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DOES CONCERN ABOUT DEATH HELP TO INCREASE DONATIONS FOR ENVIRONMENTAL CHARITIES? EXAMINING THE IMPACT OF MORTALITY SALIENCE ON PRO-ENVIRONMENTAL BEHAVIORS IN EAST ASIA

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Abstract

The present research comprises three component studies that aimed to provide new insights into improving pro-environmental behaviors in East Asian countries—namely, Japan and China—from the perspective of terror management theory. The purposes of the research were (1) to examine the impact of mortality salience on pro- environmental behaviors in East Asian countries where nature occupies an essential role; and (2) to investigate whether mortality salience can encourage people to allocate more resources to future generations, based on the motivation to create a legacy. After performing the relevant experimental manipulations to induce mortality salience and specify intended beneficiaries, we invited participants to allocate financial resources to various charitable projects. The results of our three studies consistently demonstrated that mortality salience increased environment-related donations in both Japan and China. In accordance with terror management theory, our findings also indicated that mortality salience motivated individuals to behave in ways that meet the stand-

ards of their cultural worldview. However, we found no evidence to support the hypothesis that mortality salience can lead to higher donations for future beneficiaries than for present beneficiaries.

Key words: mortality salience, terror management theory, pro-environmental behavior, donation, culture

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Introduction

Climate change has thrown contemporary civilization into a global crisis, and though environmental issues have aroused unprecedented concern in the international community, we are still far from developing adequate solutions. The situation seems to have worsened since June 1, 2017, when the United States announced that they would withdraw from the Paris Agreement on climate change mitigation. Because environmental issues are intergenerational issues that can only be overcome through long-term, sustainable, and collective effort, the decisions people make now will have a serious impact not only on contemporary populations, but also on future generations. Unfortunately, it appears that people prefer to act according to immediate self-interest rather than engage in sustainable development or promote the well-being of future generations (Wade-Benzoni, Sondak & Galinsky, 2010). As such, the present research aims to provide new insights into improving pro-environmental behaviors—such as donation to environmental charities—in East Asia, from the perspective of terror management theory (TMT) (Solomon, Greenberg & Pyszczynski, 1991).

TMT and resource allocation

As the saying goes, “he who knows right will do right.” TMT expands on the idea that humans, in the face of

death-inspired existential terror, rely on culture—a shared set of meanings and values—to provide a standard for evaluating their lives. Following the cultural inculcation that constitutes childhood, individuals incorporate the presiding cultural worldview as an internal standard by which to measure their behaviors and attitudes and determine the success and value of their lives. Meeting the standards of a cultural worldview helps people to improve their self-esteem. Hence, when confronted with the terror of death, people rely on their cultural worldview to orient their behavior.

Previous research has provided supporting evidence for the assertion that mortality salience increases adherence to cultural values and norms, such as helping, empathy, and forgiveness (Vail, Juhl, Arndt, Vess, Routledge, & Rutjens, 2012). Generosity—one of the most highly-valued cultural qualities—is often used as the dependent variable in TMT studies. For instance, Jonas, Schimel, Greenberg, and Pyszczynski (2002) found that participants who were interviewed in front of a funeral parlor (mortality salience condition) reported greater support for charities than those interviewed several blocks away (control condition). Zaleskiewicz, Gasiorowska, and Kesebir (2015) reported that being reminded of one's mortality led participants in the dictator game to allocate financial resources more generously, and to derive more satisfaction from acting generously, than participants who were not so reminded.

However, it seems that people are not willing to be generous in all circumstances. For example, participants in one study gave less money to foreign charities when they were in the mortality salience condition, because providing generous assistance to outgroups does not show commitment to one's own group (Jonas, Sullivan, Greenberg & Generosity, 2013). Furthermore, one forest-management study demonstrated that American participants, under the influence of their capitalist culture that "tout[s] wealth and the consumption of goods as paths to a successful and happy life," tended to become more materialistic and to consume more resources for immediate personal benefit when in the mortality salience condition, despite being reminded that these decisions may de-

stroy the forest (Kasser & Sheldon, 2000). Thus, it appears that people stop being generous to others when such generosity conflicts with their cultural worldview or prevents them from meeting the standards of this worldview. Therefore, we need to look closely at how mortality salience affects peoples' resource allocation decisions based on different social and cultural backgrounds.

This research aimed to examine the effect that mortality salience has on charity donations to environmental organizations in Japan and China, two East Asian countries that have similar cultural backgrounds. So far, few TMT studies regarding donation behaviors have been conducted in East Asia. Xiao, He, and Zhu (2017) reported that they failed to confirm the positive impact that mortality salience may have on increasing donation to a general charity among Chinese participants. In fact, donating is not a common activity for people in East Asia, as it is for people in Western countries. In 2017, individual donations accounted for 0.14% and 0.18% of GDP in Japan[1] and China[2], respectively, while the number was 1.44% in America. Within this context, we predicted that mortality salience would not have a positive effect on general donation behavior in East Asia unless donation behavior accords with a population's cultural worldview.

For this reason, we focused on donations to environmental organizations in Japan and China, where the culture emphasizes the close and harmonious relationship between humans and nature (Watanabe, 1974). For instance, the traditional religion of Japan—Shintoism—is animistic, viewing the spiritual and physical realms as interconnected (Martinez, 2005). Similarly, the central idea in China's indigenous religion of Taoism is to turn to

[1] Giving Japan 2017 [Cited 21 March 2020]. In: Japan Fundraising Association [Internet]. [about 3 screens]. Available from: https://jfra.jp/wp/wp-content/uploads/2017/12/2017kifuhakusho-infographic.pdf

[2] China Charity Alliance: The total donation amounts in China were 150 billion Yuan in 2017, which is doubled in 10 years. The Xinhua Net. 2018 Sep 21 [Cited 21 March 2020]. Available from: http://www.xinhuanet.com/politics/2018-09/21/c_1123466994.htm?baike

nature and become part of it. Because nature lies at the heart of East Asian culture, it is possible that East Asian people would consider contributing to nature as an effective way to enhance their self-esteem and suppress death anxiety. For example, Rahimah, Khalil, Cheng, Tran, and Panwar's study (2018) in Taiwan revealed that higher death anxiety among consumers led to a higher level of environmental concern and an increase in pro- environmental behaviors. Furthermore, because everyone stands to benefit from a livable environment, environmental donation appeals to the characteristically East Asian value of collectivism (Maheswaran & Agrawal, 2004). Based on the above, we predicted that mortality salience would have a positive effect on donations for environmental protection.

TMT and future-oriented behavior

According to TMT, the most frightening thing about death is that someday we will no longer exist in the world. Not only will the physical body perish, but all one's bonds with the world will disappear. Anxiety arises from the thought, "If all proof of one's existence will eventually be erased, what is the point of living now?" Thus, TMT assumes that people mitigate the anxiety of nonexistence by pursuing symbolic immortality (Solomon et al., 1991). When facing death, people strive to leave some indelible trace of themselves in the world—be it tangible (e.g., offspring, book, music) or intangible (e.g., memory, idea, history). This helps them feel connected with the future and assures them of the value of their existence. Previous research reported that mortality salience leads to an increased desire for offspring in both Western (Fritsche, Jonas, Fischer, Koranyi, Berger & Fleischmann, 2007) and Eastern countries (Zhou, Lei, Marley & Chen, 2009). Mortality salience also leads to a higher level of creativity when people know they can leave a legacy by passing on their ideas to others than when they think they cannot (Sligte, Nijstad & Dreu, 2013). In addition to these personal efforts, symbolic immortality can also be achieved through collective efforts. As we pass on stories of heroes who fought for our societies from one generation to the next, we integrate these contributing members into the group—clan, community, or coun-

try—thereby guaranteeing their immortality as part of something greater, and longer-lasting, than any individual (Pyszcznski, Solomon & Greenberg, 2013).

Based on the above, Wade- Benzoni, Tost, Hernandez, and Larrick (2012) proposed that concerns about death trigger legacy motivations, which override selfish tendencies and promote intergenerational beneficence. In allocating resources—for example, environmental resources— to future generations, people tend to make selfish decisions and pursue immediate self-interest, disregarding negative consequences as they do not wish to invest limited resources on behalf of strangers (Wade-Benzoni, 2008). However, when mortality salience triggers legacy motivations, people might be more willing to allocate future resources as a means of symbolically extending themselves into later generations. Zaval, Markowitz, and Weber (2015) indicated that priming legacy motivations increased environmental donations and pro- environmental intention. Furthermore, Wade-Benzoni et al. (2012) reported that participants were willing to donate more to an organization focused on creating lasting improvements to benefit people in the future than to an organization that focused on improving the present, demonstrating that mortality salience induced a desire to connect with future generations and thereby establish a legacy. As such, the present research examined how mortality salience can effectively encourage environmental donations, predicting that participants would be willing to allocate more resources to charities that enable them to create a legacy.

The Present Research

The main purposes of the present research were to examine whether mortality salience (1) increases donations to environmental charities, (2) affects donations for environmental charities, exclusively, (3) triggers legacy motivation to improve more donations to the future than to the present, and (4) has consistent effects in different East Asian countries. Thus, we conducted three studies to test the above assumptions.

Study 1 and 2 were conducted in Japan. In Study 1, we predicted that

mortality salience would encourage East Asian participants to exhibit pro-environmental behaviors in an effort to meet the standards of their nature-centric cultural worldview (Hypothesis 1, H1). Following Wade-Benzoni et al. (2012), we also predicted that, in the mortality salience condition, the tendency to allocate fewer resources to the future than to the present would be reversed, such that people would allocate resources more generally to the future than to the present (H2). In Study 2, a culture- related charity was added as a control condition to assess whether mortality salience would have an impact specifically on environment-related donation behaviors in East Asian countries. We expected to see differing interactions between mortality salience and these two types of charities, wherein mortality salience would increase donations to an environmental charity, but not to a cultural one (H3). Moreover, we hypothesized that mortality salience would encourage larger donations to charities that satisfy participants' desire to create a legacy than to those that do not (H4). Consequently, we incorporated clearer definitions of "future" and "present" into Study 2. Finally, in Study 3, we sought to replicate our findings (H3 and H4) from Study 2 among Chinese participants to examine whether our results could be generalized to other countries in East Asia. All studies were approved by the ethical review committee of Osaka University (no. 27005 for study1 and no. 28074 for study 2-3) and conformed to the ethical standards of the Declaration of Helsinki.

Study 1

Method

Participants

A total of 56 university students from Osaka, Japan participated in the study (36 females and 20 males, M_{age} = 20.70 years, SD = 1.73 years). They were randomly assigned to the four cells of a 2 (mortality salience: death vs. dental pain) × 2 (recipient: future vs. present) between-subjects design. There were two participants per session in the laboratory. After informing participants that the study was designed to examine how personality relates to lifestyle, we obtained their signed informed consent before beginning the session. Each participant was paid 500 yen (around 4–5 US dollars)

after completing all the experimental tasks.

Materials and Procedure

First, we performed a mortality salience manipulation. Following previous TMT studies (e.g. Solomon et al., 1991), we asked participants in the mortality salience condition to answer two open-ended questions about death: (1) "Describe the feelings that the thought of your own death arouses in you," and (2) "Describe what you think will happen to you physically as you die and once you are dead." Participants in the dental pain condition (control condition) answered identical questions about the experience of dental pain.

Next, we implemented an affect assessment and distraction task. All participants completed the Japanese version (Sato & Yasuda, 2001) of the Positive and Negative Affect Schedule (PANAS) (Waston, Clark & Tellegen, 1988), which we used to measure the affect aroused by mortality salience and to control for its impact on results. Participants were directed to complete sixteen items based on the present moment, eight items each for both positive (excited, strong, proud, etc.) and negative (upset, distressed, nervous, etc.) affect, on a five-point scale (1 = *not at all*, 5 = *extremely*). The final score was derived from the sum of the eight items on both the positive (α = .87) and negative (α = .90) side. Next, participants completed a filler scale about lifestyle (not used in the analysis). These two tasks also served as a delay between the mortality salience manipulation and the dependent measure, given previous research showing that anxiety may be buffered when participants are distracted from thoughts of death (Greenberg, Psyzczynski, Solomon, Simon & Breus, 1994).

Then we introduced the donation scenario for the environmental charity. After finishing the distraction task, participants were informed that the experiment was over and were given the following instructions by the experimenter:

> *To thank you for your participation, we will include you in a lottery. Among all the participants, two will win a prize of 3,000 Japanese yen (about 30*

US dollars). At present, our lab is cooperating with an environmental charity, so we would like to ask the lottery winners to consider donating part of their prize to the charity.

At this point, we performed the recipient manipulation. All participants were presented with information about an environmental charity project intended to conserve and sustainably manage forests in Japan. In the future recipient condition, this information featured the slogan "What to do to protect the FUTURE of Japan." In the present recipient condition, the slogan was "What to do to protect the PRESENT of Japan." The project description for each condition remained the same. After reading the description, participants wrote the amount of money they would be willing to donate to the project on a ticket and put it into a box. We used this donation amount as a measure of their beneficence.
Upon completion of the experiment, we debriefed the participants about the true purpose of the study and thanked them for their participation. None of the participants had suspected the actual purpose of the experiment.

Results and Discussion

All data from each of our studies were analyzed by IBM SPSS Statistics 25. In Study 1, the results from a paired *t* test showed no significant differences in positive affect (t (54) = 1.41, p = 0.16, *n.s.*) or negative affect (t (54) = 0.16, p = 0.88, *n.s.*) between the mortality salience and control conditions. This result is consistent with previous research (Watson et al., 1988), and it indicates that the mortality salience effect occurred primarily in response to activated thoughts about death, which were not held in focal attention.

To examine the impact of mortality salience on pro-environmental behaviors, we conducted a 2×2 analysis of variance. Following Wiepking and Maas's suggestion (2009), we used log-transformation versions of the donation amounts as the dependent variable because of the large sample variance. The results confirmed that mortality salience was a main effect, encouraging participants in the mortality salience condition to donate signifi-

cantly more (M = 3.09, SD = 0.26) than those in the control condition (M = 2.89, SD = 0.43) (F (1, 52) = 4.53, p = 0.04, η_p^2 = 0.080) (Fig 1). However, neither the main effect of recipient (F (1, 52) = 0.11, p = 0.75, η_p^2 = 0.002) nor the interaction between mortality salience and recipient was statistically significant (F (1, 52) = 0.05, p = 0.82, η_p^2 = 0.001).

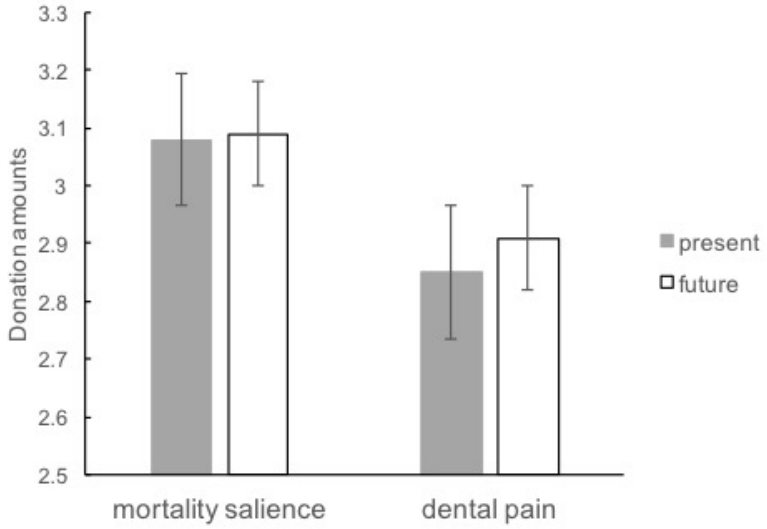

Figure 1. Effect of mortality salience × recipient interaction on log-transformed donation amounts. Higher scores reflect larger donations to the environmental charity.

These results supported H1, as they showed that mortality salience did encourage pro-environmental behavior in Japanese participants, as predicted. However, the results did not support H2. After inducing mortality salience, we witnessed no significant differences between present- and future-oriented donations. The results of the control condition did not support the expected tendency to allocate fewer resources to the future than to the present, either. Therefore, it is possible that the recipient manipulation failed because the description of "present" and "future" generations was too ambiguous. Hence, we improved this aspect of the study design by providing a clearer definition in Study 2.

Study 2

In Study 2, we defined "present"

and "future" generations by specifying the projected completion time of the environmental project as either five or eighty years. The long (80-year) completion time was intended to induce awareness that the resources participants allocated would benefit generations living after the participants' own death, thereby triggering legacy motivations. We predicted that mortality salience would encourage larger donations to benefit the future rather than the present. Furthermore, to examine whether mortality salience has a positive effect on environmental donations, specifically, as a control condition we added a culture-related charity that also benefits the collective society.

Method

Participants

The participants were 127 undergraduate students in Osaka, Japan (43 females and 84 males, $M_{age} = 18.87$, $SD = 3.42$). They answered a four-page questionnaire anonymously during a psychology class and received five credits for participation. Participants were randomly assigned to the four cells of a 2 (mortality salience: death vs. dental pain, between) × 2 (charity: environment vs. culture, between) × 2 (recipient: future vs. present, within) mixed factorial design.

Materials and Procedure

We informed participants that the study was designed to examine how personality affects lifestyle. After exposing participants to the same mortality salience manipulation, affect assignment, and distraction task used in Study 1, we invited them to make their decisions on charity donations. We presented participants with two project descriptions: one from an environment-related charity project and one from a culture-related charity project, neither of which really exists. The concepts of the two projects were the same except for a long or short completion time. The environmental charity project involved afforesting desert areas and rebuilding natural forest ecosystems, which would contribute to the protection and improvement of the local environment. The cultural charity project involved rehabilitating damaged artworks and cultural heritage, which would contribute to the protec-

tion and improvement of the local culture.

Then we performed the recipient manipulation. In the future recipient condition, participants were told that, because the project involves many arduous tasks, it would require about 80 years to complete fully. In the present recipient condition, participants were told that the project was more general, and that the completion time was estimated to be five years. The two descriptions were given in a counterbalanced order, and the experimenter assured participants that all the projects were guaranteed a high success rate, regardless of the long or short execution time, to mitigate the negative effect that uncertainty about the outcome (Wade-Benzoni et al, 2012) might have on participants' decisions. As a manipulation check, after reading each description, participants indicated how long they thought it would take to finish the project on a five-point scale (1 = *not long at all*, 5 = *very long*).

After each description, participants were asked to write down how much they would like to donate to the project, with an upper limit of 3,000 Japanese yen. We used these donation amounts as a measure of their beneficence. Participants also ranked the social necessity of each project (through the question "How much does society need the project?") on a five-point scale (1 = *not at all*, 5 = *very much*). After the participants completed the questionnaire, the experimenter debriefed them about the true purpose of the study.

Results and Discussion

There were no significant differences in positive affect (α = .92, t (125) = 1.72, p = 0.18, *n.s.*) or negative affect (α = .88, t (125) = 1.79, p = 0.12, *n.s.*) between the mortality salience and control conditions. This eliminated the possibility that participants' decisions were affected by personal emotions aroused by the mortality salience manipulation. Next, we ran a paired t test to confirm that participants were able to distinguish between the two recipient conditions (t (126) = 16.03, p = 0.00). The results confirmed that the participants recognized that it would take longer to finish the project in the future-recipient condition (M = 4.02) than it would the project in the pre-

sent-recipient condition (M = 2.46).

We submitted the donation amounts to 2 (mortality salience) × 2 (charity) × 2 (recipient) mixed factorial analyses of variance. The number of participants in each cell and the average of the two measures are shown in Fig 2. These analyses revealed a significant interaction between mortality salience and selected charity type (F (1, 123) = 10.57, p = 0.001, η_p^2 = 0.079). Consistent with our predictions, participants primed to think of death donated more (M = ¥1446.97, SD = ¥132.98) than those in the control condition (M = ¥683.07, SD = ¥137.21), but only to the environment-related charity. For the main effect of recipient (F (1, 123) = 11.63, p = 0.001, η_p^2 = 0.086), the results also showed that participants tended to allocate more financial resources to the present-oriented project (M = ¥1446.97, SD = ¥132.98) than to the future-oriented project (M = ¥683.07, SD = ¥137.21).

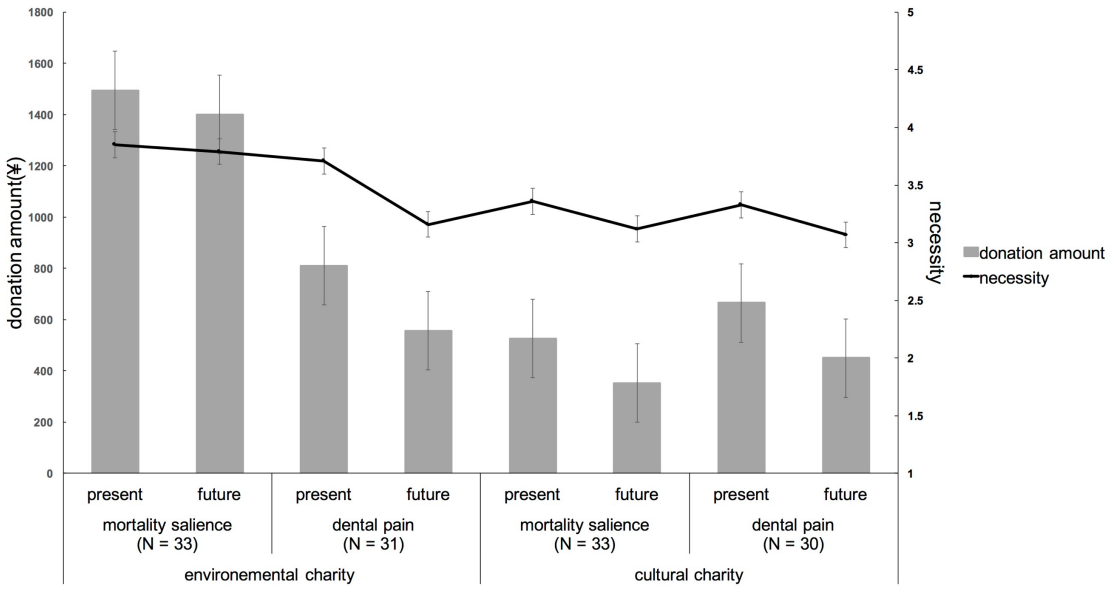

Figure 2. Results from Study 2: mean donation amount (bar graph) and necessity (line graph) among Japanese participants as a function of mortality salience, recipient, and type of charity. Error bars show standard errors.

In addition, to evaluate the ne-

cessity of each project we submitted

the data to 2 × 2 × 2 mixed-model analyses of variance (Fig 2). These analyses revealed no significant interaction between variables but did verify the main effects of recipient (F (1, 123) = 10.37, p = 0.002, η_p^2 = 0.078) and type of charity (F (1, 123) = 4.91, p = 0.029, η_p^2 = 0.038). Namely, for Japanese participants, environmental protection (M = 3.63, SD = 0.13) was considered more necessary than cultural heritage protection (M = 3.22, SD = 0.13), while resource allocation to people in the present (M = 3.56, SD = 0.10) was considered more necessary than resource allocation to people in the future (M = 3.28, SD = 0.10). Nevertheless, necessity was not impacted by the mortality salience manipulation. The results were consistent with Study 1. First, donations only to the environmental charities, not to the cultural charities, increased after the mortality salience manipulation. This indicates that when being reminded of death, Japanese participants allocated more resources to environmental projects; environmental protection is considered more socially necessary than cultural heritage protection. These results supported H3. Second, contrary to our expectations, it appears that mortality salience did not encourage more donations to future-oriented projects, which enable the creation of a legacy, than to present-oriented projects. Hence, the results did not support H4. On the other hand, the results did confirm that participants in the control condition preferred to allocate more resources to the present than to the future. In sum, the results revealed that, in Japan, mortality salience promotes increased resource allocation to environmental charities but not to cultural charities, regardless of whether the allocation contributes to a personal legacy or not.

Study 3

To examine whether the results observed in Japan are consistent with those from other East Asian countries, we conducted an additional test in mainland China.

Method

Participants

The participants were 128 undergraduate students in Shanghai, China (83 females and 45 males, M_{age} = 19.42, *SD* = 2.01). The participants were recruited from an economics class, and they received five credits for participating in the study. All participants completed the questionnaire anonymously. As with Study 2, they were randomly assigned to the four cells of a 2 (mortality salience: death vs. dental pain, between) × 2 (charity: environment vs. culture, between) × 2 (recipient: future vs. present, within) mixed factorial design.

Materials and Procedure

The questionnaires we used in Study 2 were back-translated to Chinese. All measures were the same as in Study 2, except that the upper limit of the donation amount was set to 100 Chinese yuan (about 15 US dollars). Participants completed the same tasks outlined in Study 2.

Results and Discussion

There were no significant differences in positive affect (α = .70, *t* (126) = 0.14, *p* = 0.89, *n.s.*) or negative affect (α = .69, *t* (126) = 0.31, *p* = 0.76, *n.s.*) between the mortality salience and control conditions. In addition, the results of paired *t* tests showed that the recipient manipulation was successful, as participants were able to distinguish between future-recipient and present-recipient conditions (*t* (127) = -16.44, *p* = 0.00). They recognized that it would take more time to finish the project in the future-recipient condition (*M* = 3.45) than it would the project in the present-recipient condition (*M* = 1.64).

We submitted the donation amounts to 2 (mortality salience) × 2 (charity) × 2 (recipient) mixed-model analyses of variance. The number of participants in each cell and the average of the two measures are shown in Fig 3. These analyses revealed that mortality salience constituted a main effect (*F* (1, 124) = 4.12, *p* = 0.044, η_p^2 = 0.032). The amount of money that participants were willing to donate to charity was greater in the mortality salience condition (*M* = ¥62.78, *SD* = ¥3.58) than in the control (dental pain) condition (*M* = ¥52.07, *SD* = ¥3.87). The results also revealed a significant interaction between recipient and se-

lected charity type (F (1, 124) = 6.39, p = 0.013, η_p^2 = 0.049). In terms of environmental charities, participants tended to allocate more financial resources to present generations (M = ¥60.33, SD = ¥4.15) than to future generations (M = ¥48.24, SD = ¥4.14). However, in terms of cultural charities, there were no differences in the donation amounts for people in the present (M = ¥61.47, SD = ¥3.84) and in the future (M = ¥59.66, SD = ¥3.84). Finally, the recipient constituted a main effect (F (1, 124) = 11.67, p = 0.001, η_p^2 = 0.086), because participants tended to allocate more financial resources to the present-oriented project (M = ¥60.90, SD = ¥2.83) than to the future-oriented project (M = ¥53.95, SD = ¥2.82).

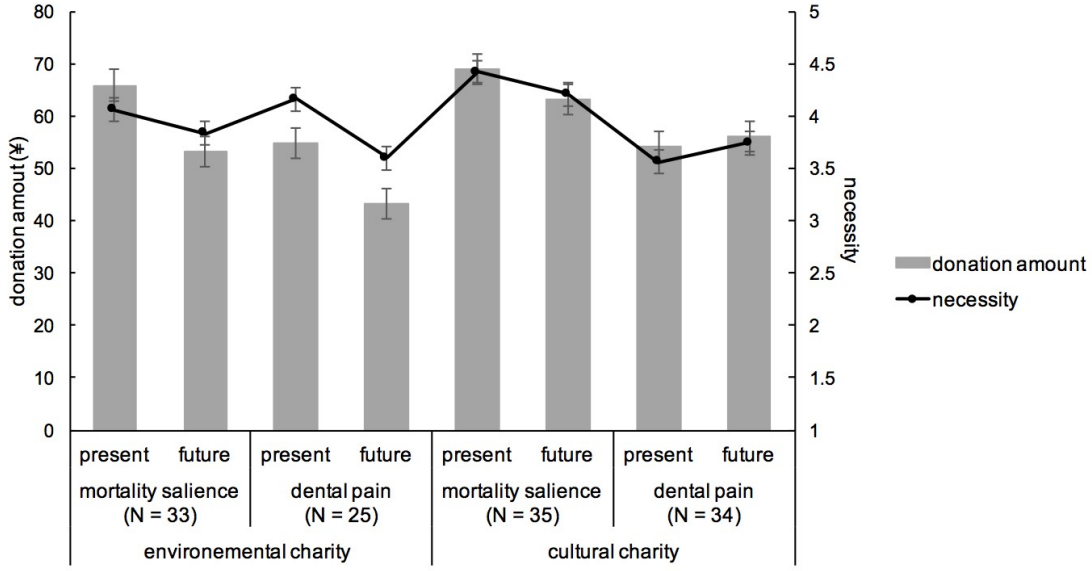

Figure 3. Results from Study 3: mean donation amount (bar graph) and necessity (line graph) among Chinese participants as a function of mortality salience, recipient, and type of charity. Error bars show standard errors.

We also submitted the necessity for each project to 2 × 2 × 2 mixed-model analyses of variance (Fig 3). The results showed that mortality salience (F (1, 123) = 7.80, p = 0.006, η_p^2 = 0.060) and recipient (F (1, 123) = 6.46, p = 0.012, η_p^2 = 0.050) were significant main effects. The mortality salience × types of charities × recipient interaction was significant (F (1, 123) = 4.93, p = 0.028, η_p^2 = 0.039). A simple effects test showed that, compared

to the control (dental pain) condition (M = 3.67, SD = 0.13), the mortality salience condition encouraged greater recognition of the need to protect culture, regardless of the beneficiaries (M = 4.32, SD = 0.13). Moreover, participants who were not asked to contemplate death tended to regard present-oriented (M = 4.16, SD = 0.18) pro-environmental projects as more necessary than future-oriented ones (M = 3.60, SD = 0.17). There was no such difference in the mortality salience condition.

The above results indicate that mortality salience had a positive, but not particular, effect on improving donations to environmental projects in China. Thus, our findings partly support H3. The results revealed that mortality salience encouraged Chinese participants to allocate more resources to both environmental and cultural protection. Based on mortality salience's capacity to increase recognition of the need to protect culture, it seems that, for Chinese participants, making efforts to protect and preserve culture is also considered to be an effective way to enhance self-esteem and suppress death anxiety. On the other hand, consistent with the results of Study 2, mortality salience did not lead to higher donations for future-oriented projects than for present-oriented projects, and the results confirmed participants' tendency to allocate more resources to the present than to the future. Hence, the results in China also did not support H4. Additionally, the data indicated that, without mortality salience, participants regarded present-oriented environmental projects as more necessary than future-oriented environmental projects. With mortality salience, however, the gap narrowed, and there was no significant difference in the perceived necessity of the two projects. Hence, it appears that mortality salience increases concern for future generations.

General Discussion

The present research examined whether reminding individuals of their mortality can encourage them to allocate more resources to environmental protection, focusing on the cases of two East Asian countries—Japan and China—where maintaining a harmonious relationship between nature and

humans is highly valued. According to TMT, reminding people of death motivates them to control their selfish desires and to allocate resources to others, but only when such behavior is culturally congruent and expected by society. Because cultural worldviews inform individuals' perception of their own worth and determine their access to symbolic immortality, they inform the actions that people take to build self-esteem and reduce fear of death. We conducted two studies in Japan and one study in China to test these assumptions. Consistent with TMT, results in the two countries indicated that mortality salience has a positive effect on donation behaviors, promoting larger donations to environmental charities. However, the results from all three studies did not support the assumption that mortality salience can encourage more donations to future-oriented projects than to present-oriented ones.

To our knowledge, the present research demonstrates for the first time the positive impact of mortality salience on pro-environmental behavior in East Asia. Individuals from East Asian countries, having adopted a nature-centric cultural worldview, are likely more willing to acknowledge connections between their behavior and its ecological effects than those with other cultural worldviews, which may motivate them to behave pro-environmentally. In contrast, previous research indicated that, after being reminded of death, Western people tended to distance themselves from nature and cling to a cultural worldview that denies the primary importance of the natural world (Vess, Arndt & Cox, 2012, Buttlar, Latz & Walther, 2017), decreasing their support for a sustainable future (Hu, Zheng, Zhang & Zhu, 2018). This may be because, in Western countries, individuals' values are influenced by the Abrahamic religions (Christianity, Islam, and Judaism), which generally assert that humans are separate from—and, in some cases, superior to—the rest of nature (Vess et al., 2008). Thus, it seems that the effect of mortality salience on individuals' environmental concern and pro- environmental behaviors depends heavily on their culturally informed view of nature. Based on this insight and the results of the present research, we advise our contemporaries engaging in environmental activism to employ dis-

tinct strategies in countries with different cultural backgrounds. For example, a poster with a countdown to human extinction may be more effective in increasing environmental awareness in individuals from East Asia than those from Western countries.

On the other hand, the results from Japan (Study 2) and China (Study 3) indicated that, even though these countries share a similar cultural background, the way in which mortality salience impacted participants' resource allocation decisions differed. Although the present studies confirmed that mortality salience increased individuals' donation amounts to pro-environmental projects in both countries, different responses were observed between the two countries when it came to pro-cultural projects. After inducing mortality salience, we saw that donation to cultural projects skyrocketed in China, while the amount remained unchanged in Japan. For Chinese participants, culture is tightly linked with nature. In fact, according to China's indigenous religion—Taoism—nature is considered the root of Chinese culture, and the highest realm of human life is understanding and following the laws of nature. Therefore, the concepts of nature and culture might be inseparable in the Chinese cultural worldview.

Moreover, there is a huge gap in the real environmental conditions of Japan and China. While Japan ranked 20th among 180 countries in the 2018 Environmental Performance Index (EPI)—where a higher rank entails better performance across environmental issues such as air quality and climate protection—China ranked 120th. It is possible that, compared to Chinese people, Japanese people derive more self-esteem from the environment, which may explain why mortality salience had a greater positive impact on Japanese pro- environmental behaviors than on Chinese pro-environmental behaviors. In sum, the above results revealed that participants in Japan and China increased self-esteem and buffered death anxiety by means of different resource allocation strategies informed by their own cultural and social backgrounds. As such, the results of the present study highlight the significance of carrying out more cross-cultural research; ex-

amining the essential differences between otherwise fundamentally similar countries may provide more accurate solutions to environmental problems. The results of the present research did not support the assumption that mortality salience can encourage East Asian young people to allocate more resources to future-oriented charities than to present-oriented ones, even when the chance to create a legacy was emphasized. One possible explanation for these results may be that participants considered themselves beneficiaries of present-oriented projects. Hence, it was reasonable that participants prioritized behaviors that would benefit both self and others over those that would benefit others exclusively. Nevertheless, in accordance with Wade-Benzoni et al. (2012), our results indicated that mortality salience does have a positive impact on increasing donations to projects that would benefit future others.

There are some noteworthy limitations to this research, and several future directions in which it can be taken. First, we only tested the hypotheses among university students, and the sample sizes were small. Considering that resource allocation decisions could be affected by individuals' age, income, and living conditions, future studies should collect data from a wider range of participants. Second, there was no direct evidence to indicate how Japanese and Chinese participants conceive of concepts like environment and culture, or their importance within their cultural worldviews. Future studies need to measure and compare Japanese and Chinese individuals' views on nature and culture. Moreover, future studies should also examine the differing legacy motivations of East Asian and Western individuals, as well as the effect that different views of nature can have on mortality salience, in order to provide more accurate explanations of how mortality salience encourages behaviors that are consistent with cultural worldviews. Third, future studies should take a closer look at how individual differences in social value orientations may moderate the impact of mortality salience on resource allocation for environmental protection. Wolfe and Tubi (2018) pointed out that mortality salience may produce negative effects in individuals who do not define their identity or derive their self-esteem from pro-environmental

norms, or in those who belong to a sub-group that does not encourage pro-environmental behavior. Vess and Arndt (2008) demonstrated that heightened mortality salience fostered environmental concern among those who are predisposed to acquire self-esteem from environmental action. Future studies should aim to provide more practical advice that accounts for individual differences to improve pro-environmental behaviors in daily life.

In conclusion, our results revealed that higher mortality salience increased participants' donation to environmental charities, regardless of whether the beneficiaries of this action constituted the present or future generation. The present research contributes to the understanding of culture's role in promoting pro-environmental behaviors through mortality salience.

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