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Conserving nature out of fear or knowledge? Using threatening versus connecting messages to generate support for environmental causes

Corresponding author: Netta Weinstein, Cardiff University[1]

Michael Rogerson, University of Essex[2]

Joshua Moreton, University of Essex[2]

Andrew Balmford, University of Cambridge[3]

Richard B. Bradbury, Royal Society for the Protection of Birds[4]

1. Cardiff University
70 Park Place
Cardiff, Wales CF10 3AT
+44 (0)2920 879435
weinsteinn@cardiff.ac.uk

2.University of Essex
Department of Psychology
University of Essex
Wivenhoe Park
Colchester CO4 3SQ
United Kingdom

3. Royal Society for the Protection of Birds
RSPB Centre for Conservation Science,
RSPB, The Lodge, Sandy, Beds, SG19 2DL, UK
richard.Bradbury@rspb.org.uk

4. University of Cambridge
Conservation Science Group
Department of Zoology
University of Cambridge
Downing St
Cambridge CB2 3EJ, UK
apb12@cam.ac.uk

Abstract

Threatening and connecting messages are two types of appeals commonly used to encourage conservation behaviors, yet little research has examined their psychological impacts and behavioral outcomes. This paper describes two studies contrasting these approaches with a neutral comparison and testing their effects on state levels of negative affect, caring, and openness, psychological states which we expected in turn would encourage conservation behavior. Participants viewed visually identical nature videos with no text, connecting text or negative text. They then reported on their state experiences, and were asked to engage in conservation behaviors, including supporting conservation organizations. Findings showed that connecting messages increased caring and openness, and decreased negative affect, and by doing so elicited more conservation behaviors. On the other hand, threatening messages showed no beneficial effects above a neutral comparison without an appeal. Our findings, which we contextualize in motivational theory, can be used to inform the use of messages to promote conservation.

Keywords: Conservation marketing, motivation, nature connection, education, threat

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Many advertisement campaigns by pro-environmental, nature conservation organizations use threatening messages to elicit conservation behaviors and to gain support for the organization. For example, the World Wildlife Fund for Nature's (2012) 'Text for Tigers' campaign advertisement uses messages such as "wild tiger numbers have dropped to as few as 3,200'; and 'more than 90% of tiger habitat has been destroyed". These messages represent a form of 'fear appeal' (for a review of fear appeals, see Williams, 2012; fear is referred to broadly, and may be cognitive rather than affective) aimed to elicit a sense of immediacy and urgency. In this paper we contrast threatening appeals with connecting communications that teach people about nature; for example, in the same 'Text for Tigers' campaign, "Kamrita is a Bengal tiger, around 7-8 years old and has been photographed on several occasions with two young cubs". Messages such as this, which increase the salience of environmental topics and are non-threatening, may be more successful in achieving conservation behavior change. Such information may connect individuals to nature in a meaningful and personal way.

Connecting Messages

We employ self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000) as a framework for understanding the role of connecting appeals in environmentally responsible behavioral change. SDT argues that individuals are naturally oriented toward relatedness with others and with the outside world, and that connecting to nature is one way to satisfy the relatedness need (Ryan et al., 2011). Empirical work from the SDT literature shows that having such needs satisfied increases one's openness to experience and reduces defensiveness (Hodgins & Knee, 2002), and that need satisfaction is linked to more feelings of empathy and caring (Weinstein, Hodgins, & Ryan, 2010). In addition, empirical work has

linked both nature connection and need satisfaction to an absence of negative relative to positive affect (positive emotions such as happiness vs. negative emotions such as sadness or fear; Fredrickson, 2008; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Ryan & Deci, 2012; Tarrant, 1996; Ulrich, 1981). Lower negative affect has been related, in turn, to giving and other prosocial behaviors (e.g., Cunningham, 1979; Hoffman, 2010; Isen, Clark, & Schwartz, 1976; Isen & Levin, 1972; Kazdin & Bryan, 1971).

In the context of conservation, connecting to nature promotes caring, encourages pro-environment decision-making, and relates to lower likelihood of making selfish decisions (Dutcher et al., 2007; Gosling and Williams, 2010; Hoot and Friedman, 2011; Mayer & Frantz, 2004; Vining, Merrick, & Price, 2008). Experimental work further suggests that connecting to nature promotes life goals and decisions that reflect caring (Weinstein, Przybylski, & Ryan, 2009). In sum, these findings indicate that connecting with nature is one important way to encourage people to care about others and the natural world. This research is significant in light of work showing that modern living is associated with people interacting less with nature, knowing less about natural environments, and having less of an understanding of how the natural world operates (e.g., Balmford, Clegg, Coulson, & Taylor, 2002; Kahn & Kellert, 2002; Louv, 2005; Nabhan & Trimble, 1994; Pyle, 1993, 2003). We argue that connecting messages educate people about aspects of the natural environment, such as animals, plants and their habitats. This model is somewhat akin to the contact hypothesis for group behavior, which contends that intergroup relations can be improved by connecting disparate individuals to one another in meaningful ways (e.g., Amir, 1969) – in this case personalizing the natural world provides a basis for meaningful contact between nature and people.

Threatening Messages

Threatening messages about large-scale problems with irreversible consequences are also used often in environmental appeals. Such messages may elicit different reactions from viewers: for some, threatening messages may drive action. However, for others research suggests that threatening messages are ineffective unless accompanied by an appraisal of high self-efficacy and the belief that behavior change will reduce the threat (Williams, 2012). Without this, threatening messages can elicit defensive responses that are lower in openness to new information and are characterized by avoidance aimed at reducing tension (Roskos-Ewoldsden et al., 2004), paired with other defensive reactions such as reactance and denial (Witte, 1992; Witte & Allen, 2000) and more negative affect (Harris & Napper, 2005; Dillard & Nabi, 2006). Threatening messages may therefore elicit defensive processes that not only discourage individuals from attending to the message, but also lead to lower engagement with the issue (Gibb, 1961). In this way defensiveness resulting from threatening messages can act as a barrier to internalizing further messages. This model, applied to global issues such as climate change, can help explain empirical studies that find, counter-intuitively, that the more people are informed about climate change, the less likely they are to feel responsible for global warming (Kellstedt, Zahran, & Vedlitz, 2008).

Work focusing on threatening messages in the conservation domain suggests they are frequently employed to raise awareness and encourage support (Weberling, 2012). However, people have low perceptions of personal efficacy to prevent global problems such as species level extinction (Kellstedt, Zaharan, & Vedlitz, 2008), so the use of negative messages may have the opposite effect, conveying hopelessness and dissuading conservation actions in favor of endeavors that are more likely to be successful (Vasi & Macy, 2003). Indeed, marketing and branding companies who work with conservation causes suggest humanizing and personalizing is key to effective messages, and discourage the use of doomsday-type messages (Frogleaps, 2014; Futerra, 2014) – yet little empirical work supports this view.

Present studies

Here we tested the relative effectiveness of threatening and connecting messages in the context of raising support for biodiversity conservation. Threatening messages are widely used by conservation organizations (Weberling, 2012) but their effectiveness has rarely been tested (Vasi & Macy, 2003); on the other hand, while there is reason to believe that facilitating a connection with the natural world is critical to increasing support (Vining, 2003), this strategy has often been overlooked by conservation organizations.

To address these gaps in understanding, we conducted two studies that contrasted connecting with threatening messages to examine their effectiveness in increasing conservation behaviors and support for conservation organizations. In both studies, we showed otherwise matched nature videos with (1) threatening text, (2) connecting text, or (3) no text (neutral condition). We measured a mechanism that might underlie any effects on behavior: state experiences of negative affect (based on work reviewed above). In the second study, we also measured state caring and openness as two additional mechanisms of pro-environmental behavior. Based on literature arising out of self-determination theory (Ryan & Deci, 2000), we anticipated that connecting interventions would lower negative affect, increase caring, and foster openness, and by doing so would encourage conservation behaviors as compared to a neutral intervention, whereas threatening messages would have the opposite effect. To understand the impact of connecting messages on conservation behavior, we tested three complementary indicators: Intention to provide financial support (Study 1), pro-environmental behavior (operationalized as a decision to use recycled paper; Study 1), and interest in conservation organizations (operationalized as the duration spent on the World Wildlife Fund for Nature website; Study 2). Thus, we relied on behavioral as well as self-reported indicators, and on financial and non-financial indicators.

In our first study we manipulated the texts in otherwise relatively neutral videos of rainforests, and then examined negative affect, caring and giving. By conducting a second study we were able to test our findings in the context of less well-known causes than rainforest conservation, using a film of animals not widely known to be endangered (e.g. snake, owl, terrapin, Figure 4), and this time measuring engagement with an international conservation organization (the World Wildlife Fund for Nature, WWF).

Methods

Participants

In Study 1, participants were 60 students (34 women) studying Psychology in the UK or British members of the public, aged 20 to 61 years (M = 28.7 years, SD = 9.55 years), who grew up in urban (48%) or rural (52%) environments primarily in the UK, with a small number of participants from East Asia, Southeast Asia, Continental Europe, the United States, and South America. Preliminary analyses showed no notable statistical interactions between participants' childhood environment and their assignment to condition (described in 'procedures' below), $Fs(2, 54) < 1.79$, $ps > .18$, between age and condition, $Fs(2, 54) < 0.99$, $ps > .36$, or between gender and condition, $Fs(2, 54) < 2.84$, $ps > .07$, suggesting that condition did not impact participants differently as a function of these differences.

In Study 2, participants were 71 students (58 women) studying Psychology in the UK and with similar national distributions to participants of Study 1. They were aged 18 to 54 (M = 20.1, SD = 4.89), and grew up in primarily urban (73%) environments, with the remainder growing up in other rural areas. Childhood environment did not interact with condition in predicting negative affect, caring, openness, or time on website, $Fs(64) < 1.63$, $ps > .21$.

Procedures

Study 1

As a framing for the study, participants were told that they were taking part in a study about images and visualization in reaction to a short film. Participants were randomly assigned to one of three conditions: (1) threatening, (2) connecting, and (3) neutral, which determined which of three videos they would see. Videos lasted 3 minutes, were visual only (included no audio), and showed above- and below-canopy film footage of rainforests (Figure 2); this visual content was identical across conditions.

Figure 2. Images taken from Study 1 manipulation. On the top are snapshots from the neutral condition where no text was use; on the bottom left is a snapshot from the threatening condition, and on the bottom right is an image from the connecting condition (original images were presented in color).

Messages presented at the bottom of the screen were manipulated as a function of condition. Images were paired with (1) messages that presented threats to the continued existence of rainforests, e.g., 'almost half of the world's original four billion acres of rainforest are now gone'; these messages presented material aimed at eliciting reader concern or worry, or fearful thoughts that something bad is likely to happen; (2) connecting messages that informed readers about specific and relatable facts relevant to the image, e.g., 'Fossil

records show that the forests of Southeast Asia have existed for 70 to 100 million years; or (3) no messages (in the neutral condition). Following presentation of videos, participants completed a survey to measure negative affect.

After completing the survey, participants were asked to draw a picture (in line with our explanation that the study involved imagery). The experimenter placed a set of colored pens and two paper notepads onto the desk in front of the participant, and asked participants to 'use whatever you like' to 'draw anything you like'; giving them two minutes to do so. The paper notepads and pens were placed randomly between trials, to prevent bias. This task offered a decision relevant to the environment: subjects could use (1) a 'Pukka Pads' notepad, or (2) a 60% recycled paper notepad (recycling sign indicated with symbol on front).

Before leaving, the experimenter reminded participants they had each been allocated £1 from monies left over from a previous research grant to donate to their preferred organization from a choice of three: 'The Rainforest Alliance', (an organization which directly addresses the environmental concerns explored in the videos), 'RSPCA' (Royal Society for the Prevention of Cruelty to Animals) and 'University Studentship Fund'. Subjects were handed a £1 coin and asked to donate it into their preferred collection pot, located on a table positioned immediately outside of the test-room and out of the sight of the experimenter. Positioning of the three collection pots in relation to one another was randomized between trials, to eliminate bias from easier access to one or another of the pots.

Study 2

Participants arrived to the lab to participate in an 'images study' – a study about how people understand and interpret films and images. Before arriving, participants were randomly assigned to one of three conditions that were identical to those of Study 1: (1) threatening, (2) connecting, or (3) neutral. All participants saw a video lasting two minutes and depicting a number of animals against a white surface (see Figure 3 for an example). The

general public is not generally aware of the endangerment of these species (e.g., owl, and unlike the giant panda). Each animal was shown for a short time, engaging in simple activities. In this study, visuals were paired with neutral instrumental music as background, presented consistently across conditions, to encourage attention to the video. As in the previous study, videos were paired with threatening, connecting, or no text presented on the bottom of the screen; the number of texts and their lengths were comparable across conditions. Threatening texts highlighted population loss of animals due to human intervention, whereas connecting texts taught participants about the habits and preferences of the animals on screen. In the neutral condition, no text was presented. Following the video, participants completed an online survey assessing state negative affect, openness to experience, and caring.

Following this, participants were presented with a description of WWF, and they were then given a link to the WWF homepage and instructed to **"**Click on the link below to learn more about them and what they do". In this study, we used a one-way mirror facing the computer and a stopwatch to record the number of milliseconds participants spent on the website. Time ranged from 0 (did not go on website at all) to 120.40 seconds (minimum for those who went on the website was 2.03 sec; *M* for those who went on the website was 19.79 sec, *SD* = 25.53 sec). Before leaving, participants were asked to guess the nature of the study; no participants correctly identified the procedures. They were then debriefed and sent home.

Self-reports

Study 1

State measures were assessed following the manipulation with a series of items embedded among one another and presented in a random order. To measure negative affect (negative emotions relative to positive ones), participants responded to ten items adapted from the Positive and Negative Affect Schedule (Watson, Clark, Tellegen, 1988), assessing

negative and positive (reversed, r) emotions: happy (r), upset, ashamed, hopeful (r), which were paired with a 1(*not at all*) to 7(*very much*) scale (α = .85).

Study 2

A shortened version of the negative affect scale (α = .85; 3 items) from Study 1 was used, and paired with a 7-point scale as before. In addition, caring was measured with three items (caring, connected, inviting), which were paired with the same seven-point scale. Items had acceptable internal reliability, r = .83. Finally, openness was measured with three items (open, receptive, protected) using the same 7-point Likert scale (α = .60). Items were averaged to reflect an on overall score indicative of more state openness after the manipulation.

Data analytic strategy for both studies

Whenever dependent variables were continuous, analyses of variance (ANOVAs) were used to compare the three conditions (for example, when predicting mechanisms and the Study 2 continuous behavior), followed by LSD post-hoc analyses. In Study 1, lab behaviors were dichotomous and as such we tested them using logistic regression with dummy coded condition (where both conditions were compared to the neutral group). Depending on whether the dependent variable was continuous or dichotomous, multiple or logistic regression analyses paired with bootstrapping tested the indirect effects of mechanisms on behavior.

Results

Study 1

Negative affect. Condition predicted negative affect, $F(2, 57) = 5.84$, $p = .005$. Post-hoc analyses suggested that threatening messages ($M = 3.50$) resulted in higher negative affect than both the connecting ($M = 2.75$), $t = 2.34$, $p = 0.02$, and neutral ($M = 2.93$), t =

3.31, $p = 0.002$, conditions, though there was no difference between neutral and connecting conditions, $t = 0.92$, $p = 0.36$ (See Figure 3).

Pro-environmental behaviors (notepad choice). Contrast coded logistic regressions were conducted to predict notepad choice (recycled vs. premium) from condition. Findings showed no benefit of threatening over neutral messages, $b = .18$, wald $\chi^2 = 0.67$, $p = .80$. On the other hand, those in the connecting messages condition were more likely to use recycled paper than those in the neutral condition, $b = 1.42$, wald $\chi^2 = 4.16$, $p = .04$.

Financial contribution to an environmental cause. Similar regressions compared both threatening and connecting messages to the neutral condition in predicting financial support for a rainforest conservation organization. Findings showed a trend wherein threatening messages were somewhat beneficial over the neutral condition, $b = 1.19$, wald $\chi^2 = 3.12$, $p = .08$. When participants viewed connecting messages, however, they were significantly more likely to contribute to a conservation cause, $b = 1.64$, wald $\chi^2 = 5.44$, $p = .02$.

Indirect effects. Bootstrapping analyses (Hayes, 2009; Preacher & Hayes, 2008) indicated indirect effects were present between the connecting condition and choice of charity; the estimate of the indirect effect for caring was -.605 with a 95% bootstrap confidence interval of -1.493 to -.108; this interval did not include zero, indicating the effect was sufficiently robust. There was no indirect effect for the connecting condition and choice of paper through negative affect, d = -.011 with a 95% bootstrap confidence interval of -.384 to .519

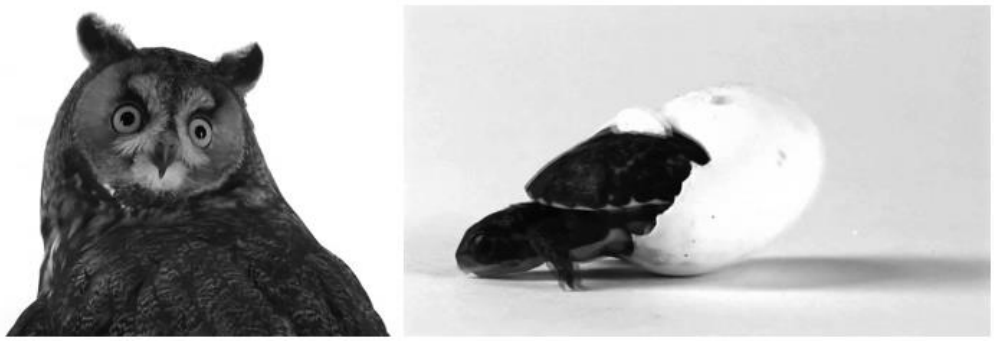

Figure 4. Images taken from video used in the Study 2 manipulation (original images were in color).

Study 2

Negative affect. Analyses of variance (ANOVAs) showed that condition predicted negative affect, $F(2, 64) = 3.51$, $p = .04$. Posthoc analyses indicated that participants in the neutral and threatening conditions had similar levels of negative affect (*M*s = 2.06 and 1.99, respectively), $t = .32$, $p = .75$. In comparison, the connecting condition ($M = 1.50$) predicted lower negative affect than either of the other conditions *ts* = 2.29, $p = .03$ and 2.04, $p = .04$ (Figure 5).

Caring. Condition also predicted participants' reports that they felt caring after the video, $F(2, 64) = 4.98$, $p = .01$. Posthoc analyses indicated no difference between the threatening condition ($M = 3.17$) and the neutral condition ($M = 2.91$), $t = 1.06$, $p = .29$. On the other hand, individuals exposed to the connecting condition reported more caring ($M = 3.68$) than both other groups: connecting versus neutral: $t = 3.09$, $p = .003$, connecting versus threatening: $t = 2.12$, $p = .04$.

Openness to experience. Analyses also showed condition predicted more openness after the video, $F(2, 64) = 3.51$, $p = .04$. Posthoc analyses indicated that participants in the threatening condition ($M = 3.04$) were no higher in openness to experience than those in the neutral group ($M = 2.91$), $t = 0.68$, $p = .50$. On the other hand, participants in the connecting condition ($M = 3.42$) reported feeling more open than did those in the neutral group, $t = 2.54$, $p = .02$.

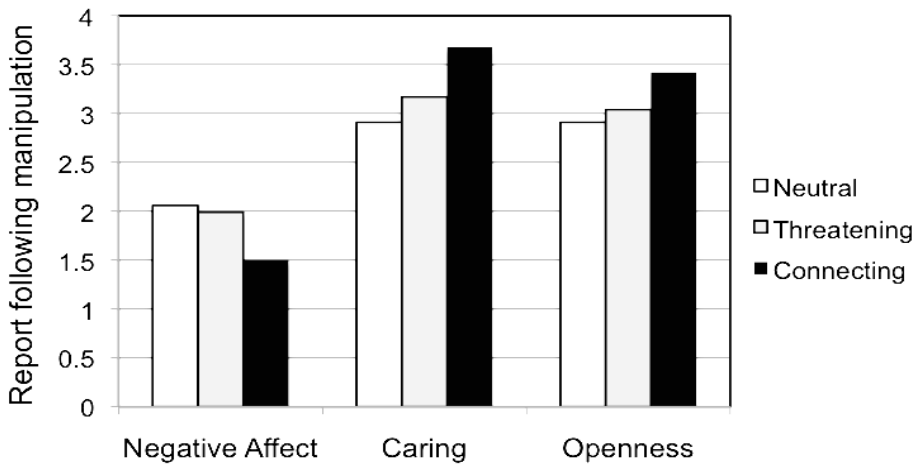

Figure 5. Study 2 mean scores depicting the effects of condition (neutral, threatening, connecting) on state levels of negative affect, caring, and openness following the video.

Time on WWF website. The manipulation predicted amount of time spent looking at the WWF website (recorded to the .01 second), $F(2, 64) = 3.29$, $p = .04$. Using threatening messages ($M = 7.67$ seconds) showed no benefit above showing the same video with no messages ($M = 8.24$ seconds), $t = 0.09$, $p = .93$. On the other hand, using connecting messages ($M = 22.45$ seconds) resulted in a significant increase in time spent on WWF website as compared to the neutral condition, $t = 2.14$, $p = .04$, and threatening, $t = 2.30$, $p = .03$, conditions.

Indirect effects. We looked at the effects that negative affect, caring, and openness had on conservation behavior; in this study all three psychological processes related to time spent on the WWF website: caring: $\beta = .38$, $t(65) = 3.34$, $p = .001$; negative affect, $\beta = .30$,

$t(65) = -2.38$, $p = .02$; openness, $\beta = .34$, $t(65) = 2.89$, $p = .005$. To estimate indirect effects, we computed a contrast code comparing the connecting condition (coded 1) to the neutral and threatening conditions (coded -1). Bootstrapping analyses showed indirect effects were present between the connecting intervention and behavior through openness, 1.109 with a 95% bootstrap confidence interval of 0.009 to 3.415, and caring, 1.973 with a 95% CI of 0.218 to 5.664, but not through relative negative affect, -.037 with a 95% CI: -2.428 to 2.287.

Discussion

Stimulating support for nature conservation is of global importance. People have converted roughly half of all natural habitats (MEA 2005), and rates of species extinction are orders of magnitude above background rates seen in the fossil record (Barnosky et al., 2011). Such losses are not just a moral issue; through the loss of essential ecosystem services they are having significant negative effects on human wellbeing (Chapin et al. 2000; Balmford et al., 2002; MEA, 2005). Efforts to date, though demonstrably effective (Rodrigues, 2006), are woefully underfunded (McCarthy et al. 2012), and rates of loss of habitats, species and services are if anything, increasing (Butchart et al. 2010). Hence it is critically important to communicate conservation needs to elicit both financial and non-financial support from the public. Notably, while data on the erosion of nature may persuade conservationists and active nature enthusiasts, the present studies suggest they may not be effective when communicating to the general public, who have a low sense of perceived efficacy for protecting natural resources (Kellstedt et al., 2008).

Results from the present studies indicated that pairing images of the natural world (in this case, rainforests and animals) with connecting and personalizing messages that help individuals to learn about and connect to nature encourages conservation action. Participants in two studies who were exposed to such messages were more likely to donate funds to support nature conservation (Study 1), tended toward making environmentally friendly

decisions (Study 1), and demonstrated interest in conservation organizations (Study 2). Conversely, although using threatening messages did not undermine helping, across studies there were no consistent behavioral benefits to using these messages.

Self-determination theory (SDT) argues that connecting to the outside world satisfies basic psychological needs (Deci & Ryan, 2012), lowers negative affect, and increases caring and openness versus defense (e.g., Hodgins & Knee, 2002; Reis et al., 2000; Weinstein et al., 2010). Research arising from the persuasion literature, on the other hand, argues that threatening messages encourage adaptive action only under certain circumstances, but defensive disengagement in other circumstances (Witte & Allen, 2000). In these studies we measured the extent that connecting versus threatening appeals shaped the state processes of negative affect, caring, and openness, and tested whether these played a role in shaping conservation behaviors. We found that in line with these theories, connecting appeals increased caring and openness, and these were responsible for the indirect effects of connecting messages in Study 2. The effects of condition on negative affect, on the other hand, were inconsistent across the two studies, suggesting a possible role that may be better explained by the other mechanisms tested. In summary, connecting but not threatening messages encouraged individuals to feel a higher sense of general caring and concern, and more state openness versus defense; both processes that promoted environmentally responsible action.

Threatening messages did not appear to directly increase defensiveness (or reduce openness). The Extended Parallel Process Model (EPPM; Witte, 1992) posits that reactions to threatening material may depend on perceptions of efficacy, and it may be that in this case, beneficial or harmful effects of threatening appeals may have depended on individual differences such as personal efficacy for environmental action (Kellstedt et al., 2008; Williams, 2012). In contrast, connecting messages appear to be effective for most individuals,

consistent with SDT expectations that under typical conditions people benefit from connecting and relating to the outside world (Deci & Ryan, 2012). In future studies, researchers should also explore the direct effects of conservation appeals on nature connectedness and basic psychological need satisfaction; presumably these underlying processes played a role in the behavioral effects observed in this study. Finally, the present studies utilized laboratory-based experimental procedures that were high in internal control but relatively low in external validity. We therefore suggest that additional research should be conducted with appeals put out by conservation organizations to the general public and to their existing supporters.

Although these studies collected data from largely student-based samples in developed countries, this research can be tentatively applied to communicating conservation causes globally. Conservation organizations struggle to finance their efforts (International Union for Conservation of Nature, 1998), and far greater support is required to meet the Aichi Biodiversity Targets (International Union for Conservation of Nature, 2012; Convention on Biological Diversity, 2010; McCarthy et al. 2012). The greatest barrier to conservation funding is national and global lack of political or societal recognition that conservation needs to be paid for and is a worthwhile investment (Birdlife International, 2004). In attempting to convince the public, environmentalists are often defined by issues they oppose, and some have urged to focus instead on the positives of environmental systems that can be embraced (International Union for Conservation of Nature, 2012).

Furthermore, many environmental problems in developing, ecologically rich countries such as in latin America and the Caribbean are consequences of environmentally-unsustainable economic development, and there are harmful associations between socio-economic and environmental trends (UNEP, 2012). Given substantial biodiversity in these areas (Saatchi et al., 2011), further action and regulation is necessary to conserve rainforests,

for example through sustainable tourism activity (Sijlbing, 2010). In regions such as these, in addition to the need for strengthened policy to be integrated with broader environmental principles (UNEP, 2012), it is also of great importance to engage and motivate public populations towards environmentally sustainable development and pro-environmental attitudes. For example, in relation to creation of a new Amazonian road in Brazil, public pressure for participatory regional planning led to creation of a working group with the participation of 21 federal institutions to elaborate the 'Br163 Sustainable Plan'. The plan was adopted by the Brazilian government, who additionally committed to further public policies associated with the Br163 road (Azevedo-Ramos, 2008). Findings of the current research may be of use for campaigns in canvassing greater public support for social movements of this kind, although future studies that replicate findings in more diverse samples would inform these applications.

The present studies tested the effectiveness of conservation communications in samples of students and those from the community. Different tools may be used when conveying the importance of conservation causes to those who have powerful positions that enable them to enact change, such as CEOs of large consumptive companies, and government leaders responsible for shaping policy. These individuals, unlike those tested here, may feel efficacious in enacting change and may therefore respond to both educational and threatening messages. In such cases it may be that a combination of techniques is more effective. That is, educational interventions would be expected to facilitate caring and connection to the natural world, and threatening messages may communicate the urgent need to prioritize these issues. It should be noted, however, that those in power often act in response to public demand: public opinion that conservation causes are important are likely to drive these individuals to action, particularly given that conservation has costs as well as benefits. As such, it may still

be important to reach individuals through messages that increase connection and caring, and by doing so shape public opinion and encourage public action.

Conclusions

Engaging people is central to the success of conservation, yet communications aimed at increasing public support often elicit support from only a small minority. The present studies begin to examine why this may be, by comparing the effectiveness of the widespread approach of using threatening messages with that of using connecting messages – an alternative strategy informed by psychological theory. This research extends SDT's motivational theory to the context of conservation appeals and paves the way for more informed environmental interventions emerging from the literature on human motivation and values. In doing so, these studies also touch on human reactions to global problems, and how individuals take responsibility for the world in which they live: they show that when people learn about the natural world they are more willing to take steps to protect it than if they simply hear about its demise. Connecting messages may not be the most effective for everybody; perhaps threatening messages are effective when reaching those in power, who feel competent to influence change. As such, it may be important to differentiate messages according to the audience.

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