

Mortality Salience Motivates the Defense of Environmental Values and Increases Collective Ecoguilt

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Abstract

In highlighting the potentially catastrophic effects of environmentally harmful behavior, proenvironmental campaigns may inadvertently induce what social psychologists call mortality salience. An uncomfortable awareness of one's inevitable demise, mortality salience motivates individuals to act in line with important social values and to feel guilty when they fail to do so. Guilt, in turn, motivates proenvironmental behavior. It is unclear, however, whether individuals who do not value the environment are influenced by such appeals. The present research tests the conditions under which drawing attention to mortality increases environmental guilt (i.e., ecoguilt) among individuals who vary in their endorsement of proenvironmental values. We find that mortality salience increases ecoguilt when individuals who strongly endorse environmental values have those proenvironmental values made salient. In comparison, mortality salience does not influence ecoguilt for individuals who weakly endorse environmental values, regardless of whether environmental values are made salient.

In the film *An Inconvenient Truth*, former United States Vice President Al Gore presented a picture of the Earth and argued the necessity of engaging in proenvironmental behavior:

You see that pale, blue dot? That's us. Everything that has ever happened in all of human history has happened on that pixel. All the triumphs and all the tragedies, all the wars, all the famines, all the major advances...it's our only home. And that is what is at stake, our

ability to live on planet Earth, to have a future as a civilization. I believe this is a moral issue, it is your time to seize this issue, it is our time to rise again to secure our future. (Guggenheim, 2006)

Gore's appeal resembles a tactic that is commonly used in proenvironmental campaigns. Oskamp (2001) has called it "the war against the common enemy of an uninhabitable Earth" (p. 388), and this type of appeal can be found in environmental documentaries (e.g., *The 11th Hour*, DiCaprio, 2007; *Planet in Peril*, Doss, 2007), television advertisements, and print media. In linking our failure to protect the environment with a certain and untimely demise, Gore and others may have activated what social psychologists call "mortality salience" (Greenberg et al., 1997).

Mortality salience

An uncomfortable awareness of one's inevitable death, mortality salience motivates people to act in line with important values (Rosenblatt et al., 1989). According to Terror Management Theory (Greenberg et al., 1997), human behavior is driven by the constant tension between the motivation to stay alive and the lingering awareness of our inevitable mortality (Becker, 1973). When mortality is made salient by, for example, watching an advertisement that depicts catastrophic weather due to climate change, one could either be paralyzed by fear and guilt or motivated to reduce those negative emotions. Greenberg and colleagues (1997) posit that the best way to transcend this discomfort is by endorsing and protecting a culturally acceptable worldview or set of values. Doing so upholds social order, thereby allowing individuals to leave a lasting legacy in the form of a functioning society (Solomon et al., 2004).

The type of behavior that mortality salience motivates depends on the nature of the values that are endorsed by, or accessible to, the individual. In general, individuals tend to exhibit behaviors that reflect their values (Oskamp & Schultz, 2005; Rokeach, 1973). In this

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way, values inform social norms, which then serve as standards of appropriate conduct in a given domain (Cialdini & Trost, 1998; Schwartz, 1977). The more individuals report that they are guided by their values, the more likely they are to believe it is normative or appropriate to engage in value-congruent behavior (Cialdini & Trost, 1998). For example, as the value that people place on the environment increases, so does willingness to engage in proenvironmental behavior (Bamberg & Moser, 2007; Karp, 1996; Schultz et al., 2005; Stern, 2000), especially when mortality salience motivates them to act according to their values (Fritsche et al., 2010; Vess & Arndt, 2008).

Many western societies, including the United States, are guided by competing values that encourage both prosocial (e.g., helping others) and proself (e.g., helping the self) behaviors (Schwartz, 1992). Consequently, it is not always clear which set of values is in effect and what behaviors are the most appropriate at any given time. This also makes the effects of mortality salience less predictable.

Norm Focus Theory (Cialdini et al., 1991) suggests that when a behavior is subject to competing norms, the norms that are both important and salient are considered to be the appropriate standard of behavior. That is, the norms which are brought to mind in a situation provide the details of the worldview that the individual is motivated to uphold (Cialdini et al., 1991). Dispositional factors—such as the extent to which individuals consider themselves to be environmental activists and support proenvironmental reform—activate proenvironmental norms on a regular basis (Cialdini et al., 1991). Mortality salience then serves as an amplifying effect—a force that further encourages individuals to act in line with these important and salient values. For example, when individuals endorse prosocial values, mortality salience increases prosocial behavior (Jonas et al., 2002); and if egalitarian values are made salient, mortality salience reduces prejudice (Gailliot et al., 2008).

Mortality salience has been shown to be an effective means to increase proenvironmental concern and behavior. For example, when individuals value the environment, mortality salience motivates them to act on their environmental concerns (Vess & Arndt, 2008). That is, when individuals achieve esteem from proenvironmental acts, mortality salience makes them more inclined to protect the environment in the future. Similarly, when proenvironmental values and norms are primed in an experimental setting, mortality salience increases proenvironmental attitudes, sustainable behavior in that laboratory setting, and proenvironmental behavior (Fritsche et al., 2010).

Mortality salience and ecoguilt

Mortality salience is an especially effective motivator of behavior because it enhances awareness of discrepancies between important

values and behaviors. When individuals become aware of a discrepancy between their values and behavior, they experience guilt (Frijda, 1988). More specifically, people feel guilty when they accept responsibility for an action or inaction that harms a valued other and conclude that the behavior is not representative of their character or societal standards (Estrada-Hollenbeck & Heatherton, 1998). Mortality salience also draws attention to cases where individuals violate normative standards. Arndt and colleagues (1999, 2005) showed that individuals who engaged in non-normative (i.e., creative) behavior reported more guilt after mortality was made salient relative to when it was not, especially when they considered behaviors that violated the norms of a valued worldview (Arndt et al., 1999, 2005). Therefore, the amount of guilt experienced in response to mortality salience-inducing appeals should depend on the extent to which one values certain standards of behavior.

Guilt is an important emotion because it motivates restitutive behavior (Frijda, 1988). For example, if attention is drawn to a harmful action, an individual may feel guilty and desire to make amends for that action. Therefore, if individuals who value the environment consider times when they did not protect the environment, they should experience guilt linked to their environmental behavior, or ecoguilt (Kaiser, 2006). Recent research shows that this is the case: When individuals experience ecoguilt for failing to protect the environment, they are more willing to protect the environment in the future (Ferguson & Branscombe, 2010; Mallett, 2012).

People may also experience collective—rather than individual—guilt if they identify with a group that is responsible for a harmful act (Doosje et al., 1998). For example, White Americans may experience White guilt upon recognizing that their racial group was responsible for enslaving African Americans (Swim & Miller, 1999). By extension, Americans may feel collective ecoguilt if they think Americans as a group do not do a good job of protecting the environment. Ferguson and Branscombe (2010) found that if people believed that humans cause global warming then they reported feeling collective ecoguilt and consequently exhibited more willingness to engage in reparative behavior (i.e., proenvironmental behavior). Regardless of whether it comes from internal or external standards, guilt helps people learn from past mistakes and avoid similar acts in the future (Frijda et al., 1989; Monteith, 1993).

The present research draws on Terror Management Theory (Greenberg et al., 1997) and Norm Focus Theory (Cialdini et al., 1991) to examine the connection between mortality salience, collective ecoguilt, and proenvironmental behavior. Because the influence that mortality salience has on behavior depends on what an individual values and what values are accessible, we predict that mortality salience will increase collective ecoguilt when individuals who strongly endorse environmental values have their environmental values made

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salient. For these individuals, mortality salience should enhance collective ecoguilt when they realize the failure of society to live up to proenvironmental standards. In comparison, for individuals who weakly endorse environmental values, mortality salience should not affect reports of collective ecoguilt, even if they are made to think about environmental values, because these individuals do not believe the environment is a key issue worth defending.

Method

Participants

One-hundred (25 men, 75 women) undergraduates at a Midwestern university were recruited from psychology courses for this study. Sixty-nine were White, 16 were Hispanic, 13 were Asian, 6 were African American, 2 were Alaskan Native/Native American, 2 were Middle Eastern, and 5 classified themselves as "other." All participants were US citizens.

Materials and procedure

Experimental sessions included between one and six participants. Each participant used a computer to individually complete all manipulations and measures. Participants first reported demographic information and endorsement of environmental values, then completed the value salience manipulation and the mortality salience manipulation. Participants were randomly assigned to the value salience (environmental, non-environmental) and mortality salience (mortality salient, control) manipulations. Finally, participants reported collective ecoguilt.

Demographics. Participants reported gender, race, and country of citizenship.

Environmental values. As an indirect measure of environmental values, participants indicated the extent to which they endorsed an environmental worldview using a scale from 1 *very conservative* to 7 *very liberal* to respond to the statement, "In terms of political orientation, how would you classify yourself on environmental issues?"¹ Individuals who consider themselves to be politically liberal report more environmental concern and are more supportive of

proenvironmental norms in the form of social policy change than individuals who consider themselves to be politically conservative (Buttel & Flinn, 1978; Dunlap & Gale, 1974). Moreover, Stern and Dietz (1994) found that willingness to take political action to protect the environment was related to valuing the environment.

Value salience manipulation. Participants were randomly assigned to one of two value salience manipulations. They either spent 10 minutes writing about how 10 values from Schwartz's (1992) Value Type reflected their environmental (environmental value salience condition) or everyday (non-environmental value salience condition) behavior. The text for the non-environmental value salience condition appears second in the brackets below:

Listed below are ten values that people sometimes use as guiding principles in their life. People often express values through everyday behaviors. Today we are interested in how people express their values through [environmentally friendly behaviors/daily activities]. [Environmentally friendly behaviors may include conserving natural resources like gasoline, electricity and water, or recycling/To get a sense of everyday behaviors, think about what people typically do during the course of an average day]. Underneath each value, please jot down a few words describing how engaging in an [environmentally friendly behavior/everyday behavior] may express that value. Feel free to be as abstract or concrete as necessary as you link the [environmentally friendly act/everyday act] to expressing each value.

The values were freedom, respect for tradition, social recognition, choosing goals, self-respect, equality, sense of belonging, influential, social justice, and responsible. Pilot testing showed the 10 values had strong face-validity with regard to environmental and non-environmental issues, and participants reported the same level of ease in linking both types of values to behavior.²

Mortality salience manipulation. Participants were randomly assigned to one of two levels of the standard mortality salience manipulation (Greenberg et al., 1997). Participants either spent 5 minutes writing about the thoughts and emotions they would experience when thinking about their own death (mortality salient

¹We also asked about more general social values using the item, "In terms of political orientation, how would you classify yourself on social issues?" Though the item about social values was strongly and positively correlated with the item about environmental values ($r=0.72$), it was not associated with collective ecoguilt ($r=0.10$). This reinforces the idea that the item assessed values that are specifically related to the environment and not simply political orientation.

²Twenty undergraduate students participated in a focus group where they identified 15 values from Schwartz's (1992) value circumplex that could apply to both proenvironmental and non-environmental behaviors. From this list of 15, they discussed and agreed on the top 10 values that could just as easily be applied to motivating proenvironmental and non-proenvironmental behavior.

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condition) or the thoughts and emotions they would experience when going to the dentist to have a cavity filled (control condition). Writing about a visit to the dentist is often used as a control condition in mortality salience research because, much like thinking about one's death, it presumably brings about unpleasant thoughts and feelings. A visit to the dentist does not, however, have the existential implications (e.g., considering one's meaning in life and inevitable death) that thinking about one's death might. Therefore, participant reports of anxiety and difficulty associated with the writing task should not differ by condition, but awareness of mortality should be aroused in the mortality salient condition (Greenberg et al., 1997).

Collective ecoguilt. Participants answered five items in response to the prompt,

Think about the behavior of Americans as a group. To what extent do you feel guilty that Americans: consume non-renewable natural resources; contribute to global warming; can do more to minimize the environmental impact that we have on the earth; do not always recycle items like cans or paper; and waste natural resources

using a scale from 1 *not at all guilty* to 7 *extremely guilty* ($<1c$ grk $\alpha > \alpha = 0.96$).³

Results

Manipulation checks

To examine effectiveness of the values manipulation, two coders independently counted the number of times that participants wrote words related to environmental behaviors (e.g., recycling, conserving water, cleaning up after oneself, not polluting, protesting polluting factories) and the total number of words written. In the case of multiple word phrases (e.g., not polluting), coders counted only the environmental words (e.g., polluting). Providing evidence that the value salience manipulation was effective, participants in the environmental value salience condition used significantly more environmental words ($M=8.08$, $SD=4.88$) than those in the non-environmental value salience condition ($M=3.80$, $SD=3.21$), $t(98)=4.94$, $p<.001$, $d=0.99$. Furthermore, the number of words

³In addition to the context-specific emotion of collective ecoguilt, participants also completed the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988) to demonstrate that the predicted pattern of results would be unique to collective ecoguilt. In line with expectations, collective ecoguilt was not significantly correlated with state guilt ($r=0.08$), and none of the independent variables or their interactions influenced state guilt ($ps>.20$).

written did not differ across condition, $t(98)=0.21$, $p=.53$, $d=0.04$, indicating that participants exerted equal effort across conditions. Coder reliability was acceptable ($r=0.95$).

Following Greenberg et al. (1997), we also tested the effectiveness of the mortality salience manipulation by asking participants how anxious they were and how difficult it was to write about their assigned topic on a scale from 1 *not at all* to 7 *extremely*. Coders also examined the content of participants' writings to ensure that participants wrote about the assigned topic. Providing evidence that the mortality salience manipulation was effective, we found that participants in the mortality salient condition reported the same levels of anxiety ($M=3.47$, $SD=1.72$, $M=3.98$, $SD=1.98$), $t(98)=1.36$, $p=.18$, $d=0.27$, and difficulty ($M=2.73$, $SD=1.76$, $M=2.36$, $SD=1.64$), $t(98)=-1.08$, $p=.28$, $d=0.22$, as participants in the control condition. Furthermore, all participants correctly followed instructions regarding the topic of their writing (i.e., death or dentist).

Primary analyses

We predicted that mortality salience would increase collective ecoguilt when individuals who strongly endorsed environmental values had environmental values made salient. In comparison, we predicted that mortality salience would have no effect on collective ecoguilt for individuals who weakly endorsed environmental values, regardless of whether environmental values were made salient. Because we had one continuous independent variable (environmental values) and two categorical independent variables (value salience; mortality salience), we followed procedures outlined by Aiken and West (1991) for testing interactions in multiple regression. We centered ratings of environmental values and used that variable along with value salience (-1 = non-environmental, 1 = environmental), mortality salience (-1 = control, 1 = mortality salient), and all the two-way interactions and the three-way interaction as predictors of collective ecoguilt (see Table 1 for descriptive information).

As predicted, we found a significant three-way interaction between environmental values, value salience, and mortality salience (see Table 2). To determine the pattern of the three-way interaction, we examined the two-way interaction between value salience and mortality salience for those who strongly endorsed environmental values separately from those who weakly endorsed environmental values. We calculated a variable that represented strong (one standard deviation above the mean) and weak (one standard deviation below the mean) endorsement of environmental values in our sample (Aiken & West, 1991).

For those who strongly endorsed environmental values, the two-way interaction between value salience and mortality salience was significant, $b(SE)=0.62(0.27)$, $t(92)=2.29$, $p=.02$, $pr^2=.05$. As

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Table 1. Descriptive Statistics for Experimental and Control Conditions

VARIABLE	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
	Environmental value salience	Non-Environmental value salience	Overall
	(<i>N</i> =51)	(<i>N</i> =49)	(<i>N</i> =100)
Environmental values	5.24 (1.21)	5.00 (1.57)	5.12 (1.39)
Ecoguilt	5.95 (1.99)	5.28 (1.99)	5.62 (2.00)
VARIABLE	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
	Mortality salience	Control (<i>N</i> =45)	Overall
	(<i>N</i> =55)	(<i>N</i> =45)	(<i>N</i> =100)
Environmental values	5.16 (1.51)	5.09 (1.26)	5.12 (1.39)
Ecoguilt	5.57 (2.05)	5.68 (1.97)	5.62 (2.00)

Note. No significant differences between treatment and control (i.e., environmental value salience and non-environmental value salience; mortality salience and control) were observed for environmental values or collective ecoguilt, $p_s > .09$, $d_s < .33$.

predicted, simple slopes testing indicated that mortality salience increased collective ecoguilt when environmental values were salient compared with when non-environmental values were salient, $b(SE) = 0.66(0.35)$, $t(92) = 1.90$, $p = .06$. In the control condition, collective ecoguilt did not differ depending on the type of values that were salient, $b(SE) = -0.59(0.42)$, $t(92) = -1.41$, $p = .16$ (see Fig. 1a). No other slopes were significant. Moreover, for those who more

weakly endorsed environmental values, the two-way interaction between value salience and mortality salience was not significant, $b(SE) = -0.16(0.28)$, $t(92) = -0.58$, $p = .56$, $pr^2 = .003$ (see Fig. 1b).

Discussion

The present research investigated the conditions under which mortality salience was most likely to amplify collective ecoguilt. In

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Table 2. Results for the Moderation Analysis Regressing Collective Ecoguilt on Environmental Values, Value Salience, and Mortality Salience

VARIABLE	<i>b (SE)</i>	β	<i>t</i>	<i>p</i>	pr^2
Environmental values	0.45 (0.14)	0.31	3.10	.003	.09
Value salience	0.27 (0.19)	0.14	1.42	.16	.02
Mortality salience	-0.06 (0.19)	-0.31	-0.34	.74	.00
Environmental values X Value salience	-0.17 (0.14)	-0.12	-1.18	.24	.01
Environmental values X Mortality salience	0.02 (0.14)	0.01	0.13	.89	.00
Value salience X Mortality salience	0.23 (0.19)	0.12	1.23	.22	.02
Environmental values X Value salience X Mortality salience	0.28 (0.14)	0.20	1.96	.05	.04

$R^2 = 0.19$, adjusted $R^2 = 0.13$, $F(7, 92) = 3.16$, $p = .005$.

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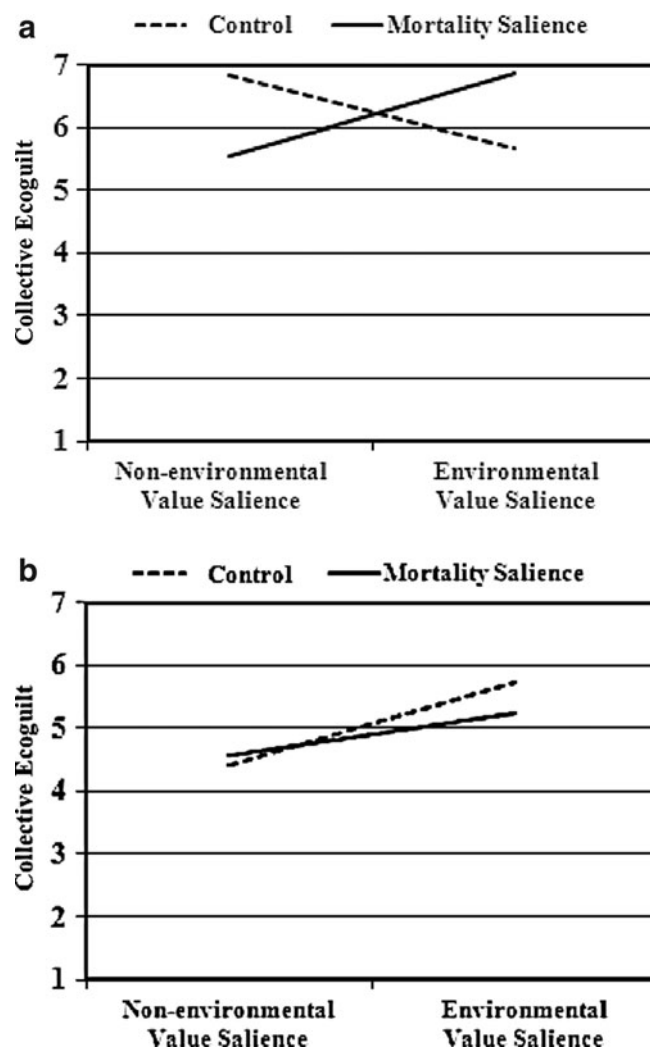


Fig. 1. (a) Collective ecoguilt as a function of mortality salience and value salience for those who strongly endorse environmental values. (b) Collective ecoguilt as a function of mortality salience and value salience for those who weakly endorse environmental values.

line with Terror Management Theory (Greenberg et al., 1997) and Norm Focus Theory (Cialdini et al., 1991), mortality salience was particularly likely to produce collective ecoguilt for individuals who were motivated to defend a valued worldview—especially when that worldview was currently in focus. More specifically, we found that relative to a control condition, mortality salience boosted reports of collective ecoguilt when participants who strongly endorsed environmental values considered

how their values were expressed by engaging in proenvironmental behaviors, as opposed to everyday behaviors. Value salience and mortality salience did not influence collective ecoguilt for participants who more weakly endorsed environmental values.

In addition to demonstrating when mortality salience-based proenvironmental appeals may encourage collective ecoguilt, these findings add to existing research on environmental values (Shultz et al., 2000), norms (Fritsche et al., 2010), and behaviors (Ferguson & Branscombe, 2010). We find that when Americans who strongly value the environment consider their country's violation of proenvironmental norms, a manipulation that enhances the motivation to defend their cultural worldview amplifies ecoguilt. Previous research has linked collective ecoguilt to an increased willingness to engage in proenvironmental behavior (Ferguson & Branscombe, 2010; Mallett, 2012) and shown that when environmental norms are accessible, mortality salience increases individuals' motivation to engage in proenvironmental behavior (Fritsche et al., 2010). The present research links these literatures and highlights factors that may increase ecoguilt.

Mortality salience did not increase collective ecoguilt among individuals who weakly endorsed environmental values, regardless of whether environmental values were made salient. It appears that individuals may need to derive some amount of self-worth or at least partially base their worldview on protecting the environment to be motivated to conform to proenvironmental norms and experience ecoguilt. If individuals see themselves as members of a subgroup who rejects the majority's proenvironmental concerns, then drawing attention to norm violation should be ineffective at eliciting either guilt or proenvironmental behavior. This presents a challenge to those attempting to encourage proenvironmental behavior by highlighting the devastating consequences of failure to protect the environment. Perhaps those who do not hold environmental values as part of their worldview could be motivated by mortality salience to engage in proenvironmental behavior through the defense of other important goals applied to the environment. For example, those who express strong levels of self-enhancement could be encouraged to think about how the catastrophic effects of climate change might influence their ability to act in their own self-interests.

We chose to investigate ecoguilt because of its theoretical connections with mortality salience, social norm violation, and reparative behavior. However, other emotions—including shame and anger—likely occur when individuals or social groups violate proenvironmental norms. Shame motivates withdrawal, whereas anger motivates negative approach behavior (Frijda, 1988). It is possible that ecoshame could inhibit proenvironmental behavior and that ecoanger could encourage individuals to act against those who harm the environment.

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In comparison, positive emotions like pride may result when individuals conform to proenvironmental norms. Pride should reinforce normatively appropriate behavior (Isen & Levin, 1972). Future research should continue to explore ways to understand and harness the power of emotions as they pertain to the environment.

Limitations and future directions

An important limitation of the present research is the use of a single measure of environmental values. It is generally preferable to have a multi-item measure of a construct as complex as environmental values (Schultz, 2001; Schultz et al., 2005; Schwartz, 1992). In addition, the environmental values measure used was indirect. Although much research demonstrates that environmental values and environmental political ideology are closely related (Buttel & Flinn, 1978; Dunlap & Gale, 1974; Stern and Dietz, 1994), utilizing a political ideology measure as a proxy for environmental values likely ignores the subtle nuances between these constructs. This limits our ability to firmly conclude that it is environmental values, not political ideology, that determines the effectiveness of mortality salience on collective ecoguilt (see footnote 2). Future research should use a more direct, multi-item measure of values (e.g., Schwartz's Value Inventory; Schwartz, 1992).

Although common practice in psychological research, the use of a student sample to study a global issue like environmental emotions has obvious limitations for generalizability. Social activism is an important part of university culture (Van Dyke, 1998), and students may be consistently made aware of environmental issues by environmental groups. If environmental groups bring proenvironmental values to mind, doing so may independently motivate proenvironmental behavior. In this case, our effects could be attributable to the culture of that institution rather than the environmental values measure or the value salience manipulation. In populations where environmental values are only rarely considered, we might expect find more variability in reports of collective ecoguilt, thereby provided a very different picture. Future research should extend the present work into these populations, especially when members of these populations may have the power to make social policy changes that could favorably benefit the environment.

Finally, although the predicted pattern of mortality salience increasing collective ecoguilt when environmental values were salient was in line with our hypothesis, collective ecoguilt is just as high for individuals in the control and non-environmental value salience conditions. Mortality salience motivates the defense of salient values, and it is possible that those in the non-environmental value salience condition were actually made to care more about non-environmental

issues, subsequently reducing ecoguilt. In comparison, those who were in the control condition but still strongly endorsed environmental values had high collective ecoguilt regardless of mortality salience. Although these differences were not statistically significant, future research should further explore why collective ecoguilt might be similarly high among those who value the environment but are not primed with environmental values or mortality salience.

Conclusion

By drawing attention to the potentially catastrophic effects of our failure to protect the environment, Al Gore's appeal to protect the environment may have inadvertently induced mortality salience and, consequently, feelings of collective ecoguilt among those who value the environment. Our research indicates that the effectiveness of this approach depends on whether environmental values are important to the audience and in focus at the time of the appeal. When individuals who value the environment have their environmental values activated and develop a clear perception that the US, as a group, does a poor job of adhering to proenvironmental social norms, they experience collective ecoguilt. Previous research (Ferguson & Branscombe, 2010; Mallett, 2012) demonstrates that ecoguilt, in turn, motivates behavior that mitigates environmental damage. The present research also suggests that it is unlikely that a mortality salience-inducing appeal would influence individuals who do not value the environment. Thus, utilizing mortality salience to induce emotions like guilt may be an appropriate tool if designed with the proper audience in mind.

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Received: August 8, 2012
 Accepted: December 21, 2012

- AU1 Frijda et al. 1989 and Shultz et al. 2000 not found in the reference list. Please reconcile.
- AU2 Kasser & Sheldon not found in the text. Please reconcile.