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The effects of personal and collective mortality salience on individualism: Comparing Australians and Japanese with higher and lower self-esteem

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Abstract

The cross-cultural generality of terror management theory was examined in Australia and Japan. Based on previous research suggesting that individualism is stronger in Australia than in Japan, mortality salience was predicted to enhance individualism in Australia, but to reduce it in Japan. The results supported this prediction. Consistent with the theory, the cultural pattern of worldview defense was found only among Australians and Japanese with low self-esteem. We also found preliminary evidence that collective mortality (death of one's in-group) has a greater impact than personal mortality (personal death) in Japan. Although the cultural worldview and self-esteem may serve terror management functions in both cultures, there may be differences between cultures in the type of mortality that produces the greatest levels of anxiety and the manner in which a given worldview is used to cope with anxiety about mortality.

Keywords: Culture; Terror management; Personal and collective mortality; Individualism; Self-esteem; Australia; Japan

1. Introduction

Terror management theory (TMT) proposes that a person's cultural worldview and self-esteem both serve an anxiety-buffering function in the human predicament of existential terror (Greenberg, Solomon, & Pyszczynski, 1997; Pyszczynski, Greenberg, & Solomon, 1997; Solomon, Greenberg, & Pyszczynski, 1991). According to TMT, worldviews are culturally shared conceptions of reality that set standards of values and morals for cultural members. As such, these worldviews endow people who meet the prescribed standards with a sense of order, permanence, and meaning. Self-esteem is based on the belief that one is living up to the standards set by a cultural worldview. This produces psychological equanimity in the face of existential threat. A belief that one is a valued member of the meaningful universe helps people to face their own mortality (the anxiety buffer hypothesis). Hence, the theory predicts that people try to defend their cultural worldview when they are threatened by mortality concerns (the mortality salience hypothesis), particularly if their self-esteem is low.

TMT aspires to be a universal theory of human evolutionary adaptation, so it is important to test it cross-culturally. To date, support for the theory has been found in North America, Western Europe (e.g., Castano, Yzerbyt, Paladino, & Sacchi, 2002), and Israel (see Greenberg et al., 1997, for a review). Little research on non-Western cultures has been reported, however, apart from two studies. Heine, Harihara, and Niiya (2002) found evidence in Japan that personal mortality salience exacerbated the rejection of an essay that criticized traditional Japanese culture, consistent with the standard terror management findings from North America. And Halloran (2001) found that Australian Aboriginals engaged in worldview defense when their mortality salience was heightened. Nonetheless, these

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studies did not explore the role played by culture in the *process* of terror management. Further research is thus necessary to test the generalizability of TMT in non-Western cultures. This paper describes an experiment that investigated three fundamental questions with Australian and Japanese participants: (1) Does mortality salience lead to the defense of a worldview that is shared within the cultural group? (2) Is there cross-cultural generality in the self-esteem anxiety buffer? (3) Is there cross-cultural generality in the finding that personal mortality produces the strongest mortality salience effects? We will discuss each of these questions briefly.

Culture-specific worldview defense

Numerous papers on TMT have described the cultural worldview as a personal construction comprising someone's values and beliefs (Pyszczynski et al., 1997). Research has also shown that such individual differences as authoritarianism, attachment style, and personal attitude can moderate worldview defense (e.g., Greenberg et al., 1990; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). Paradoxically, TMT also posits that worldviews are deeply rooted in the shared belief systems of the cultures. After all, it is this assumption of sharedness that allows worldviews to serve the anxiety buffer function (Rosenblatt et al., 1989). Does mortality salience indeed produce a worldview defense that reflects a culture's unique characteristics? The first aim of our research was to test the basic assumption of TMT that worldview defense involves cultural constructs.

The cross-cultural literature suggests that cultures vary remarkably in the priorities that are placed on particular values and the kinds of self-views that are promoted. Two patterns of values and self-views that broadly exemplify Western and Asian cultures are individualism and collectivism (Heine, Lehman, Markus, & Kitayama, 1999; Hofstede, 2001; Markus & Kitayama, 1991; Triandis, 1995; see Kashima, 2001). A recent meta-analysis by Oyserman, Coon, and Kemmelmeier (2002) concluded that the individualist worldview, which emphasizes individual autonomy and the pursuit of personal goals, is one of the prominent characteristics of Western (especially English-speaking) cultures. If the individualist worldview function as a buffer against existential anxiety, then mortality salience should enhance the endorsement of that worldview in Australia more than in Japan. Support for this hypothesis would suggest that worldview validation is essentially *cultural* in its construction, rather than merely personal.

Another issue that arises here is how members of Japanese culture, primed with mortality thoughts, would use the individualist worldview. Individualism is a contentious issue in contemporary Japan, as it is in many countries of East and South-East Asia. It has risen significantly in Japan over the past few decades, accompanied by rapid economic development in that country (Hofstede, 2001; Schooler, 1998; Trommsdorff, 1983). Yet breaches of traditional family duties (e.g., care for the aged) and the collapse of the lifetime employment system suggest that this value transition is controversial. Is a contentious cultural worldview rejected under high mortality salience, or does it fail to elicit any reaction? Halloran (2001) found that mortality salience led bicultural Aboriginal Australians to reject either individualism or collectivism, depending on the context. When the context highlighted the Anglo worldview, collectivism was rejected, but when the context highlighted the traditional Aboriginal worldview, individualism was rejected. Evidently, mortality salience can motivate someone to reject, rather than simply ignore, a controversial worldview. We thus expected that mortality salience would lead Japanese participants to reject the individualist worldview.

Generality of the self-esteem anxiety buffer

According to TMT, people with lower self-esteem (who regard themselves as not meeting the standards set by their cultural worldview) are more vulnerable to existential threats, so they should engage more strongly in worldview defense. Supportive evidence has been found in North America. For example, Harmon-Jones et al. (1997; see also Simon et al., 1996) showed that higher levels of self-esteem (both naturally occurring and experimentally manipulated) reduced defensive reactions to reminders of death, as well as anxiety responses to graphic depictions of death or painful electric shocks. This terror management process, however, deserves to be studied across cultures, especially in East Asia. An emerging opinion in the cross-cultural literature is that people from East Asian cultures, compared to those from Western cultures, tend to have lower levels of self-esteem, measured at both personal and collective levels. They also engage in less self-enhancement. Moreover, research in Japan has shown that interdependent self-construal, the tendency believed to reflect their cultural imperative (see Heine et al., 1999), does not correlate with self-esteem. These findings imply that self-esteem may function differently in the Japanese context than it does in the Western context. Heine et al. (2002) found evidence for worldview defense in Japan, but they did not study the role of self-esteem in that process. Thus, another goal of our research was to test the anxiety buffer hypothesis in Japan and Australia.

Personal vs collective mortality effects

Among various methods for arousing existential terror, including thinking about the death of a loved one, seeing a gory accident film, giving a speech in public,

and thinking about an exam (Greenberg, Pyszcynski, Solomon, Simon, & Breus, 1994, 1997, Study 1), priming thoughts of personal mortality has proven to be the most effective. A method yet to be tested is priming thoughts of collective death—the death of a whole in-group, including the self. Collective death might be caused, for example, by such large-scale calamities as a natural disaster or a nuclear war. Imagining the death of the entire in-group may be particularly disturbing for someone whose collective self (based on group or social category memberships) is especially important. Conversely, imagining one's own death may be particularly disturbing for someone whose self-concept involves personal traits/attributes that distinguish the self from others. If the individual self is more prominent among European Australians and Americans, and the collective self more prominent among East Asians (see Bochner, 1994; Heine et al., 1999; Kashima et al., 1995; Markus & Kitayama, 1991; Rhee, Uleman, Lee, & Roman, 1995; Trafimow, Silverman, Fan, & Law, 1997; Triandis, 1989; Triandis, Chan, Bhawuk, Iwao, & Sinha, 1995), then personal mortality should be more influential than collective mortality for Australians, but less influential than collective mortality for Japanese, when it comes to cultural validation.

Hypotheses

In sum, three hypotheses concerning the cultural generality of the terror management process are offered. First, TMT led us to predict that existential terror would lead Australians to emphasize an individualist worldview. But existential terror might lead Japanese to deemphasize an individualist worldview, given the contentious nature of individualism in current Japanese society. Second, we predicted that high mortality salience would lead Australians with lower self-esteem to endorse the individualist worldview more strongly. But endorsement of that worldview by the Japanese might not depend on their level of self-esteem. Finally, cultural variability in the relative prominence of individual and collective selves led us to predict that thoughts of personal mortality would have more impact than thoughts of collective mortality on the worldview defense of Australians, but this pattern might be reversed for the Japanese.

Method

Participants

Participants were 74 Anglo-Australian students (33 males and 41 females) from Swinburne University of Technology in Melbourne, Australia, and 92 Japanese students (55 males and 37 females) from Hokkaido University in Sapporo, Japan. All students participated to fulfill a requirement of their psychology courses. The sex ratio differed somewhat between samples, and the average age was significantly higher among Australians than Japanese, $t = 4.98$, $df = 74.27$, $p < .001$. All analyses were thus repeated using age and sex as covariates, but the results remained constant. Therefore, sex and age will not be discussed further here.

Materials and procedure

We described our research to participants as a study of values important to society. The cross-cultural nature of our research was not disclosed. All participants were required to complete a questionnaire. The questionnaire was originally developed in English and then translated into Japanese. A back-translation ensured that the two versions were equivalent. The first part of the questionnaire requested demographic information, including the respondent's gender, age, marital status, and country/region of birth, followed by an 8-item version of Rosenberg's self-esteem scale (O'Malley & Bachman, 1979; Rosenberg, 1965). Responses to the self-esteem items were made on five-point (1–5) rating scales. Four items were negatively worded and later reverse-scored.

After the first part of the questionnaire, a mortality salience manipulation was introduced, using the procedure developed by Greenberg et al. (1990). In the Personal Mortality condition, thoughts of one's own death were primed by asking participants to write a few lines in response to two questions: (a) "What will happen to you when your body dies?" and (b) "What emotions does the thought of your own death arouse in you?" In the Collective Mortality condition, participants were asked to imagine that their country was suddenly destroyed by a meteorite (killing all the people), and then to respond to two questions: (a) "What will happen to you and the people in your country when your bodies die?" and (b) "What emotions does the thought of your death and the death of all the people in your country arouse in you?" In the Control condition, respondents were asked two filler questions: (a) "What emotions or feelings do you have when you are watching television?" and (b) "What happens physically when watching television?" Within each culture, each participant was randomly assigned to one of the three mortality-salience conditions. The method used in the Personal Mortality and the Control conditions has been used extensively in many studies (e.g., Greenberg et al., 1990; Halloran, 2001; Harmon-Jones et al., 1997), so we have confidence in their effectiveness.

Following the mortality manipulation, participants were asked to work on a short self-description task. A sheet of paper was provided, with instructions to "make ten different statements in response to the question addressed to yourself, 'Who am I?' Answer as if you are

giving the answers to yourself, not to somebody else.'' Ten blank lines followed the instructions. Responses to this task were not analyzed, because minor inconsistencies in the response formats were found later between the Australian and Japanese samples. More importantly, this task was introduced as a filler for the purpose of making the mortality manipulation more effective—short delays seem to have this effect (e.g., Greenberg et al., 1994). After about 5 min, participants began work on the last part of the questionnaire, which assessed their endorsement of the individualist worldview. All of the responses here were made using nine-point (1–9) rating scales. Eight questions assessed the extent to which respondents viewed themselves as independent and unique (*Autonomous Self*, e.g., ''I often do 'my own thing,''' ''I am a unique individual''). These questions were taken from the Horizontal Individualism scale (Singelis, Triandis, Bhawuk, & Gelfand, 1995), which has been shown to measure an autonomous self-view (Kashima & Hardie, 2000; Triandis & Gelfand, 1998). Five additional questions assessed the extent to which respondents thought they might engage in individualist behaviors that reflected rejection of in-group duties and personal ties (*Individualist Behavior*, e.g., ''Placing your parents in an old people's home or nursing home,'' ''Spend money (e.g., send flowers) rather than take the time to visit an ailing friend'').[1] These items were taken from the Individualism Behavior scale developed by Triandis et al. (1995, see Appendix 2 on p. 480). After the experiment, participants were probed for suspicion, fully debriefed, and thanked for their participation.

Results

Factor analysis was conducted to examine the relationships among the Autonomous Self and Individualist Behavior items. Due to the relatively small sample size, the two cultural samples were initially combined and their responses were analyzed together. According to the standard procedure in recent cross-cultural research (van de Vijver & Leung, 1997), participants' scores for each item were first standardized *within each culture* by subtracting the group mean and dividing by the standard deviation, to avoid the influence of cultural mean differences and dispersion on the factor structure.

Factors were extracted using Maximum Likelihood extraction and rotated by Varimax rotation. To measure a factor, an item needed a loading greater than .45 on that factor and loadings less than .45 on any other factors. A scree plot clearly indicated the expected two-factor structure. Items associated with the Autonomous Self generally loaded on Factor 1, which accounted for 21% of the total variance. All items associated with Individualist Behavior loaded on Factor 2, which explained 16% of the total variance. We repeated the same analysis on each of the two cultural samples separately. The same factor structure emerged, except that the factor that explained the most variance was Autonomous Self in Australia and Individualist Behavior in Japan.

In both samples, relevant items were averaged to create an Autonomous Self scale ($\alpha = 0.68$ for Australia, 0.63 for Japan) and an Individualist Behavior scale ($\alpha = 0.70$ and 0.82). A summary of the scores can be found in Table 1. As expected, scores on the two scales were uncorrelated, $r(72) = .20$ for Australia and $r(90) = .15$ for Japan, both p's $> .05$. The mean Autonomous Self score was significantly higher in Australia ($M = 6.68$, $SD = 0.96$) than in Japan ($M = 6.01$, $SD = 1.03$), $t(164) = 4.26$, $p < .001$. Contrary to what might be expected, the mean Individualist Behavior score was significantly lower in Australia ($M = 3.54$, $SD = 1.20$) than in Japan ($M = 4.57$, $SD = 2.09$), $t = -4.01$, $p < .001$ ($df = 149.6$, due to adjustment for unequal variances). The standard deviation was larger in the Japanese sample, perhaps because Individualist Behavior is culturally contentious in Japan.

The Self-Esteem measure had a satisfactory level of internal consistency, both in Australia ($\alpha = 0.88$) and Japan (0.79). Consistent with Heine et al.'s review (1999), mean Self-Esteem scores were significantly higher among Australians ($M = 3.69$, $SD = 0.48$) than among Japanese ($M = 3.15$, $SD = 0.55$), $t(164) = 6.65$, $p < .001$. We subsequently standardized Self-Esteem scores *within each culture* so that the psychological function of self-esteem could be interpreted independently in each sample.

Our predictions were tested in separate multiple regression analyses for Autonomous Self and Individualist Behavior. The three predictors were Culture, Type of Mortality, and Self-Esteem. Culture was coded as Australia = 0 and Japan = 1. To test our prediction that the two types of mortality would show effects in contrary directions in Australia and Japan, the Control, Collective-Mortality, and Personal-Mortality conditions were coded −1, 0, and 1 (respectively) for Australians, but −1, 1, and 0 for Japanese. Self-Esteem was a continuous variable. We tested three main effects, three two-way interaction effects, and one three-way interaction effect, in a three-step hierarchical regression analysis of each dependent measure. See Table 2 for the unstandardized regression weights (B) and their significance levels.

[1] According to Oyserman et al. (2002), in-group duty is one of the core aspects of collectivism, rather than individualism. We nevertheless used this scale as a measure of individualism because the items described behavioral *rejections* of in-group duties, and the authors of the scale noted that such behaviors are typical in individualistic cultures (Triandis et al., 1995, p. 467).

Table 1
Mean Autonomous Self and Individualist Behavior in Australia and Japan in the Control, Collective-Mortality, and Personal-Mortality conditions

		Autonomous Self		Individualist Behavior	
	n	*M*	*SD*	*M*	*SD*
Australia					
Control	22	6.41_a	1.16	3.13_a	0.99
Collective-Mortality	27	6.55_a	0.81	3.53	1.22
Personal-Mortality	25	7.06_b	0.84	3.90_b	1.27
Total	74	6.68	0.96	3.54	1.20
Japan					
Control	36	6.26	0.96	5.14_a	2.40
Personal-Mortality	35	5.88	1.10	4.55_a	2.00
Collective-Mortality	21	5.81	1.00	3.62_b	1.15
Total	92	6.01	1.03	4.57	2.09

Note. Means with distinct subscripts differ significantly from each other at $p < .05$.

Table 2
Regression Analyses assessing the effects of Culture, Mortality Type, Self-Esteem, and their interactions on Autonomous Self and Individualist Behavior

Predictor	Step 1		Step 2		Step 3	
	B	*t* (162)	*B*	*t* (159)	*B*	*t* (158)
Autonomous Self						
Culture (C)	−0.66	−4.32[c]	−0.70	−4.62[c]	−0.70	−4.60[c]
Mortality Type (M)	0.02	0.19	0.27	1.90	0.27	1.90
Self-Esteem (SE)	0.25	3.35[b]	0.35	2.95[b]	0.36	2.82[b]
C × M			−0.49	−2.58[a]	−0.50	−2.58[a]
C × SE			−0.23	−1.50	−0.24	−1.45
SE × M			−0.05	−0.48	−0.03	−0.21
C × M × SE					−0.03	−0.14
Individualist Behavior						
Culture (C)	0.99	3.60[c]	0.98	3.63[c]	0.95	3.63[c]
Mortality Type (M)	−0.22	−1.28	0.42	1.69	0.36	1.48
Self-Esteem (SE)	0.08	0.58	0.04	0.17	−0.21	−0.96
C × M			−1.17	−3.42[b]	−1.12	−3.39[b]
C × SE			0.11	0.40	0.42	1.50
SE × M			0.27	1.45	−0.43	−1.54
C × M × SE					1.24	3.38[b]

Notes. $N = 166$.
[a] $p < .05$.
[b] $p < .01$.
[c] $p < .001$.

The analysis of Autonomous Self revealed two significant main effects, one for Culture and the other for Self-Esteem. The latter effect indicated that Autonomous Self scores tended to be higher for those with higher Self-Esteem. Though this trend was stronger in Australia [$\beta = 0.41$, $t(72) = 3.78$, $p < .001$] than in Japan [$\beta = 0.14$, $t(90) = 1.34$, $p > .05$], the interaction for Culture and Self-Esteem was not significant. The only significant two-way interaction effect was for Culture by Mortality Type. The pattern of that interaction suggested that Autonomous Self *increased* from the Control through Collective-Mortality to Personal-Mortality conditions in Australia, $\beta = 0.27$, $t(72) = 2.38$, $p < .05$, but *decreased* marginally from the Control through Personal-Mortality to Collective-Mortality conditions in Japan, $\beta = -0.18$, $t(90) = -1.77$, $p = .08$ (see Table 1). The grand mean for Autonomous Self was higher for Australians than for Japanese, and this difference gradually increased as a function of mortality condition. The three-way interaction was not significant: Cultural trends were not any stronger when Self-Esteem was lower. See Fig. 1 for an illustration of the Autonomous Self scores for those with lower Self-Esteem (1 *SD* below the mean) and with higher Self-Esteem (1 *SD* above the mean). Overall, the full model accounted for 21% of the total

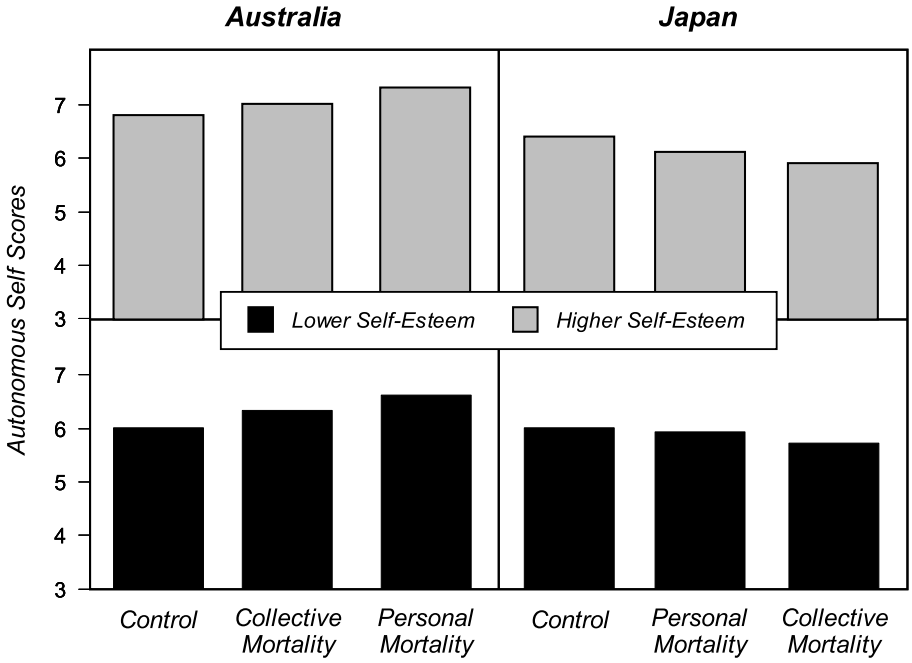

Fig. 1. Estimates of Autonomous Self for participants with higher self-esteem and lower self-esteem in Australia and Japan (self-esteem scores standardized within each sample) *Note*. X-axis is presented differently for each sample to show the group-specific linear trend.

variance in Autonomous Self scores, $F(7, 158) = 5.89$, $p < .001$.

In the analysis of Individualist Behavior, the only significant main effect was for Culture. This main effect was qualified by a significant Culture by Mortality interaction effect. The pattern of the interaction indicated (consistent with the same interaction for Autonomous Self) that Individualist Behavior *increased* from the Control through Collective-Mortality to Personal-Mortality conditions in Australia, $\beta = 0.26$, $t(72) = 2.28$, $p < .05$, but *decreased* from the Control through Personal-Mortality to Collective-Mortality conditions in Japan, $\beta = -0.28$, $t(90) = -2.73$, $p < .01$ (see Table 1). So, even though the overall mean for Individualist Behavior was higher in Japan than in Australia, this difference gradually decreased as a function of mortality condition. Neither the Culture by Mortality interaction nor the Self-Esteem by Mortality interaction was significant. However, a significant three-way interaction was found. The pattern of this interaction was explored. Fig. 2 illustrates Individualist Behavior scores for those with lower Self-Esteem (1 *SD* below the mean) and with higher Self-Esteem (1 *SD* above the mean). Consistent with our hypothesis, the predicted pattern for each culture was discernible only for participants with lower self-esteem. The responses of higher self-esteem participants were generally invariant across mortality conditions, suggesting that the type of mortality we made salient had little impact on Individualist Behavior when self-esteem was high, both in Australia and Japan. Overall, the model accounted for 22% of the total variance in Individualist Behavior, $F(7, 158) = 6.33$, $p < .001$.[2]

Discussion

Two predictions based on the TMT's key postulates were supported in this research: Mortality salience triggered the validation of a culturally shared worldview, and this effect was stronger for individuals with lower self-esteem, both in Australia and Japan. Yet our results also suggest that adjustments to some aspects of TMT may be necessary.

First, although personal mortality was the most influential antecedent of worldview defense in Australia, this was not the case in Japan. In Japan, mortality salience had a stronger effect when collective rather than personal death was imagined. Apparently, the question of whose mortality is more influential is a cross-cultural issue that should be taken into account by TMT. A possible hypothesis is that the relative impact of

[2] Table 1 shows that Individualist Behavior had relatively large *SD*s in the Japanese sample, particularly in the Control and Personal Mortality conditions. Levene's test of homogeneity of variance was indeed significant, $F(1, 164) = 26.07$, $p < .001$, for Individualist Behavior. These large *SD*s, however, were due to a genuinely large spread of scores, rather than outliers. We performed a logarithmic ($\log_{10}$) transformation of the data and repeated the analysis, which yielded results consistent with those already reported.

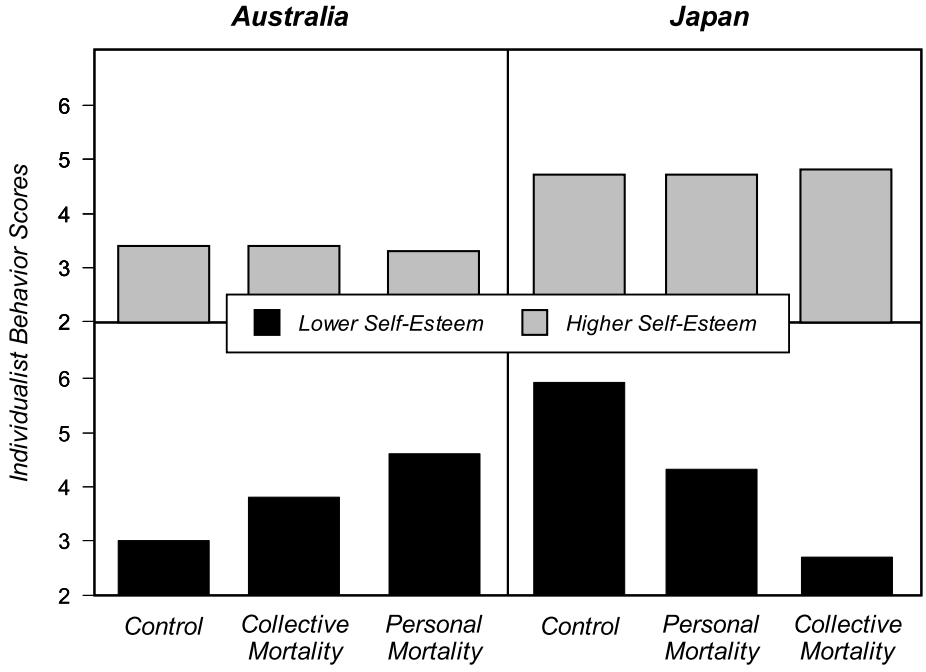

Fig. 2. Estimates of Individualist Behavior for participants with higher self-esteem and lower self-esteem in Australia and Japan (self-esteem scores standardized within each sample) *Note*. X-axis is presented differently for each sample to show the group-specific linear trend.

personal versus collective mortality depends on the relative importance of individual versus collective selves. This hypothesis, though it was tested in this experiment, should be tested further in future cross-cultural research. Further, and more broadly, terror management theory so far has described mortality awareness and psychological coping as strictly individual processes. The fact that a collective mortality prime has a greater effect than an individual one on some people indicates that terror management should be linked to broader socio-cultural factors. This seems to be a productive direction for further research. Human history has shown that collective tragedies, such as genocide, mass destruction, and systematic violence against particular categories of people, perpetuate inter-group conflicts. One factor in such conflicts may be that threats to one's in-group can trigger vigorous defense of that group's worldview, even when one's own life is not at stake.

A subsidiary issue involves relational mortality salience, represented by thoughts of the death of a loved one. Such thoughts have been found to be less effective than thoughts about personal mortality in North America (e.g., Greenberg et al., 1994), but this issue needs to be explored cross-culturally. In addition, relational mortality may prove to have stronger effects among females than males, because previous research has found relational orientation (levels of concern for a relationship with another individual; see Brewer & Gardner, 1996; Kashima & Hardie, 2000) to be stronger among females than males. This is true not only in Anglo America and Australia, but also in East Asia (Kashima et al., 1995).

Our results also showed that worldview defense occurs in the directions that previous cross-cultural research suggested (Oyserman et al., 2002). The individualist worldview, celebrated strongly in English-speaking cultures, increased in Australia, but decreased in Japan, when mortality was salient. This pattern was consistent for both Autonomous Self and Individualist Behavior, two separate dimensions reflecting the individualist worldview. To the best of our knowledge, this is the first research to demonstrate that a specific worldview can be emphasized in distinct ways in two cultures. It gives credence to the fundamental assumption of TMT that worldviews comprise cultural constructs and that worldview defense is a cultural process.

Some caution is required in interpreting our results, however. First, the mean for Individualist Behavior in the control condition was substantially higher in Japan than in Australia. The Australian mean was also unexpectedly lower than the scale midpoint. This suggests that Individualist Behavior is not regarded as desirable in Australia, contrary to the usual notion that a cultural worldview acts as a prescriptive standard. Second, the standard deviation for Individualist Behavior was significantly larger in Japan than in Australia, suggesting substantial disagreement about such behaviors in Japan. It thus seems important to replicate the present mortality salience effects on individualist and collectivist worldviews. Finally, the effect size for the Culture by Mortality Type interaction was modest, particularly for the Autonomous Self. This may be due in part to the modest internal consistency achieved by the measures

we used. Thus, a replication with stronger measures may be required.

The finding that Japanese endorsement of the individualist worldview was reduced under mortality salience has some important implications for the cross-cultural literature. We mentioned earlier that individualism may be a culturally contentious issue in contemporary Japanese society. More than one review paper has concluded that Japanese are not really more collectivistic than North Americans (Matsumoto, 1999; Oyserman et al., 2002; Takano & Osaka, 1999). Indeed, our measure of Individualist Behavior reflected a rejection of in-group duties, and there was considerable disagreement in the opinions of our Japanese respondents on this point. A remarkable implication of our research is that regardless of the diversity in their opinions about in-group duties under normal (non-mortality salience) circumstances, contemporary Japanese may reaffirm such duties when faced with mortality terror. The weakening that we found in the Autonomous Self under high mortality salience by the Japanese gives further weight to this finding.

Finally, turning to the self-esteem hypothesis, our results supported the anxiety buffer function of self-esteem in Japan as well as Australia, particularly for the Individualist Behavior measure. As predicted by TMT, worldview defense was limited to those with lower self-esteem. This evidence implies that the role of self-esteem in terror management processes is similar in East Asian and Western cultures. However, there are some puzzling findings. The Autonomous Self scores tended to be higher for those with higher Self-Esteem in both Australia and Japan. If meeting the standards set by a cultural worldview leads to higher self-esteem, as assumed in TMT, then perceiving the self as autonomous should be positively associated with self-esteem in Australia, but *not* in Japan, where autonomy is relatively less important. Self-esteem also failed to moderate the impact of mortality salience on Autonomous Self. Further research is required to clarify the link between self-esteem and the endorsement of Autonomous Self, particularly in less individualistic cultures. In future research, it is also essential to use different measures of self-esteem, including more collectivistic ones, because the measure that we used (like those used in past TMT research) was individualistic in nature.

In sum, our research suggests that the terror management process in Australia and Japan involves both cultural worldview defense and the self-esteem anxiety buffer, thus supporting two main tenets of TMT. Yet a cross-cultural comparison of these terror management processes revealed the need for further development of the theory to encompass socio-cultural factors. Depending on the culture and context, collective death may be more terrifying than personal death, and thus exert stronger effects on terror management processes. The ways in which a particular worldview such as individualism is used to manage terror may depend on cultural traditions. Clearly, future research should be directed at clarifying the important role that culture may play in terror management processes around the world.

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