diagnoses, PTSD and otherwise, and trauma types, but also include a measure of individual resiliency among participants. These individual differences in resilience may reveal means of coping with high posttraumatic stress without anxiety buffer disruption.

In addition to individual differences, there is a potential limitation in ceiling effects. Due to a lack of true neutral control group within the threat prime condition, it is possible that the high posttraumatic stress group was impacted more significantly in terms of death anxiety by the idea of any type of threat, regardless of whether the threat was academic or relationship-based. Future studies should seek to include a true neutral

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condition, especially when utilizing the buffer disruption method of TMT research and a population with high levels of posttraumatic stress.

Additionally, the study itself was administered online, which presents issues with distraction and response validity. That is, the study materials were not administered in a controlled environment, and we therefore had no assurances that participants completed the materials without substantial distractions or multi-tasking. However, attention checks were administered and used to screen participants who failed to accurately attend to the materials. This technique provides some assurance of data quality, but it remains possible that some distraction remained present in other portions of the study. Regardless, future studies should attempt more environmental control during administration of materials.

Conclusion

Overall, the present study gave light to new, previously unexplored concepts surrounding posttraumatic stress and buffer functionality. To recall David Brooks, the symbolic breaking of buffers and a lack of connection to the world may lead to a sense of isolation among those with PTSD. This aligns with the study's results that individuals with high posttraumatic stress symptoms had high death anxiety after a relationship threat *and* in the control topic condition. Knowing that close relationships have the potential to serve as anxiety buffers presents novel potential for therapeutic approaches to addressing PTSD and its many symptoms. The present research contributes to the growing body of evidence that trauma alters the ways that people relate to their environments and the other people within them. An increase in posttraumatic stress symptoms subsequently increases anxiety surrounding the idea of death. Increased death anxiety indicates not only a repercussion of trauma, but also the potential for long-lasting impairments to

functionality due to disrupted anxiety buffers. However, there may be potential for those buffers to be rebuilt, undisrupted, and utilized again, to push death back into the shadowy recesses of the mind for the betterment of individuals' well-being.

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APPENDIX A: Posttraumatic Stress Checklist- Civilian

[Post-traumatic stress Check List—Civilian (PCL-C)]

Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, and select the response that most accurately indicates how much you have been bothered by that problem *in the last month*:

1	2	3	4	5
Not at all	A little bit	Moderately	Quite a bit	Extremely

_____ 1. Repeated, disturbing memories, thoughts, or images of a stressful experience from the past?

_____ 2. Repeated, disturbing dreams of a stressful experience from the past?

_____ 3. Suddenly acting or feeling as if a stressful experience were happening again (as if you were reliving it)?

_____ 4. Feeling very upset when something reminded you of a stressful experience from the past?

_____ 5. Having physical reactions (e.g., heart pounding, trouble breathing, or sweating) when something reminded you of a stressful experience?

_____ 6. Avoid thinking about or talking about a stressful experience from the past or avoid having feelings related to it?

_____ 7. Avoid activities or situations because they remind you of a stressful experience from the past?

_____ 8. Trouble remembering important parts of a stressful experience from the past?

_____ 9. Loss of interest in things that you used to enjoy?

_____ 9a. For this item, please mark "Quite a bit".

_____ 10. Feeling distant or cut off from other people?

_____ 11. Feeling emotionally numb or being unable to have loving feelings for those close to you?

_____ 12. Feeling as if your future will somehow be cut short?

_____ 13. Trouble falling or staying asleep?

_____ 14. Feeling irritable or having angry outbursts?

_____ 15. Having difficulty concentrating?

_____ 16. Being "super alert" or watchful or on guard?

_____ 17.   Feeling jumpy or easily startled?

APPENDIX B: Manipulation 1

[RELATIONSHIP PROBLEM CONDITION]

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 problems you have experienced in your current, or most recent, romantic relationship.

_____

_____

_____

_____

_____

_____

_____

2. Describe the thoughts and emotions that these relationship problems evoke in you.

_____

_____

_____

_____

_____

_____

_____

[MANIPULATION #1: NEUTRAL PROBLEM CONDITION]

The Projective Life Attitudes Assessment

This assessment is part of 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 problems you have experienced in your current, or most recent, academic studies.

_____

_____

_____

_____

_____

_____

_____

2. Describe the thoughts and emotions that these academic problems evoke in you.

_____

_____

_____

_____

_____

_____

_____

APPENDIX C: Death Anxiety Measure

How disturbed or made-anxious are you by the following aspects of death and dying?
Read each item and answer it quickly. Don't spend too much time thinking about your
response. We want your first impression of how you think right now. Use the following
scale.

| 1 | 2 | 3 | 4 | 5 | 6 |

Not at all
disturbed/anxious

Very disturbed/anxious

_____ 1. The social isolation of death

_____ 2. The shortness of life

_____ 3. Missing out on so much after you die

_____ 4. Dying young

_____ 5. How it will feel to be dead

_____ 6. Never thinking or experiencing anything again

_____ 7. The disintegration of your body after you die

_____ 8. The physical degeneration involved

_____ 9. The pain of dying

_____ 10. The intellectual degeneration of old age

_____ 10a. For this item, please select the somewhat agree response.

_____ 11. That your abilities will be limited as you lay dying

_____ 12. The uncertainty as to how bravely you will face the process of dying

_____ 13. Your lack of control over the process of dying

_____ 14. The possibility of dying in a hospital away from friends and family

APPENDIX D: Demographics

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.) Are you currently in a romantic relationship? Yes/No

6.) If you are currently in a romantic relationship, please indicate the relationship duration (e.g., 3 months, 8 months, 1 year, 4 years, etc.):
_____

7.) Please indicate your marital status:
    _____1. Single   _____3. Separated   _____5. Widowed
    _____2. Married   _____4. Divorced

8.) Please rate your political orientation:
  1   2   3   4   5   6   7   8   9   10
 Progressive   Moderate   Conservative

9.) 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

10.) With which political party do you most strongly identify? (circle one)
    Democrat   Republican   Don't know   None   Other
_____

11.) 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

12.) Please indicate your religious affiliation, if any (please circle one):
  1. Christian   5. Hindu
  2. Muslim   6. Atheist (I do not believe supernatural beings exist)
  3. Jewish   7. Spiritual (I believe supernatural beings exist, but I do not

follow a specific religion)
4. Buddhist   8.   Agnostic (I'm not sure whether, or it is impossible to know whether, supernatural beings do or do not exist)
9. Other: _____

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

1	2	3	4	5	6	7	8	9	10
Very Weak				Moderate				Very Strong	

14.) 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? _____

_____

Table 1. Participant descriptive and frequency statistics.

Demographic	Low trauma	High trauma	Total sample
Age	39.09 (12.22)	33.30 (9.84)	36.21 (11.46)
Did not report	0	1	1
Sex			
Male	88	72	160
Female	99	114	213
Ethnicity			
Hispanic or Latino	10	13	23
Non-Hispanic or Latino	176	173	349
Did not report	1	0	1
Race			
Caucasian	151	153	304
African American	11	11	22
Native American/Native	2	1	3
Alaskan			
Asian/Pacific Islander	15	15	30
Other	8	4	12
Did not report	0	2	2
Religion			
Christian	104	71	175
Muslim	1	2	3
Jewish	4	4	8
Buddhist	1	4	5
Hindu	1	1	2
Atheist	28	24	52

Spiritual	11	21	32
Agnostic	33	49	82
Other	3	10	13
Did not report	1	0	1
Political orientation (low = progressive, high = conservative)	7.24 (2.54)	6.31 (3.01)	6.77 (2.82)
Years of education	15.63 (2.32)	15.14 (1.92)	15.39 (2.14)
Did not report	2	1	3
Any romantic relationship?			
Did not report	1	0	1
No	9	4	13
Yes	177	182	359
Longest (months)	141.27 (122.72)	88.98 (95.47)	114.46 (112.52)
Did not report/incomplete	5	1	6
Current romantic relationship?			
No	49	46	95
Yes	138	140	278
Duration (months)	148.18 (116.36)	100.98 (101.07)	124.49 (111.29)
Did not report/incomplete	3	4	7
Marital status			
Married	102	67	169
Widowed	2	0	2
Divorced	10	16	26
Separated	2	6	8
Never married	71	97	168

Note. Sums and means are presented with standard deviations following means in parentheses.
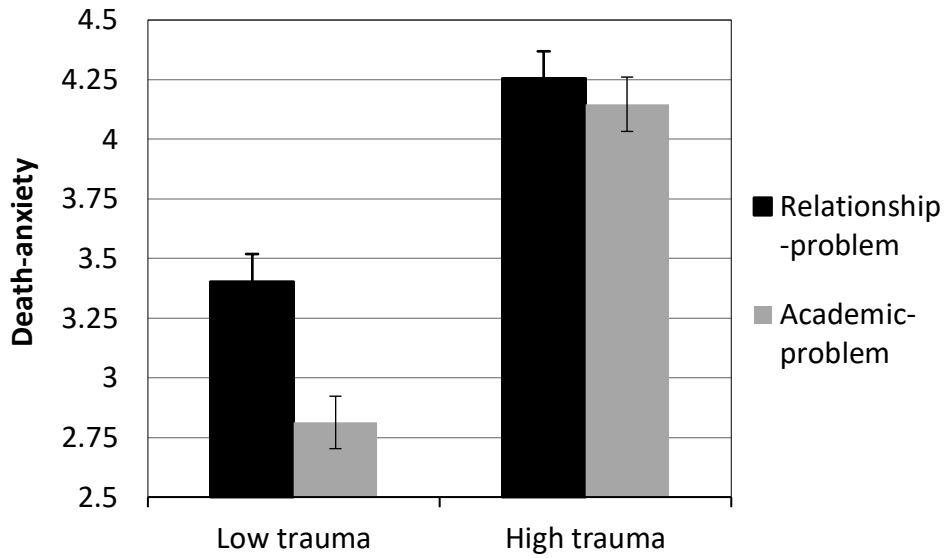
Figure 1. The effect of relationship threat manipulation on death anxiety among samples of individuals with below-threshold and above-threshold PCL-C (traumatic experience) scores, averaged across death-anxiety items.