

# Who Uses Groups to Transcend the Limits of the Individual Self? Exploring the Effects of Interdependent Self-Construal and Mortality Salience on Investment in Social Groups

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## Abstract

Terror management theory posits that people identify with and invest in culturally derived social groups, in part, to attach the self to something more permanent than one's physical existence. Accordingly, research demonstrates that reminders of mortality (mortality salience) increase investment in culturally derived in-groups. The current research extends this analysis by examining whether amplified in-group investment following mortality salience is primarily characteristic of people who define the self in terms of social groups (interdependent self-construal). Three studies provided support for this assertion. Mortality salience increased: identification with one's nation among Chinese (high interdependence culture) but not American (low interdependence culture) participants (Study 1); positivity toward one's university for students with high, but not low, interdependent self-construal (Study 2); and willingness to self-sacrifice for one's religious group among participants induced to adopt an interdependent (vs. independent) self-construal (Study 3).

## Keywords

attitudes, mortality salience, culture and self, interdependence, terror management

Terror management theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986) posits that people are motivated to maintain a belief that the self can transcend death. The theory has uncovered myriad of behaviors that serve this function, but a significant amount of attention has focused directly on group identity and investment (Solomon, Greenberg, & Pyszczynski, 2000). This is perhaps not surprising, given the theoretical links between group identities and death transcendence (e.g., Anderson, 1991; Lifton, 1968). Individuals die, but the groups that people belong to typically continue. Thus, connecting the self to a broader group is thought to provide a means by which people can maintain a sense that the self will transcend physical death (Castano, Yzerbyt, & Paladino, 2004).

Supporting this view, research generally finds that connecting the self to a group serves a death-denying function. For example, conditions that heighten the awareness of death (mortality salience [MS]), compared to control topics, increase in-group identification (e.g., Castano, Yzerbyt, Paladino, & Sacchi, 2002) and in-group bias (e.g., Das, Bushman, Bezemer, Kerkhof, & Vermeulen, 2009). Likewise, MS increases in-group entitativity (the belief that social groups are real

entities; Castano et al., 2002) and the perception that one's group will last long into the future (Sani, Herrera, & Bowe, 2008). Yet, despite empirical links between group investment and death transcendence, research has yet to fully consider factors that might determine who is most likely to utilize groups for their death-transcending function. We propose that one central factor may be the extent to which people define the self in terms of the social groups to which they belong.

In particular, we draw upon theory and research on self-construal and consider the extent to which people possess an interdependent self-construal (Cross, Hardin,

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Gercek-Swing, 2011; Markus & Kitayama, 1991). Differences in interdependent self-construal reflect how much people define the self in terms of their group identities, and these differences have important implications. For example, the more people define the self interdependently, the more they are motivated to promote group-relevant goals (e.g., Bond, 1986) and the more they are emotionally affected by group success (e.g., Neumann, Steinhäuser, & Roeder, 2009). In the present context, interdependent self-construal may be diagnostic of who should be inclined to turn to groups in response to MS. Group investment should only offer a viable self-transcendence strategy if one's self-definition is tied to a group. Consequently, increased group investment following MS should be most likely to emerge among people high in interdependent self-construal. Individuals who do not attach the self to broader social groups, on the other hand, should not respond to MS with increased group investment because the group should be less likely to offer self-transcendence. The current research assessed these predictions by examining the effects of MS and interdependent self-construal operationalized culturally, at the trait level, and experimentally on national, university, and religious group-related investments.

## Study 1

Earlier work on self-construal focused on broad cultural differences in how people define the self (Triandis, 1989). For example, anthropologists and psychologists (e.g., Berry, 1979; Marsella, De Vos, & Hsu, 1985; Triandis, 1988) observed that people in Eastern societies (e.g., China, Japan) tend to have more interdependent self-construals than people in Western societies (e.g., North American and Western European countries). For instance, Chinese participants completed the phrase "I am . . ." with more group-related terms than American participants (Triandis, McCusker, & Hui, 1990). We drew from this work in Study 1 and operationalized differences in interdependent self-construal by obtaining samples of participants from China (relatively high interdependence) and the United States (relatively low interdependence). Using nationalism as the domain of group-related investment, we predicted that MS would increase nationalism primarily among individuals who define the self at a broader social level (high interdependence). Thus, MS was expected to increase nationalism to a greater extent among Chinese, relative to American, participants.

## Method

### Participants

One hundred fifty-seven undergraduates (73 females, 84 males) participated. Eighty-two participants were from an American university (North Dakota State University [NDSU]) and 75 were from a Chinese university (China Agricultural University). For Chinese participants, all materials were first

translated from English into Mandarin Chinese and then back-translated independently by a second translator.

### Materials and Procedure

Following some filler measures, participants were randomly assigned to either an MS or control condition (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). Participants in the MS condition responded to two open-ended questions: "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 will happen to you physically as you die and once you are physically dead." Participants in the control condition answered two open-ended questions regarding the experience of extreme pain: "Briefly describe the emotions that the thought of extreme physical pain arouses in you" and "Jot down, as specifically as you can, what you think will happen to you physically as you experience extreme physical pain and once you have experienced extreme physical pain."

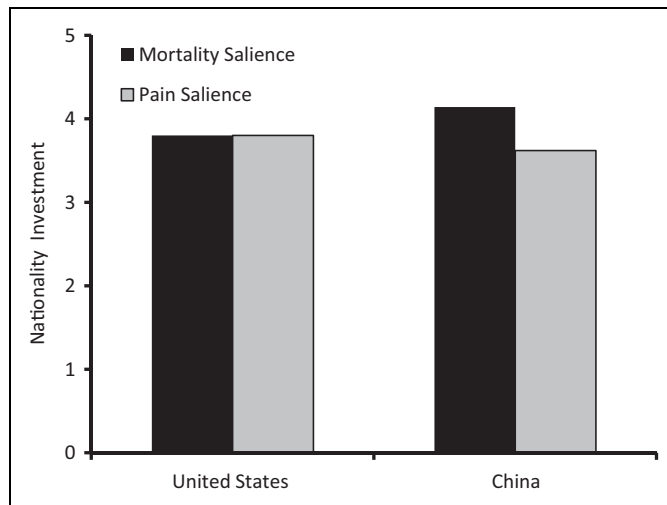
Next, participants completed the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988; positive affect:  $\alpha = .84$ ,  $M = 3.04$ ,  $SD = .68$ ; negative affect:  $\alpha = .90$ ,  $M = 2.06$ ,  $SD = .78$ ), which provided a delay between the MS induction and the dependent measure (Pyszczynski, Greenberg, & Solomon, 1999).

Finally, participants completed a measure of investment in their nation. They responded to 4 items (e.g., "I am a person who considers my nation important," "I am a person who is glad to belong to my nation") on 1 (*never*) to 5 (*very often*) scales. The items were averaged into nationalism scores ( $M = 3.45$ ,  $SD = 0.82$ ,  $\alpha = .89$ ). Higher scores indicate greater nationalism.

## Results and Discussion

We submitted nationalism scores to a 2 (sample: American vs. Chinese)  $\times$  2 (salience: MS vs. pain) analysis of variance (ANOVA). There was no main effect of sample,  $F(1, 153) = 0.39$ ,  $p = .53$ , but a main effect of MS indicated that those in the MS condition ( $M = 3.97$ ,  $SD = 0.75$ ) reported greater levels of nationalism than those in the control condition ( $M = 3.71$ ,  $SD = 0.87$ ),  $F(1, 153) = 4.21$ ,  $p = .04$ . The sample by salience interaction also emerged,  $F(1, 153) = 4.01$ ,  $p = .05$  (Figure 1). Pairwise comparison tests revealed that, within the Chinese sample, MS (vs. pain) increased nationalism,  $F(1, 153) = 7.85$ ,  $p = .006$ . Within the American sample, however, there was no effect of MS,  $F(1, 153) = 0.001$ ,  $p = .97$ . Looked at differently, within the MS condition, Chinese participants reported marginally higher levels of nationalism than American participants,  $F(1, 153) = 3.58$ ,  $p = .06$ . No sample effect was found within the control condition,  $F(1, 153) = 0.92$ ,  $p = .34$ .

The only significant effect observed on the PANAS was a main effect of sample on negative affect; Chinese participants scored higher on negative affect ( $M = 2.65$ ,  $SD = .56$ ) than



**Figure 1.** Interdependent self-construal (United States vs. China) by MS interaction on nationality investment in Study 1.

Note. Higher scores reflect higher levels of nationality investment.

American participants ( $M = 1.53$ ,  $SD = .57$ ),  $F(1, 153) = 150.05$ ,  $p < .001$ . However, controlling for negative affect,  $F(1, 152) = 4.01$ ,  $p = .05$ , and positive affect,  $F(1, 152) = 6.56$ ,  $p = .01$ , did not attenuate the interaction effects reported above.

These initial results support our primary hypothesis. MS increased group investment among individuals who define the self in terms of social groups (i.e., the more interdependent Chinese), but not among the less interdependent Americans. The lack of an effect among Americans is notable, given previous TMT research using American (and other Western) samples. One may have expected a significant, but smaller, effect among American participants based on this earlier work. A potential explanation for this incompatibility may be that there was greater heterogeneity in interdependent self-construal among American participants and, had we assessed individual differences in interdependent self-construal directly, an effect among Americans may have emerged. Indeed, despite general cultural trends in self-construal, the diverse experiences of people within a culture can promote within culture variability in the construct (Cross & Madson, 1997). This means that, even among the generally less interdependent Americans, there may be individuals who strongly define themselves in terms of groups. Heightened group investment in response to MS among Americans may therefore depend on individual differences in interdependent self-construal. Study 2 assessed this possibility.

## Study 2

In Study 2, American participants completed a measure of interdependent self-construal, responded to open-ended questions about death, and indicated their investment in their university. We predicted that MS would increase

university investment, but only among individuals who define themselves in terms of the group (i.e., those high in interdependent self-construal).

## Method

### Participants

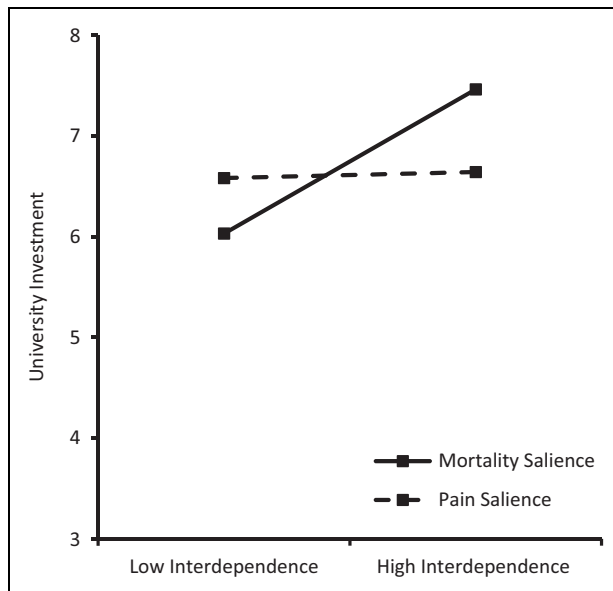
Seventy-one undergraduates (43 female, 28 male) from NDSU participated in exchange for course credit.

### Materials and Procedure

First, participants completed the Self-Construal scale, which consists of separate interdependent self-construal and independent self-construal subscales (Singelis, 1994). We used this measure because the interdependent self-construal subscale focuses on self-definitions in terms of broad social structures (e.g., religion, nation, educational institution), rather than close relationships (i.e., relational-interdependent self-construal; Cross, Bacon, & Morris, 2000). Although the focus of the present research is on interdependent self-construal, independent self-construal (defining the self in terms of unique personal attributes) is also part of self-definition. We included the independent self-construal subscale for exploratory reasons, but, given our specific focus on group-related strivings, did not make predictions about its effects. For each subscale, participants indicated the extent to which they agreed with 12 statements on 1 (*strongly disagree*) to 7 (*strongly agree*) scales. The interdependent subscale contains items such as “It is important to me to respect decisions made by the group” and “I often have the feeling that my relationships with others are more important than my own accomplishments” ( $\alpha = .72$ ,  $M = 4.94$ ,  $SD = .71$ ). The independent subscale contains items such as “I act the same way no matter who I am with” and “I enjoy being unique and different from others in many respects” ( $\alpha = .69$ ;  $M = 4.94$ ,  $SD = .71$ ). Consistent with previous research, the two subscales were not correlated ( $r = .09$ ,  $p = .52$ ).

Next, as in Study 1, participants were randomly assigned to the MS condition or the physical pain control condition and then completed the PANAS (positive affect:  $\alpha = .93$ ,  $M = 2.90$ ,  $SD = .94$ ; negative affect:  $\alpha = .84$ ,  $M = 1.60$ ,  $SD = .57$ ).

Finally, all participants read and evaluated an essay ostensibly written by a NDSU senior who answered the question “What do you think of NDSU?” The essay was praiseworthy of NDSU and contained statements such as “I personally think NDSU is a great college.” and “I would strongly recommend NDSU to anyone who is thinking about coming here.” Participants then answered five questions used in previous TMT research (e.g., Greenberg et al., 1990) that assessed positive attitudes toward the essay and its author (e.g., “How much do you think you would like this person?”). Responses were made on 1 (*not at all*) to 9 (*totally*) scales and averaged into a university investment score ( $\alpha = .86$ ,  $M = 6.70$ ,  $SD = 0.52$ ). Higher scores indicate greater university investment.



**Figure 2.** Interdependent self-construal by MS interaction on university investment in Study 2.  
*Note.* Higher scores reflect higher levels of university investment.

### Results and Discussion

We ran a regression analysis by entering the main effects of interdependent self-construal (centered) and salience manipulation (dummy-coded) in Step 1 and their interaction in the Step 2 as predictors of university investment. There was a positive effect of interdependent self-construal on university investment,  $b = 0.49$ ,  $SE = 0.18$ ,  $t = 2.61$ ,  $p = .01$ , but no main effect of MS,  $b = 0.13$ ,  $SE = 0.26$ ,  $t = 0.51$ ,  $p = .61$ . The interdependent self-construal by MS interaction was also significant,  $b = -0.96$ ,  $SE = 0.35$ ,  $t = -2.75$ ,  $p = .008$  (Figure 2). Predicted means tests revealed that MS increased university investment at high levels (+1 *SD*) of interdependent self-construal,  $b = 0.82$ ,  $SE = 0.35$ ,  $t = 2.33$ ,  $p = .02$ , but had no effect at low levels (−1 *SD*) of interdependent self-construal,  $b = -0.55$ ,  $SE = 0.35$ ,  $t = -1.58$ ,  $p = .12$ . Additionally, within the MS condition, interdependent self-construal was positively associated with university investment,  $b = 1.01$ ,  $SE = 0.26$ ,  $t = 3.87$ ,  $p < .001$ , but unrelated to university investment within the control condition,  $b = 0.04$ ,  $SE = 0.24$ ,  $t = 0.18$ ,  $p = .86$ .

Independent self-construal did not interact with the salience manipulation,  $b = -0.41$ ,  $SE = 0.31$ ,  $t = -0.31$ ,  $p = .19$  and no significant main or interaction effects on negative affect were observed. There were also no main effects on positive affect, but the MS by interdependent self-construal interaction approached significance such that positive affect in the MS condition was lower than positive affect in the control condition at low, but not high, levels of interdependent self-construal,  $b = -0.58$ ,  $SE = 0.31$ ,  $t = -1.88$ ,  $p = .07$ . Critically, controlling for negative affect,  $b = -0.99$ ,  $SE = 0.35$ ,  $t = -2.82$ ,  $p = .006$ , or positive affect,  $b = -1.09$ ,  $SE = .36$ ,  $t = -3.07$ ,  $p = .003$ , did not attenuate the MS by interdependent self-construal effect on university investment.

These findings complement those of Study 1 by showing that high interdependent self-construal, even within an American sample, predicts greater group investment following MS. Such findings point to a more nuanced relationship between death awareness and group investment than previously recognized and therefore contributes to the literature on the death-transcending functions of group bonds. In Study 3, we further assess the nature of this relationship by experimentally examining the causal impact that interdependent self-construal has on terror management.

### Study 3

Most people, in all cultures, likely possess both interdependent and independent self-related cognitions (e.g., Triandis, 1989) and the extent to which a person construes the self interdependently and independently at any moment can be influenced by the relative accessibility of these cognitions (e.g., Hong, Morris, Chiu, & Benet-Martinez, 2000). This means that the extent to which people possess an interdependent or independent self-construal can be situationally altered. For example, manipulations that heighten an interdependent self-construal increase self-descriptions based on group membership (Trafimow, Triandis, & Goto, 1991), collectivist social values (Gardner, Gabriel, & Lee, 1999), perceived similarity to others (Kühnen & Hannover, 2000), and the desire for proximity to others (Holland, Roeder, van Baaren, Brandt, & Hannover, 2004). Moreover, people are capable of appropriately adapting their self-construal to different situations (Bhawuk & Brislin, 1992; Cross & Markus, 1991). Thus, though culture and individual differences influence which self-construal is typically operative, situational factors can affect how the self is construed at any given moment. Therefore, in Study 3, we manipulated perceived similarity to others in order to induce self-construal and provide experimental evidence that attaching the self to a group increases reliance on the group for existential security.

We also sought to expand our analysis by exploring a potentially important implication of this enhanced group investment. Specifically, we asked participants to indicate their willingness to make personal (even deadly) sacrifices for their religious group. Acts of group-related self-sacrifice (e.g., suicide terrorism) are most frequently committed by individuals from collectivist cultures (Schwartz, Dunkel, & Waterman, 2009) and, following the first two studies, may reflect efforts to transcend death. We thus predicted that MS would increase religious self-sacrifice for those who received a high similarity to others induction, but not those who received a low similarity to others induction.

### Method

#### Participants

Forty-eight NDSU undergraduates (15 female, 33 male) participated for course credit. All participants reported being Christian in a preliminary survey.

## Materials and Procedure

Participants were randomly assigned to a low or high similarity to others induction following previous research (e.g., Trafimow et al., 1991). Those in the low similarity to others condition were asked to “please think about and write (using the space below) what makes you different from your family and friends.” Those in the high similarity to others condition were asked to “please think about and write (using the space below) what you have in common with your family and friends.” Trafimow, Triandis, and Goto (1991) found that participants given the high similarity to others induction were more likely to complete sentences that begin with “I am” with group-related responses than participants given the low similarity to others induction. These findings support the validity of this manipulation for inducing high versus low levels of interdependent self-construal.

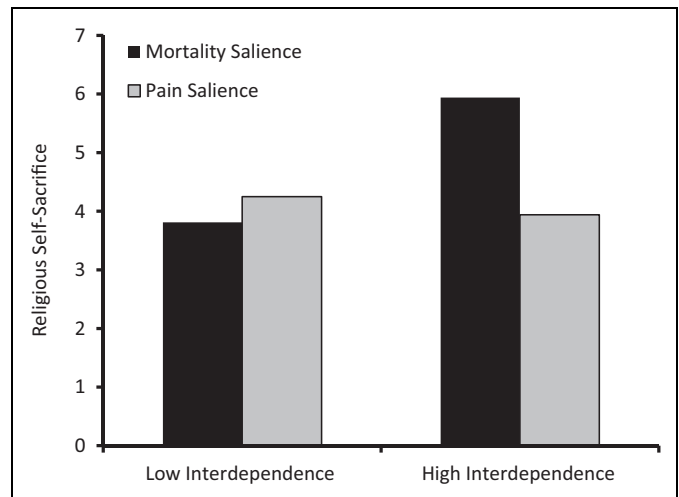
After the similarity manipulation, participants were randomly assigned to the MS or physical pain conditions and subsequently completed a word search delay task used in previous research (Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000). Participants searched for the words book, computer, desk, phone, movie, train, paper, school, grass, and beer in a letter matrix.

Finally, participants indicated their level of agreement with three statements (“I would die for my religion,” “My personal safety is not as important as the continuation of my religion,” and “It is worth making personal sacrifices to protect my religion’s tradition”) on 1 (*totally disagree*) to 7 (*totally agree*) scales. Responses were averaged to produce religious self-sacrifice scores ( $\alpha = .93$ ,  $M = 4.49$ ,  $SD = 1.89$ ). Higher scores indicate a greater willingness to endorse religious self-sacrifice.

## Results and Discussion

We submitted religious self-sacrifice scores to a 2 (similarity to others: low vs. high)  $\times$  2 (salience: MS vs. pain) ANOVA. There was a marginal main effect of the similarity to others induction,  $F(1, 44) = 3.34$ ,  $p = .08$ ; participants in the high similarity to others condition ( $M = 4.94$ ,  $SD = 1.77$ ) reported greater religious self-sacrifice than those in the low similarity to others condition ( $M = 4.03$ ,  $SD = 1.94$ ). There was no main effect of MS,  $F(1, 44) = 2.40$ ,  $p = .13$ , but the similarity to others by MS interaction was significant,  $F(1, 44) = 5.93$ ,  $p = .02$  (Figure 3). Pairwise comparison tests revealed that MS increased levels of religious self-sacrifice among participants in the high similarity to others condition,  $F(1, 44) = 7.94$ ,  $p = .007$ , but had no effect among participants in the low similarity to others condition,  $F(1, 44) = .39$ ,  $p = .53$ . Additionally, within the MS condition, participants in the high similarity to others condition reported greater religious self-sacrifice than those in the low similarity to others condition,  $F(1, 44) = 9.09$ ,  $p = .004$ . No effect emerged within the control condition,  $F(1, 44) = 0.19$ ,  $p = .67$ .

Consistent with predictions, a manipulation that effectively induces interdependent cognitions (i.e., having participants think about ways in which they are similar to others) increased



**Figure 3.** Interdependent self-construal by MS interaction on religious self-sacrifice in Study 3.

Note. Higher scores reflect higher levels of religious self-sacrifice.

participants’ willingness to make religious self-sacrifices after MS. These results thus extend the first two studies by elucidating the *causal* impact that interdependent self-construal has on amplified group investment in response to mortality reminders.

## General Discussion

In three studies, thinking about death increased investment in social groups, but only at high levels of interdependent self-construal. This effect was found across multiple social groups (university, nation, religion), when interdependent self-construal was measured and manipulated with a similarity to others induction, and when we compared participants from a culture with relatively high levels of interdependence (China) to a culture with relatively low levels of interdependence (United States). Furthermore, Study 3 demonstrated that highly interdependent people respond to mortality reminders with an increased willingness to make self-sacrifices for the sake of a social group.

These findings have a number of implications. First, this research extends previous TMT work on group-relevant strivings. TMT is ultimately a theory about the self and states that people are motivated to find and maintain a sense of self-transcendence because doing so allows them to manage deeply rooted concerns about personal mortality. A number of studies have demonstrated that MS heightens positivity toward in-groups and negativity toward out-groups (see e.g., Greenberg & Kosloff, 2008), as well as beliefs that groups are real entities (Castano et al., 2002) that will persist long into the future (Sani et al., 2008). In these previous studies, however, group-related strivings were never explicitly connected to self-definition. The current research, by considering the extent to which the self is attached to social groups, suggests that these earlier effects may be largely driven by the self-concept. MS only increased in-group investments in the current studies for people likely to define the self in terms of the group (i.e., high



levels of interdependence). The current research thus paves the way for future considerations of how self-definition may affect behaviors that are fueled by concerns about mortality.

Of course, as previously noted, the lack of MS effects among less interdependent people in the present studies may seem inconsistent with previous TMT research where main effects of MS on group-related defenses were observed. On this point, it is important to recognize that many MS effects are moderated by other variables (see Landau, Sullivan, & King, 2010). For example, no main effect of MS was observed in one of the original and most cited TMT studies on in-group bias. Instead, an interaction was detected in which an MS effect was only found for certain individuals (e.g., high authoritarians, Greenberg et al., 1990). Further, traits like self-esteem (Harmon-Jones et al., 1997), personal need for structure (Landau et al., 2004), and neuroticism (Goldenberg, Pyszczynski, McCoy, Greenberg, & Solomon, 1999) moderate the effects of MS on a wide range of outcomes. In terms of group-relevant outcomes, Arndt, Greenberg, Schimel, Pyszczynski, and Solomon (2002) found that MS only increased in-group identification when the in-group was framed positively. There is thus a strong foundation of empirical work demonstrating that MS effects are frequently moderated by other self-relevant factors. The present work joins this growing chorus of studies that take a more nuanced approach to investigating the consequences of death awareness by specifically considering how differences in interdependent self-construal shape utilization of groups for terror management purposes.

By focusing specifically on group-related strivings, however, the present research cannot speak to the terror management strategies of people who do not construe the self in terms of the group. It might be tempting to conclude that less interdependent people are simply invulnerable to the threat of death awareness. We caution against such a conclusion. Our results merely demonstrate that these individuals do not respond to MS with amplified group investment. Future research should examine the potential ways that these individuals respond to MS. For example, because MS increases efforts to enhance the self within domains that are personally valued (e.g., Routledge, Arndt, & Goldenberg, 2004), less interdependent people might respond to MS with increased efforts to bolster feelings of personal significance or enduring value in ways that are not directly attached to broader social groups.

It is also worth noting that all of the American participants in the present research were NDSU students and previous research indicates that North Dakota ranks as one of the states lowest in collectivism (Vandello & Cohen, 1999). That being said, in Study 2 of the present research, mean and standard deviation interdependent self-construal scores were comparable to samples from a university in the state ranked highest on collectivism (i.e., Hawaii; see Singelis, 1994).

Future research should consider whether the MS effects on group investment among people high in interdependence extend to groups other than the in-group. Could it be that people high in interdependence respond to MS with increased

positive responses to groups in general? This is an interesting possibility that the present research cannot address. However, our analysis suggests that MS should only increase investment in groups to which people's sense of self is attached. Previous research is consistent with this, indicating that MS only increases positivity to beliefs that people themselves hold and actually decreases positivity to divergent beliefs (Greenberg et al., 1990). Thus, although future research is needed, it seems likely that the amplified group investment observed in the present work would be limited to groups to which people themselves belong.

The current research also has broader implications for the study of intergroup conflict. Becker (1973, 1975) proposed that much of the conflict between groups is rooted in the struggle to symbolically escape death. Different social and cultural groups offer different ideologies regarding how one should live and what is socially valued. When people bind their sense of self to a particular group, they become highly invested in group beliefs and norms. Indeed, high levels of interdependent self-construal are associated with increased motivation to belong to and promote the goals of one's social groups (see Bond, 1986; see also Markus & Kitayama, 1991). Therefore, when other groups advocate beliefs and norms that are seemingly in opposition, the potential for group conflict is high, especially when death concerns are elevated. The current research, by establishing the interdependent self as the self-culpable in MS-induced group-related strivings, suggests that the more people define the self at a broader social level, the more they may contribute to intergroup conflict in the service of affirming their death-defying group. This further reveals how existential concerns about death, like other motivational, cognitive, and social variables (Sassenberg, Moskowitz, Jacoby, & Hansen, 2007; Tajfel, Billig, Bundy, & Flament, 1971; Tajfel & Turner, 1979; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) may promote intergroup conflict. Although the present studies only assessed attitudes toward one's in-group, it may be the case that such enhanced investment in one's own group catalyzes opposition to and conflict with one's out-group. Thus, research is needed to more directly examine the extent to which interdependent self-construal and MS affect people's desire to derogate and harm members of groups with conflicting meaning and self-transcendence providing ideologies.

In contrast to intergroup conflict, emerging research is showing that mortality concerns can actually contribute to peaceful coexistences between groups (Motyl et al., 2011). This research is based on the common in-group identity model (Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993), which states that recategorizing different social groups into a single superordinate group can reduce hostility between smaller subgroups. Motyl and colleagues (2011) found in two studies that MS increased tolerance for out-groups when a superordinate group was primed. Because the current research suggests that social groups help interdependent people manage death concerns, perhaps recategorizing social groups into a superordinate group may be an effective strategy that these people can employ to manage mortality concerns in a way that does not

foster friction between groups. Future research should assess this hypothesis more specifically. Additionally, future research should investigate other ways that interdependent people can use groups to manage mortality concerns prosocially. For example, people with high interdependence may be particularly inclined to engage in community volunteer work or donate money to causes that serve their broader social group when mortality is salient (Jonas, Schimel, Greenberg, & Pyszczynski, 2002; Niesta, Fritsche, & Jonas, 2008).

Finally, the current research, and particularly Study 3, has important implications for the study of group-motivated self-sacrifice. When facing the existential threat of death-related ideation, people who construe the self broadly prioritize the collective (symbolic) self over their physical self. These findings help explain recent research showing that, under certain conditions, participants report increased willingness to make self-sacrifices for their nation (Routledge & Arndt, 2008) and join martyrdom efforts on behalf of their nation (Pyszczynski et al., 2006) as a means to manage death awareness. Although it is only recently that experimental research has examined the prioritization of the symbolic self over the physical self in order to manage mortality concerns, scholars have long made the assertion that the symbolic self can take precedence over the physical self. For example, when Erich Fromm (1947) discussed humans' existential situation, he stated that devotion to broader cultural ties is often stronger "than even the drive for self-preservation," (p. 48). Similarly, Ernest Becker (1975) asserted that the only reason humans would ever willingly die would be to attain self-transcendence.

At first blush, symbolic self-prioritization may appear counterintuitive and at odds with the evolutionary position that all animals, including humans, should be highly motivated to survive in the service of reproduction. However, it is important to remember that humans are unique intellectual animals. Humans can ponder their motivation to live and realize that death ultimately cannot be avoided. Perhaps, it is not surprising then that when the awareness of mortality is heightened, people increase their investment in the aspects of the self that are less vulnerable to physical death. People do of course strive to avoid physical death. We, or at least many of us, go to the doctor and subject ourselves to rather embarrassing and unpleasant medical examinations. We wear our seatbelts and for the most part are appropriately fearful of dangerous toxins and carcinogens. And when people lose this motivation to live, we label that person ill. However, combined with other recent research, the current research, as well as otherwise inexplicable real life cases of self-sacrifice (e.g., suicide bombing, self-immolating), demonstrate that humans are also highly motivated to preserve the symbolic self and a secure symbolic self may offer great comfort to an animal fully aware of its inevitable date with death.

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