

**Effects of nature values and regulatory fit of message framing on message evaluation
and actual pro-environmental donations**

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Abstract

Messages are often tailored to individual differences, as fit is believed to influence behavior. We examine the effects of regulatory fit (i.e., matching promotion/prevention message framing to people's promotion/prevention orientation) and the priority that individuals attribute to nature values, on the evaluation of climate change messages and donations to pro-environmental charities. We measured participants' ($n = 570$) regulatory focus on ensuring positive outcomes (promotion) versus avoiding negative outcomes (prevention), nature values. Participants evaluated a promotion- or prevention-framed text (highlighting ensuring the welfare of the environment or avoiding its destruction) and were then invited to donate part of their remuneration to pro-environmental or other charities. Participants who prioritized nature values evaluated the promotion-framed text more favorably the stronger their promotion focus was, but only endorsement of nature values predicted donations. This highlights the importance of measuring actual pro-environmental behavior, as positive message evaluations did not result in donations.

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To increase donations, pro-environmental charities often attempt to tailor messages to fit the potential donor. One well-known type of such fit that has been found to be successful in increasing the persuasiveness of messages is regulatory fit: tailoring messages to people's predominant self-regulatory orientation in terms of either a promotion focus (on ideals, aspirations and the presence of gains) or a prevention focus (on security, safety and the absence of losses; Cesario et al., 2008; Higgins 1997, 1998). Using differently framed texts about climate change that highlighted either promotion (e.g., “do your share for cleaner air”) or prevention (e.g. “do your share to prevent dirty air”) concerns, we examined the influence of regulatory fit on text evaluations and actual monetary donations to pro-environmental charities. Furthermore, personal values have also been found to be important motivators of behavior (e.g., Lee et al., 2021; Maio, 2010), including pro-environmental behavior (e.g., Evans et al., 2013; Steg et al., 2014). Thus, a more complete picture of regulatory fit effects in the context of donations would be gained by testing if and how regulatory fit interacts with people's endorsement of nature values (Schwartz et al., 2012) in predicting text reception and pro-environmental behavior. Considering multiple factors such as these would emulate real life better, as in real life multiple factors operate simultaneously.

On a practical level, this examination will advance our understanding of factors that motivate people to donate and aid environmental charities' fundraising efforts. This is important, as the latter rely heavily on individual donors (Igoe, 2010; Morris et al., 2018) and invest considerable resources in fundraising appeals – despite these efforts often being unsuccessful (Helmig et al., 2004; Levis et al., 2018). On a theoretical level, the current work is one of the first to examine whether regulatory fit effects are moderated by the strength of people's motivational goals (in this case, the importance they attribute to nature values).

Furthermore, it may add to emerging evidence of asymmetric regulatory fit effects regarding evaluations and behavior (Motyka et al., 2014), as we outline in greater detail below. Finally, the present work responds to calls for research that measures actual behavior (e.g., Baumeister et al., 2007; Furr, 2009), especially when aiming to gain insight into people's choices and decisions (e.g., Morales et al., 2017). However, to the best of our knowledge, only one study investigated the impact of personal values on actual donations to pro-environmental charities (e.g., Clements et al., 2015; see also van Dijk et al., 2019, for donations to various charities). As such, it is important to investigate whether the effect of values on actual donations would replicate when tested in a very different way. We first review relevant literature on the role values play in donating to pro-environmental charities, then discuss regulatory focus and regulatory fit effects, and finally we combine these lines of research, which jointly informed our predictions.

Values, Behavior, and Pro-Environmental Donations

Values (e.g., caring for nature, power) are desirable, trans-situational goals, which express broad life-goals that motivate action and serve as the standards by which people evaluate events and the actions of others (Rokeach, 1973; Schwartz, 1992, 1994). Several value theories have incorporated environmental concerns. For example Ingelhart's (1977) post-materialist values index included a facet regarding 'trying to make cities and the countryside more beautiful'. Stern and colleagues (1993) drew on Schwartz's (1992) theory of human values to identify four value types (i.e., biospheric, altruistic, egoistic, and hedonic) to predict environmental beliefs and behaviors. Within this framework, biospheric values reflect the motivation towards unity with, respect for, and protection of nature (see also Steg et al., 2011). However, other value theories, such as Gouveia and colleagues' (2014) functional theory of human values, do not specifically include environmental concerns.

In this study, we use the empirically well-established theory of refined values (Schwartz et al., 2012), which is an extension of the Schwartz (1992) theory of (10) basic human values. The refined values theory divided some of the original 10 basic values, resulting in 19 value facets organized in a circular system of motivations. Neighboring values in the circle share similar motivations and support the pursuit of similar goals, whereas values that are located opposite to one another in the circle are based on conflicting motivations. As such, the importance of each value is operationalized in terms of its *relative* importance within the system of values. For instance, when asked how important nature values are in their life, people provide this answer relative to all other values they could (or do) endorse. People tend to behave according to the values they hold most important (e.g., Lee et al., 2021). However the overall relations between values and behaviors tend to be weak to moderate when examining all levels of value importance, (e.g., Bardi & Schwartz, 2003). This may be due to other factors that also impact behavior, some of which we test in the current study.

The basic value of universalism, defined as “understanding, appreciation, tolerance, and protection for the welfare of all people and for nature” (Schwartz, 2015, p. 66), underlies concerns for the environment. Universalism is positively associated with pro-environmental behaviors, usually measured by intentions (e.g., De Groot & Steg, 2010; Stern et al., 1993) or self-reports (e.g., Bouman et al., 2018; Katz-Gerro et al., 2017; Marshall et al., 2019; Steg et al., 2014), but rarely with actual behaviors (e.g., Clements et al., 2015).

The refined values theory (Schwartz et al., 2012) includes the refined value of universalism-nature that emphasizes caring for nature, defending its welfare, and protecting the natural environment. Lee and colleagues (2019a) extended the theory of refined values with the addition of the universalism-animals value, which expresses empathic concern for the welfare of all animals. These two refined values are somewhat similar to Stern and

colleagues' (1993) biospheric altruism and Dietz and colleagues (2017) animal altruism values, respectively. However, measuring the entire system of refined values has the advantage of considering the relative importance of these nature-focused values compared to all other refined values. The universalism-nature and universalism-animals values convey a specific and unique concern for nature and animals within the values circle (Schwartz, 2015) and have been associated with self-reported donating to pro-environmental charities (Sneddon et al., 2020), and therefore were of particular relevance to the current investigation. Focusing specifically on these values is also justified by the finding of an ideological difference between people who are motivated to help society (i.e., universalism-concern in Schwartz et al.'s 2012 refined value theory) and people who are motivated to help nature (Molinario et al., 2020).

The limited number of studies that have examined donating to pro-environmental charities largely focused on identifying who to target by examining the socio-demographic characteristics of existing and potential donors. For instance, self-reported donating to pro-environmental charities has been associated with being female (Casale & Baumann, 2015; Srnka et al., 2003), higher levels of education (Srnka et al., 2003), and religious affiliation (Neumayr & Handy, 2019). However, other studies found no relations between self-reported donations to pro-environmental charities and the socio-demographic characteristics of donors (e.g., Greenspan et al., 2012; Wiepking, 2010). More consistent results have been reported regarding donors' personal values, namely positive relations between values that emphasize the protection of nature (i.e., universalism-nature or biospheric values) and intentions (De Groot & Steg, 2008), as well as self-reported donations to environmental organizations (Greenspan et al., 2012; Lee et al., 2019a; Sneddon et al., 2020).

Despite concerns about the gap between intentions and behaviors (e.g., Sheeran & Webb, 2016) and the less than ideal reliability of self-report data in pro-environmental

behavior research (e.g., Kormos & Gifford, 2014), to the best of our knowledge only one study examined relations between values and actual donations to pro-environmental charities. Specifically, Clements and colleagues (2015) found that biospheric value orientation was positively associated with actual donations to the World Wildlife Fund. More broadly, van Dijk and colleagues (2019) demonstrated a two-stage process in donation choices regarding nonprofit organizations. First, universalism values (broadly conceptualized and including concern for the welfare of those in the wider society and world as well as for nature) influenced the likelihood of donating, and second, choice of charity reflected congruency between donors' perceptions of the charities' values and donors' nonprofit organization values (e.g., starting challenging projects). We aimed to contribute to this emerging research by considering the effect of nature values on actual donations to a diverse range of pro-environmental organizations.

Message Framing, Regulatory Focus and Regulatory Fit in Persuasion

Research examining the effectiveness of environment-focused messages and appeals has mainly considered the persuasiveness of differently framed messages on intentions to engage in pro-environmental behavior, as opposed to actual behavior. This research has provided some contradictory results. For instance, van den Broek and colleagues (2017) found that people who prioritized biospheric values were more persuaded to accept paper saving tips by biospheric value congruent messages (i.e., emphasizing the positive impact of paper saving on the environment) than those that did not prioritize these values. In contrast, Herziger and colleagues (2020; see also Chang, 2014) found that only those messages framed to reflect egoistic value orientations (i.e., values that emphasize personal gains, such as achievement, power, and hedonism) were effective in promoting consumption-curtailement among people who prioritized either biospheric or egoistic values. Moreover, intentions to increase pro-environmental behaviors in response to climate change messages have been

reported to be positively associated with both threat-framed (Hartmann et al., 2014) and *low* fear-framed (Chen, 2016) messages, as well as hope-framed messages (Bain et al., 2012).

One promising avenue of research regarding message framing is regulatory fit, as this has been successful in augmenting message persuasiveness. Essentially, fit influences persuasion by making message recipients ‘feel right’ during message reception, increasing the fluency of message processing and the strength of message engagement, and influencing message elaboration (Cesario et al., 2008). We examined whether framing climate change messages to fit the regulatory focus of recipients would increase positive message evaluation and persuasiveness, as well as donations to pro-environmental organizations for everyone or only for those who attribute relatively high importance to nature values.

Regulatory focus theory posits two different self-regulatory systems operating within individuals (Higgins, 1997, 1998). In a promotion focus, individuals are concerned with advancement and growth needs and they are focused on the presence or absence of positive outcomes (gains or non-gains). Conversely, in a prevention focus, individuals are concerned with safety and security and they are focused on the absence or presence of negative outcomes (non-losses and losses). Consequently, individuals in a promotion focus show greater sensitivity for positive events and information, and use ‘eager’ strategies in pursuing goals, whereas individuals in a prevention focus show a greater sensitivity for negative events and information, and use ‘vigilant’ strategies in pursuing goals (Crowe & Higgins, 1997; Higgins & Tykocinski, 1992; Higgins et al., 1994; Idson et al., 2000; Shah et al., 1998). Hence, a strategic approach (or avoidance) orientation “is the natural strategy for promotion (or prevention) self-regulation” (Higgins, 1997, p. 1292, parenthesis added; see also Higgins, 1998, 2000; Keller 2006).

Regulatory focus differs across individuals (i.e., chronic regulatory focus; Higgins et al., 2001) and situations (Higgins et al., 2001; Higgins et al., 1994). In line with promotion

and prevention focus being conceptualized as independent dimensions (Higgins, 1997, 1998), scales that measure these dimensions are uncorrelated (e.g., Higgins et al., 2001), and they are orthogonal in factor analyses (e.g., Semin et al., 2005). Moreover, the orthogonal foci are uniquely related to other theoretically relevant constructs (for a meta-analysis, see Gorman et al., 2012). As such, we treat them as independent dimensions in the current study.

When individuals pursue a goal in a manner that sustains, rather than disrupts, their chronic regulatory focus or when a goal or other information is framed to fit their predominant focus, they experience regulatory fit: the manner of goal pursuit or the nature of the pursued goal itself feels right and this, in turn, increases goal engagement and goal value (Higgins, 2000, 2005). Consequently, regulatory fit is used to increase the effectiveness of attempts to change attitudes and behavior by making recipients have an “it-just-feels-right experience” during message reception (Aaker & Lee, 2006, p. 15). When the concerns of individuals’ regulatory focus are met by what is promoted in a message or how it is presented, this fit experience increases their strength of engagement with the message, resulting in more favorable attitudes towards the message and compliance with advocated actions (Aaker & Lee, 2006; for further reviews, see Cesario et al., 2008; Lee & Aaker, 2004; Lee & Higgins, 2009).

One way of conceptualizing regulatory fit and situating it within other approaches to message-framing is to consider it as one example of consequence-based argumentation, in that messages may be more effective if they highlight consequences that fit perceivers’ regulatory concerns (O’Keefe, 2013). In the current context, this suggests that messages addressing promotion nurturance concerns with a gain-frame stressing the pleasures of adherence to the message, should ‘feel right’, be perceived as being of higher quality, and be evaluated more favorably by individuals with a strong promotion focus. The same should hold for individuals with a strong prevention focus when messages address prevention safety

concerns with a loss-frame stressing the pains of non-adherence (Cesario et al., 2004; Cesario et al., 2013; Lee & Aaker, 2004; Spiegel et al., 2004).

Regulatory fit has been applied to a wide variety of social influence domains. For example, it has been associated with more effective communications in health psychology (for a review see Ludolph & Schulz, 2015) and consumer psychology (for a review and meta-analytic synthesis see Motyka et al. 2014). In the context of soliciting donations to charity, Shaw and colleagues (2017) found that among participants who donated, the amount donated was higher under conditions of fit between the regulatory framing of goals and means (i.e., succeeding in raising US \$1000/reaching the target; not falling short of raising US \$1000/not failing to reach the target) than under conditions of misfit. Also, individuals induced with a global processing style (similar to a promotion focus; Förster & Higgins, 2005), expressed larger donation intentions to prosocial charities with approach-oriented appeals (Mukherjee et al., 2014; cf. Cao, 2016). However, these effects were limited to behavioral intentions or to small sub-samples of participants, and differences in individuals' values or regulatory focus were not considered.

To the latter point, climate change policy communications have recently been found to be most persuasive when different levels of framing fit with each other (i.e., a message focused on renewable energy sources framed as achieving positive outcomes that emphasize growth versus a message focused on greenhouse gas emissions framed as avoiding negative outcomes that emphasize safety) and with recipients' regulatory focus. Specifically, promotion- (or prevention-) focused participants agreed more with messages that presented the achievement of positive (or the avoidance of negative) outcomes than vice-versa (Bertolotti & Catellani, 2014). However, this research neither considered the role of values, nor did it consider behavioral outcomes.

There is also evidence that framing exerts effects in the domain of personal values. For instance, Feinberg and Willer (2015) found that political arguments reframed to appeal to the moral values of those holding a different political position were more effective in terms of increasing self-reported support. Regarding climate related issues, Graham and Abrahamse (2017) found that messages about the impact of meat consumption that were framed to fit people's values emphasizing either the pursuit of one's own self-interest or values emphasizing transcending self-interest for the sake of others, influenced attitudes towards meat consumption. However, no effects were found for either behavioral intentions or actual meat consumption.

Overall, the interactive effects between participants' regulatory focus and message framing have remained largely unexplored in the context of climate change communications and, more importantly, regarding actual charitable donations. The current research aimed to address this gap, while also considering the importance that individuals attribute to nature values. Messages that contain content that 'fits' one's attitudes are more persuasive (e.g., Petty et al., 2000). Thus, in the current study, we expected that fit effects would be especially pronounced for people who attribute relatively high importance to nature values.

The Current Research

Drawing on the above research, it stands to reason that people for whom nature values are relatively important should have more positive evaluations of promotion-framed environmental messages (e.g., ensuring environmental growth) than of prevention-framed messages, the stronger their promotion focus is. However, a similar pattern regarding prevention focus and prevention-framed messages (e.g., preventing environmental destruction) is less likely to emerge for two reasons. First, values are conceptualized as ideals people strive for (Rokeach, 1973; Schwartz, 1994). Thus, people may naturally conceptualize nature values as a desired goal they wish to approach, rendering promotion-framed messages

more fitting. Indeed, previous research found stronger endorsement of approach- than avoidance-framed values among promotion focused participants, whereas value-framing did not impact value endorsement among prevention focused participants (Wolfin & Bardi, 2018). Second, regardless of values, asymmetrical regulatory fit effects emerged in a recent meta-analysis, showing that promotion fit had stronger effects on evaluations than prevention fit (Motyka et al., 2014). Also, promotion focus has been found to be a more important predictor of environmental concerns than prevention focus (Bhatnagar & McKay-Nesbitt, 2016). This also implies an advantage of promotion over prevention regulatory fit in the current context.

Overall, we thus expected regulatory fit of climate change message framing to interact with people's endorsement of nature values in impacting both their climate change message evaluations and their donations to pro-environmental charities. However, among participants who prioritize nature values, we expected effects to be more strongly pronounced for promotion regulatory fit and not necessarily to emerge for prevention regulatory fit, in light of the asymmetric regulatory fit effects.

Methods

Below we report all manipulations, measures and data exclusions in this study. De-identified and cleaned data for this study, the data-analysis script, and supporting information are publicly available via the Open Science Framework (OSF; https://osf.io/8xrdt/?view_only=a0599488a01c47678035ce88f1a330dd). All data used in this study were collected in accordance with the guidelines of the human research ethics committee at The University of Western Australia.

Participants and Design

Overall, 570 Australian adults were recruited by an online commercial panel provider to complete a survey about their evaluation of a text that they were told was written by a

journalism student. They were recruited from the pool of participants from a larger initial study of values and their expression, for which participants were compensated at the time ($N = 1991$; The Values Project, see www.thevaluesproject.com). The initial study included measures of participants' regulatory focus and their personal values. Past research shows that data from similar online panel providers, such as MTurk and Prolific Academic, is reliable (e.g., Buhrmester et al., 2011; Mason & Suri, 2012). The large sample had equal distribution in terms of age, a wide range of occupations, and levels of socio-economic status (see Lee et al., 2019b). It was therefore particularly diverse. The majority of participants in the final sample reported being born in the Oceania region (75.6%), with 13.2% being born in Europe, and 9% in Asia. Roughly half of the sample (47.9%) identified as Christian, and those who did not identify with a religion comprised the second largest group (45.5%). The median level on the socio-economic self-perception ladder was 5 (range 1 = *low* to 10 = *high*).

With the aim of increasing statistical power, only those participants from the larger study with either a relatively strong promotion or prevention focus were selected for the current study. Specifically, we selected (1) participants with a mean score in the top two quartiles for promotion focus items and bottom two quartiles for prevention focus items, and (2) participants with a mean score in the top two quartiles for prevention focus items and bottom two quartiles for promotion focus items. The initial values and regulatory focus survey and the current text evaluation and donation study were undertaken approximately 10 months apart. This is a valid method (see Roccas et al., 2017), as values and regulatory focus are relatively stable (e.g., Sassenberg & Scholl, 2013; Schuster et al., 2019).

Participants in the present study were randomly assigned to one of two experimental conditions (see below) and were paid AUS \$1.30 to complete a brief online survey. A sensitivity power analysis using G*Power (Faul et al., 2007) indicated that with our sample size, $\alpha = .05$, 80% power ($1 - \beta$) and number of regression predictors (15, including all

interactions) the study would be able to detect an effect size of $f^2 = .03$, and thus even a small effect.

Based on responses to an open question at the end of the study asking participants what they thought it was about, 13 participants (2.28%) were excluded from the analysis. These participants were excluded for either (a) guessing the study aim ($n = 3$), (b) indicating that they had either left the study at some point or that they could not remember the text or content of the study (i.e., our manipulation; $n = 7$), or (c) showing a strong negative reaction to the text ($n = 3$; both the interaction regarding text evaluation and the main effects regarding donations reported below are highly similar or unchanged and remain significant when these participants are not excluded). Verbatim responses of all excluded participants can be found in the online supplemental material (see S1). A total of 557 participants remained in our final sample ($M_{\text{age}} = 51.66$, $SD_{\text{age}} = 14.42$; 336 females, 221 males), which is similar to the larger initial study's sample ($N = 1991$, $M_{\text{age}} = 48.18$, $SD_{\text{age}} = 15.36$; 1201 females, 790 males) in terms of age and gender. They were randomly assigned to either a promotion-framing ($n = 286$) or a prevention-framing condition ($n = 271$; see below).

Procedure and Materials

In the initial survey, 10 months prior to the current study, participants' regulatory focus was measured with the Regulatory Focus Questionnaire (RFQ; Higgins et al., 2001). The RFQ consists of six promotion focus items ($M = 3.33$, $SD = .69$, $\alpha = .72$; e.g., "How often have you accomplished things that got you psyched to try even harder?") and five prevention focus items ($M = 3.32$, $SD = .93$, $\alpha = .85$; e.g., "Not being careful enough has gotten me into trouble at times" – reverse scored) forming the respective subscales. Items were rated on 5-point scales (1 = *never or seldom/certainly false* to 5 = *very often/certainly true*). In line with their independent conceptualization, the scales were not correlated, $r(557) = -.074$, $p = .080$.

Values were measured in the initial survey using the Schwartz Best Worst Values Refined instrument (BWV-R; Lee et al., 2019a). The BWV-R survey asks participants to choose the most and the least important values in a set of 5 values across 21 sets, derived from a balanced incomplete block experimental design (see Lee et al., 2019a for details). The simple count method was used to score values on a scale from -1 to +1 (see Louviere, Flynn, & Marley, 2015), with higher scores reflecting greater importance and zero being the midpoint of the scale. Participants' overall nature values score ($M = .08$, $SD = .33$) was computed as the mean score of the two relevant BWV-R items, universalism-animals ("Caring for the welfare of all animals") and universalism-nature ("Protecting the natural environment from destruction or pollution"), $r(557) = .44$, $p < .001$. As these two items are phrased in terms of nurturance (fitting promotion concerns) and protection (fitting prevention concerns), respectively, and in light of recent work on framing of human values and subsequent endorsement and value dimensionality (Aavik & Dobewall, 2017; Woltin & Bardi, 2018), it may be of interest that promotion focus was positively associated with the universalism-nature item, $r(557) = .12$, $p = .006$, and thus *protection* concerns. Whereas, correlations between promotion focus and the universalism-animals item, and correlations of both items with prevention focus were not significant (all r s $< |.08|$, all p s $> .074$).

In the current study, after providing informed consent, participants were randomly assigned to one of two text-framing conditions, in which they read an article about climate change, allegedly written by a journalism student. For example, in the promotion- (vs. *prevention*-) framing condition the text highlighted that people are eager to (vs. *vigilant not to*) further advance (vs. *destroy*) the natural environment, and that it is important to ensure nature's welfare and flourishing (vs. *to prevent nature's pollution and destruction*). The full texts are provided in online supplemental material S2. The article was also constructed to follow best-practice guidelines for public engagement with climate change (see van der

Linden et al., 2015), such as presenting climate change as present in the article's opening sentence in both conditions (e.g., "Research suggests that climate change is affecting the planet"). Participants were then invited to evaluate on 7-point scales (1 = *not at all* to 7 = *very much*) how convincing, effective and compelling they found the article. Scores for these three items were averaged to produce a perceived text persuasiveness index ($M = 4.38$, $SD = 1.47$, $\alpha = .96$). Participants also responded to three items ("Overall, what is your general impression of the text", "Overall, how much did you like the text", and "How 'right' did the text feel to you?"), measured on a 7-point scales (1 = *not at all/extremely negative* to 7 = *very/extremely positive*). Scores for these three items were averaged to produce a text liking index ($M = 4.62$, $SD = 1.36$, $\alpha = .94$). The text persuasiveness and liking scales were strongly correlated, $r(557) = .89$, $p < .001$ and the six items formed a highly reliable scale ($\alpha = .97$). Factor analysis of the six items, using varimax rotation, suggested a one-factor solution, with one factor explaining over 85% of the variance. Thus we present results for a combined text evaluation index ($M = 4.50$, $SD = 1.38$). Separate analyses, showing the same pattern of results as reported below for perceived text persuasiveness and text liking are provided in the online supplemental material S3 and Table S1. To assess possible mood effects due to the differently framed texts, participants indicated for four items on a 7-point scale (1 = *not at all*, 7 = *very much*) to what extent they felt happy and relaxed [positive mood; $M = 4.14$, $SD = 1.33$; $r(557) = .64$, $p < .001$] and sad and tense [negative mood; $M = 3.30$, $SD = 1.40$; $r(557) = .62$, $p < .001$] when reading the text. All of the above items were either directly taken or adapted from Cesario and colleagues (2004).

Finally, participants were given the option to make an anonymous donation of a portion of their remuneration to one charity (i.e., AUS \$0.80, and thus approximately 62% of their remuneration; cf. Clements et al., 2015). Participants could choose between giving to one of eight charities, four of which were concerned with nature and/or animal conservation

(i.e., Animals Australia, Australia Conservation Foundation, Greenpeace Australia, and the World Wildlife Fund) and four of which were popular human services charities in Australia (i.e., Australia Red Cross, Cancer Council, Royal Flying Doctors Service, and World Vision Australia). Alternatively, participants could choose not to donate. Charities were presented in alphabetical order. Before being debriefed, thanked and remunerated, participants were asked to state what they thought the study was about to gauge their naivety.

Results

An independent samples t-test comparing participants' mood between framing conditions showed no significant difference (positive mood, $t < 1$, $p > .75$; negative mood, $t < 1.74$, $p > .08$). As the framing manipulation did not significantly impact mood, it was not considered in further analyses (if negative mood is nonetheless included in the analyses below, p values for the interaction regarding text evaluation and the main effects regarding donations reported below remain unchanged).

In line with our prediction of regulatory focus and message framing (i.e., regulatory fit) interacting with endorsement of nature values, and in line with the independent conceptualization of promotion and prevention focus (Higgins, 1997, 1998), we regressed participants' text evaluation on the framing condition, their promotion focus, their prevention focus, and their nature values score, all 2-way and 3-way interactions, as well as the 4-way interaction between these variables. The present study was concerned only with the two regulatory fit by nature values 3-way interactions, but nonetheless we followed guidelines by including all possible interactions, by mean-centering all continuous variables, and by coding the framing conditions accordingly (-0.5 prevention-framing, +0.5 promotion-framing) prior to regression analyses (Aiken & West, 1991).

As we are tested two hypotheses simultaneously (i.e., a promotion by framing condition by nature values interaction, and a prevention by framing condition by nature

values interaction), we used the more conservative Bonferroni correction and tested these effects at $\alpha/n = .025$ (rather than at the .05 level). Although the two nature values items (i.e., universalism-animals and universalism-nature) did not systematically correlate with promotion and prevention focus (see previous section), we report the results of separate analyses for universalism-nature and universalism-animals value items in the online supplemental material S4.

Our analysis revealed a significant nature values by prevention interaction and, more importantly, a significant higher-order promotion by framing by nature values interaction (see Table 1). No other effects emerged. The highest variance inflation factor (VIF) was 1.28, well below even conservative thresholds, and thus multicollinearity was not a concern in the results reported here.

Decomposing this latter significant interaction via simple slopes (Aiken & West, 1991), the promotion by framing interaction was positive and significant for those with relatively high nature values scores (+1 *SD*), $B = .527$, $SE = .250$, $t = 2.108$, $p = .035$, $CI_{95} [.036, 1.017]$, but negative and non-significant for those with relatively low nature values scores (-1 *SD*), $B = -.425$, $SE = .280$, $t = -1.518$, $p = .130$, $CI_{95} [-.976, .125]$. Further decomposing the promotion by framing interaction for those with relatively high nature values scores showed that for those with a stronger promotion focus, the text was evaluated more positively when it was promotion-framed, $B = .319$, $SE = .161$, $t = 1.983$, $p = .048$, $CI_{95} [.003, .635]$, and less positively, though not significantly so, when it was prevention-framed, $B = -.208$, $SE = .191$, $t = -1.087$, $p = .278$, $CI_{95} [-.583, .168]$ (see Figure 1).

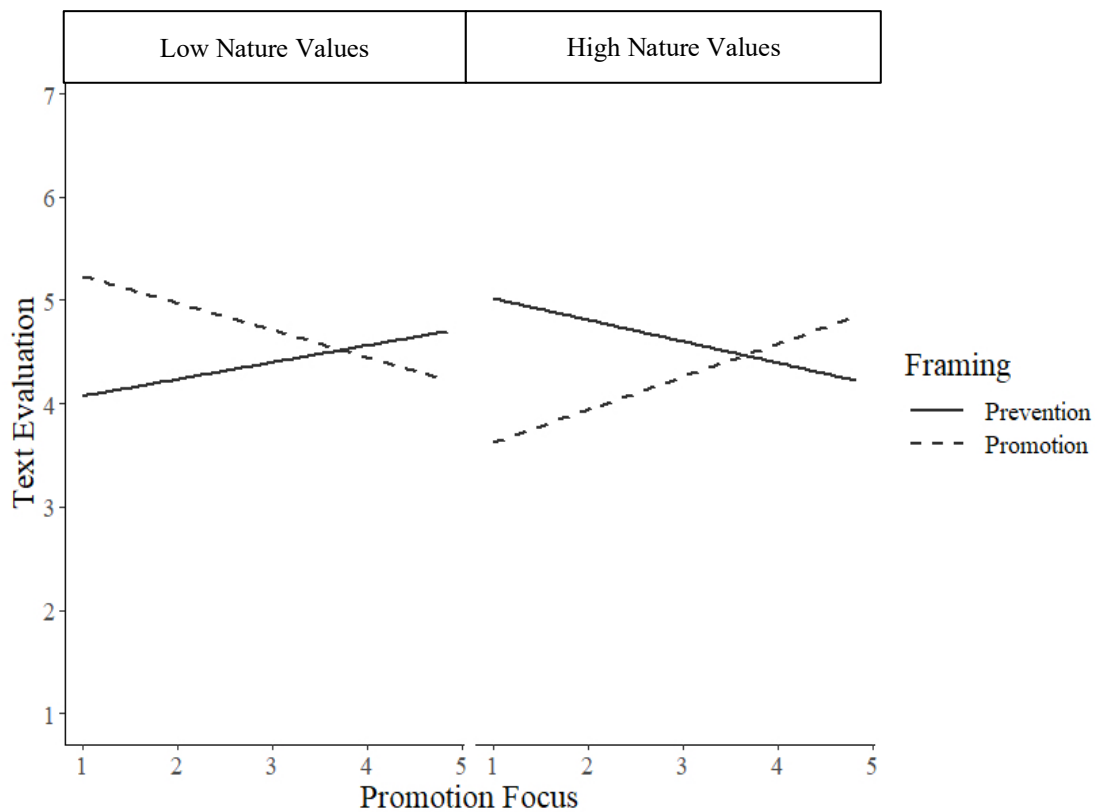
Table 1*Results of Multiple Regression Analyses Testing for Effects of all Predictors on Text Evaluation*

Predictor	Text evaluation				
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI (<i>B</i>)
Framing	.001	.118	.006	.996	[-.231, .233]
Nature values	-.134	.181	-.736	.462	[-.490, .223]
Promotion	.003	.092	.033	.974	[-.177, .183]
Prevention	-.011	.064	-.178	.859	[-.138, .115]
Promotion x Framing	.051	.183	.276	.783	[-.310, .411]
Prevention x Framing	.001	.129	.009	.993	[-.252, .254]
Nature values x Framing	-.500	.363	-1.378	.169	[-1.213, .213]
Nature values x Promotion	.159	.290	.548	.584	[-.411, .728]
Nature values x Prevention	-.374	.186	-2.007	.045	[-.740, -.008]
Prevention x Promotion	.048	.110	.438	.662	[-.168, .265]
Promotion x Prevention x Framing	.206	.220	.933	.351	[-.227, .639]
Promotion x Prevention x Nature values	.268	.307	.871	.384	[-.336, .871]
Prevention x Framing x Nature values	-.221	.373	-.594	.552	[-.953, .510]
Promotion x Framing x Nature values	1.439	.580	2.482	.013	[.300, 2.578]
Promotion x Prevention x Framing x Nature values	.359	.615	.584	.559	[-.848, 1.566]

Note. *N* = 557. CI = confidence interval for unstandardized beta (*B*).

Figure 1

Participants' text evaluation of climate change messages (scale range: 1-7) as a function of their promotion focus orientation (scale range: 1-5) and text framing (promotion vs. prevention), separately for those with low (-1 SD; left hand panel, not significant) and high (+1 SD; right hand panel, significant) priority of nature values



Two logistic regressions were used to regress participants' donation choices on the same predictors as before (with framing condition coded 0 = prevention-frame, 1 = promotion-frame). Of interest were participants' donations to pro-environmental charities compared to other options. Accordingly, the first regression contrasted donations to pro-environmental charities (i.e., nature and animal charities, coded 1) vs. other charities (coded 0; excluding the option of not donating), thus comparing donation receivers, *if* donations indeed were made. The second regression contrasted donations to pro-environmental charities (i.e., nature and animal charities, coded 1) vs. other charities *and* the option of not donating (coded 0), thus comparing targeted donations to *all* other options. For both regressions the Hosmer and Lemeshow Test was not significant, ($p = .832$ and $p = .541$, respectively) and the Nagelkerke R^2 indicated that 26.5% and respectively 18% of the variance could be explained by the predictor variables. As shown in Table 2, both regressions revealed a strong main effect of nature values, in that – even accounting for regulatory fit, regulatory focus or message framing – participants for whom nature values were relatively important were more likely to donate to pro-environmental charities (with ORs of 17.95 and 7.81, respectively). No other significant effects emerged.

Table 2*Results of Logistic Regression Analyses Testing for Effects of all Predictors on Monetary Donations Made*

Predictor	Donations to pro-environmental charities (1) vs. other charities (0)					Donations to pro-environmental charities (1) vs. other charities and no donations made (0)				
	<i>B</i>	<i>SE</i>	Wald χ^2	<i>p</i>	OR, 95% CI (OR)	<i>B</i>	<i>SE</i>	Wald χ^2	<i>p</i>	OR, 95% CI (OR)
Framing (Fr)	-.059	.298	.040	.842	.94 [.53, 1.69]	-.090	.262	.117	.732	.91 [.55, 1.53]
Nature values (Nv)	2.887	.845	11.684	.001	17.95 [3.43, 93.96]	2.055	.576	12.725	.000	7.81 [2.52, 24.14]
Promotion (Prom)	.113	.338	.112	.738	1.12 [.58, 2.17]	.200	.295	.461	.497	1.22 [.69, 2.18]
Prevention (Prev)	-.098	.211	.215	.643	.91 [.60, 1.37]	-.041	.189	.048	.827	.96 [.66, 1.39]
Prom x Fr	-.402	.465	.747	.387	.67 [.27, 1.67]	-.425	.404	1.108	.292	.65 [.30, 1.44]
Prev x Fr	.142	.339	.175	.676	1.15 [.59, 2.24]	-.003	.286	.000	.991	1.00 [57, 1.75]
Nv x Fr	1.328	1.209	1.207	.272	3.77 [.35, 40.36]	.909	.797	1.303	.254	2.48 [.52, 11.83]
Nv x Prom	.480	1.402	.117	.732	1.62 [.10, 25.22]	.626	.918	.465	.495	1.87 [.31, 11.29]
Nv x Prev	-.045	.759	.003	.953	.96 [.22, 4.23]	-.804	.557	2.082	.149	.45 [.15, 1.33]
Prev x Prom	.310	.380	.668	.414	1.36 [.65, 2.87]	.312	.330	.889	.346	1.37 [.71, 2.61]
Prom x Prev x Fr	-.668	.589	1.287	.257	.51 [.16, 1.63]	-.440	.490	.805	.370	.64 [.25, 1.68]
Prom x Prev x Nv	-.449	1.368	.108	.743	.64 [.04, 9.32]	-.368	.940	.153	.696	.69 [.11, 4.37]
Prev x Fr x Nv	.572	1.309	.191	.662	1.77 [.14, 23.04]	1.352	.844	2.569	.109	3.87 [.74, 20.20]
Prom x Fr x Nv	.157	1.879	.007	.934	1.17 [.03, 46.50]	-.721	1.228	.345	.557	.49 [.04, 5.40]
Prom x Prev x Fr x Nv	.031	2.293	.000	.989	1.03 [.01, 92.42]	-.808	1.415	.326	.568	.45 [.03, 7.13]

Note. *N* = 557; OR = Odds ratio; CI = confidence interval for odds ratio.

Discussion

Our study revealed that while matching the framing of a text about climate change to people's regulatory focus orientation positively impacted text evaluation, this was only the case for those who attributed a relatively high importance to nature values. However, such text framing fit did not predict actual donations to pro-environmental charities; only prioritizing nature values predicted actual donations. This pattern of findings sends an important message for research on donations: it is vital to study actual behavior rather than attitudinal, evaluative, or intention measures, as these may not always predict actual donations (cf., Sheeran & Webb, 2016).

In line with emerging research on value endorsement (Wolfin & Bardi, 2018) and meta-analytic findings regarding regulatory fit in the context of evaluations (Motyka et al., 2014), in the current study an asymmetric regulatory fit effect for differently framed texts about climate change was observed. Specifically, participants who prioritized nature values judged a promotion-framed text (about ensuring the natural environment's welfare) more favorably compared with a prevention-framed text (about avoiding the natural environment's further destruction) the stronger their promotion focus was. In contrast, no framing effects emerged regarding prevention focus.

Importantly, asymmetric effects in favor of promotion focus have been found in studies focusing on a variety of psychological processes, including processing style (Mukherjee et al., 2014), response efficiency (Zemack-Rugar & Klucarova-Travani, 2018), and goal commitment (Baek & Reid, 2013). They also converge with related lines of recent work. First, in cause-related marketing (i.e., corporate campaigns raising funds for a charitable cause) pride related messages were found to be more effective for individuals with a promotion focus as they increased perceived self-efficacy, while the effectiveness of guilt related messages did not differ based on regulatory foci (Coleman et al., 2020). Also,

negation frames in regulatory focus framed communication have been found to be perceived as more indirect than affirmation frames, and to attenuate perceptions of valence (Kung & Scholer, 2018; see also Dijkstra et al., 2011). It is conceivable that our promotion- and prevention-framed texts evoked feelings of anticipated pride and guilt, respectively, and that due to several negations used in the prevention-framed text it might have been perceived as less direct and less emotionally engaging. Future research is thus advised to investigate such potential collateral effects. Second, promotion focus has been found to predominate for temporally distant goals, whereas proximal goals are characterized by more balanced considerations of both foci's concerns. In other words, promotion goal importance increases with temporal distance (Mogilner et al, 2008; Pennington & Roese, 2003). According to this temporal perspective, the fact that the texts read by participants were concerned with action to mitigate future effects of climate change would have rendered promotion concerns a more natural fit (see Chang & Lee, 2009). Further research might thus consider texts about climate change focusing on the present to see if framing effects of a similar magnitude emerge. In general, promotion (compared to prevention) focus has been found to more strongly predict environmental concerns (Bhatnagar & McKay-Nesbitt, 2016). Overall, and taken together with the current findings, these lines of research strongly suggest the use of promotion frames to increase the effectiveness of climate change messages.

The differently framed texts used in the current study included references to potential gains versus losses, and as such the present finding that framing effects were limited to promotion fit dovetails with research on such framing effects in climate change related messaging. For example, attitudes towards climate change mitigation have been found to be more effectively bolstered by discussing associated gains (rather than losses), especially when fear responses are held constant (Spence & Pidgeon, 2010) and under high levels of uncertainty, where positive frames produce stronger intentions to act (Morton et al., 2011).

Both feelings of efficacy (Morton et al., 2011) and positive emotions, such as hope (Nabi et al., 2018), have been found to mediate such effects (for a recent review on the role of emotions in gain-loss framing, see Nabi et al., 2020).

At the same time, the regulatory fit text evaluation effects among participants with relatively high nature values did not carry over to actual donations made to pro-environmental charities. Specifically, given the option to donate part of their remuneration to pro-environmental or other charities, only the endorsement of nature values strongly predicted actual donations to the former compared to the latter, or no donations made at all. This is in line with findings that universalism values, and specifically the nature facet, are among the values most strongly associated with behaviors (see Bardi & Schwartz, 2003; Lee et al., 2021; Schwartz & Butenko, 2014). For example, the broader universalism value has been found to have the strongest correlations with references (i.e., word counts) made to its content in essays and Facebook posts of individuals (Ponizovskiy et al., 2020). Perhaps more important in the current context, the specific universalism-nature refined value has been associated with clear behavioral signatures regarding actions aimed at protecting and enjoying nature (e.g., composting and gardening) in retrospective self-reports (Skimina et al., 2019).

It is plausible that those who care about nature are particularly committed to this cause and therefore show a sufficiently strong motivation to donate to pro-environmental charities, regardless of the features of messages aimed at motivating them to do so. This presents an optimistic message to pro-environmental charities in that they have a captive audience in those people who prioritize nature values and may not need to invest much effort to elicit donations from this group. On the other hand, our study does not lead to optimism regarding eliciting donations for pro-environmental charities from those who do not prioritize

nature values. For this group, more effort may be needed to work on increasing concerns for nature or, more broadly, on increasing the relative importance attributed to nature values.

Strengths and Limitations

In accordance with current recommendations for psychological research on limiting climate change (see Nielsen et al., 2020), our large sample ensured a highly powered study that included participants with diverse backgrounds in terms of age, socio-economic status, level of education, and other variables (see Lee et al., 2019b), which suggests generalizability of effects. We nonetheless acknowledge that the current results rely largely on WEIRD participants (Henrich et al., 2010). Moreover, participants were based in Australia where climate change is a highly contested issue (Smith & Mayer, 2019). These potential limitations suggest a need for examining effects in more diverse populations and in populations where the issue of climate change is less contested. Furthermore, participants in Western samples tend to be chronically more promotion focused (Higgins, 2008; Lee et al., 2000). A reversed pattern of results, showing prevention regulatory fit, might be observed among participants from Eastern cultures, who tend to be more prevention focused (Lee et al., 2000; Uskul et al., 2009). The current results do not address such potential cultural variations.

Regulatory focus and nature values exerted effects 10 months after being assessed. This is a strength of the paper, as the results show these mostly stable constructs (e.g., Sassenberg & Scholl, 2013 for regulatory focus; Schuster et al., 2019 for values) indeed exert effects after a significant lapse of time. In fact, measuring values at a point in time well before the variables they are assumed to predict is advocated as a valid and useful method, reducing possible consistency biases (Roccas et al., 2017). The current work contributes to the very scarce research considering time-lagged effects of these individual difference constructs and actual behavioral consequences in the context of pro-environmental behavior (Nielsen et al., 2020). More importantly, the delay between measuring these predictors and

outcome variables in the current study constitutes a conservative test, as the measurement of either regulatory focus or nature values could not have activated them in participants situationally (i.e., similar to a mindset priming).

A caveat in terms of generalization concerns the fact that the present study relied on online participants, who were given the opportunity to donate part of their remuneration for completing the survey. As such, donating was relatively easy and did not involve a substantial investment in terms of time or effort. Furthermore, despite the fact that we asked for a donation amounting to roughly 60% of their remuneration, this sum was still small (i.e., AU\$0.80). It remains a question for future research as to what extent the present effects would hold in donation contexts that would require higher levels of motivation to overcome potential monetary, temporal, or other constraints. Moreover, stronger effects, including for message framing, might emerge when differently framed texts focus on a less polarized topic than climate change (Smith & Mayer, 2019), such as general environmental concerns.

The absence of a framing main effect for text evaluations suggests that we succeeded in crafting similarly likeable and fluent texts, despite differences (e.g., double negatives in the prevention-framed text). At the same time, we did not pre-test the texts and, as such, cannot rule out the fact that other factors besides mood, fluency, or liking impacted participants' text evaluations. For example, participants might have perceived the promotion-framed text as more comprehensible than the prevention-framed text. Text comprehensibility, in turn, has been shown to impact persuasiveness (e.g., Ratneshwar & Chaiken, 1991). Thus, whilst the present results do strengthen a regulatory fit account, we acknowledge that further factors (e.g., perceived text sophistication) might have intervened in producing them.

We did not directly employ explicit charitable appeals in the texts with the aim of reducing demand effects and to minimize the likelihood that participants would connect the texts with the behavior under investigation. Instead, we relied on texts designed to rather

implicitly raise awareness for the importance of ensuring nature's welfare, or of preventing its destruction. In addition, this procedure emulated real life situations in which people are exposed to information naturally (e.g., through the media), and then face an unrelated chance to donate. This subtlety is a strength of the current work compared to past research on framing effects regarding donation intentions or actual donations. On the other hand, at a methodological level, this subtlety might have prevented fit effects from carrying over to actual donations made, as might have been the case for the donation habits of those prioritizing nature values (Herziger & Hoelzl, 2017). However, the lack of carry over effects may be more parsimoniously explained at a theoretical level by nature values being a stronger predictor of behavior (Clements et al., 2015; Ponizovskiy et al., 2020; Skimina et al. 2019) than framing techniques (Erlandsson et al., 2018; Graham & Abrahmse, 2017). In any event, future research would be advised to combine direct, explicit appeals with differently framed messages similar to the ones used here.

Contributions and Implications

The findings from this study offer implications for pro-environmental organizations seeking to improve their fundraising efforts. Pro-environmental charities should focus on donor recruitment strategies that employ promotion-framed messages aimed at eliciting donations from potential or existing donors who already prioritize the protection of nature. Further, fundraising programs aimed at eliciting donations from individuals for whom concern for nature is not a priority could consider framing appeals in a way that reflects Schwartz's (1992) broader universalism values. Most promising may be the development of appeals that emphasize universalism-animals values (i.e., empathic concern for the welfare of all animals; Lee et al., 2019a) and/or universalism-concern values (i.e., commitment to equality, justice and protection for all people; Schwartz et al., 2012). Both universalism-animals and universalism-concern values have been found to be positively associated with

self-reported giving to pro-environmental charities (see Sneddon et al., 2020). However, further research is required to examine whether such appeals positively impact actual donations.

As actual donations were predicted only by nature values, our study implies that another way of increasing donations to pro-environmental charities is by developing programs to increase the relative importance attributed to these values, or neighboring values in the circle (e.g., benevolence values in the context of programs seeking to increase donations for disadvantaged members of society). Indeed, there is room for optimism for this approach as values can change, and they do so according to the circular structure of values (Bardi et al., 2009). That is, longitudinal studies have found an increase in the relative importance of neighboring values in the circle (in this case benevolence and self-direction) (see Schwartz, 1992) to be accompanied by an increase in the importance of target values (in this case universalism). As benevolence and self-direction values tend to be relatively high in importance (see Schwartz & Bardi, 2001), they may be more amenable to further increase, given that the attitude change literature suggests that it is easier to increase attitudes that are already quite positive (Banaji & Heiphetz, 2010). Indeed, efforts to further increase the importance of benevolence values have been successful (Arieli et al., 2014). In addition, the basic universalism value tends to be held as important on average (see Schwartz & Bardi, 2001). It may thus be possible to increase its importance further by increasing the importance of its refined facets: universalism-nature, universalism-tolerance, universalism-concern (Schwartz et al., 2012), and universalism-animals (Lee et al., 2019a). Indeed, efforts to increase the relative importance of universalism values using a nature intervention in children have been successful (Döring & Hillbrink, 2015). We therefore encourage future research to design interventions aimed at increasing the importance of nature and/or neighboring values, to investigate how such value change may impact pro-environmental behavior.

The present findings suggest that taking regulatory focus into account might reconcile previous inconsistent findings in the context of attempts to increase pro-environmental behaviors through differently framed climate change messages. For example, on the one hand, hope-framed messages about climate change action creating a more considerate and caring society or greater economic and technological development increased intentions to act more pro-environmentally (e.g., Bain et al., 2012). On the other hand, threat-framed appeals about the consequences of climate change have also been reported to significantly increase pro-environmental intentions (e.g., Chen, 2016; Hartmann et al., 2014). From a regulatory focus perspective (Higgins, 1998), the former focused on potential gains that would be desirable to approach and the latter on potential losses that would be desirable to avoid. While acknowledging that other sample characteristics might have contributed to divergent findings, against the background of the current work it seems reasonable to suggest that considering regulatory focus as one such characteristic might be warranted in future work.

More importantly, our results regarding regulatory fit effects for climate change message evaluations are consistent with the self-regulatory framework of persuasion proposed by Cesario and colleagues (2013), as they demonstrate the usefulness of going beyond single distinctions (such as gain vs. loss framing) to combine consequences, outcomes, valence, concerns, and means in framing to render messages persuasive and effective. At the same time, our results enrich and extend this framework, and research on regulatory fit more generally, in that they are the first to demonstrate goal strength as a moderator of regulatory fit effects. Specifically, effects were only present among individuals who attributed relatively high importance to nature values (i.e., the “desirable transsituational goal”, Schwartz, 1994, p. 21). In other words, differently framed texts were not evaluated differently as a function of regulatory focus *unless* participants strongly endorsed nature

values. Along with other experts in the field (Cesario, 16.04.2020, personal communication) we are not aware of any previous research having demonstrated such moderation.

In sum, promotion regulatory fit increased favorable evaluations of climate change messages, but only for people who already care about this issue (i.e., those for whom nature values are relatively important). However, only endorsing nature values predicted actual monetary donations made to pro-environmental charities, regardless of the promotion or prevention framing of the message. Generally speaking, pro-environmental charities seeking to recruit donors would thus be advised to employ promotion-framed messages aimed at eliciting donations from potential or existing donors who prioritize the protection of nature and the welfare of animals.

Supporting Information

Verbatim responses of excluded participants (see S1), the two differently framed texts about climate change (see S2), regression analyses separately for perceived text persuasiveness and text liking (see S3), and regression analyses separately for the universalism-nature and universalism-animals items (see S4) are available online on the Open Science Framework (https://osf.io/8xrdt/?view_only=a0599488a01c47678035ce88f1a330dd).

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Queries should be directed to the corresponding author.

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Supplemental Material

Effects on nature values and regulatory fit of message framing on message evaluation and actual pro-environmental donations

S1: Texts written by excluded participants

The participants excluded for guessing the study's main aim ($n = 3$) wrote: 1) I assume to see if we'd donate our survey fee to an environmental charity after reading about doing our part for the environment, 2) No idea. Probably whether the text was effective in convincing survey takers to give a portion of their money, and 3) If discussion of environmental issues, regardless of perception of the article given would change the likelihood of whether someone will donate to a charity related to environmental well-being.

The participants excluded for having left the study or not being able to remember the text/content of the study (i.e., our manipulation, $n = 7$) wrote: 1) Due to it being interrupted I must admit I have forgotten, 2) SORRY I forgot, my nephew visited and we had a cuppa so the topic is gone, 3) What survey?, 4) Who cares about text. Not me. My brain switches off when I do not find something interesting to read or watch, 5) Can't recall, 6) Not sure, it feels like I just read the participant information and was then asked how it made me feel – was that the entire survey?, and 7) What text?

The participants excluded for strong reactance in their open question response ($n = 3$) wrote: 1) Some idiot wrote a semiliterate rant about the pseudo-scientific scam of AGW, 2) This study was about how easy it is for teachers to fill their students' dumbed down heads with lies and deception. No wonder we have a generation of scared little snowflakes with no clue how to think for themselves, and 3) Before I even read it, I thought it was going to be about climate change or transgenderism - sick of this social engineering bullshit.

S2: Texts presented to participants in the promotion- (vs. *prevention*-) framing conditions

Research suggests that climate change is affecting the planet. Research also finds that it is important for some people to ensure being attentive to nature and to appreciate it (*to avoid neglecting nature and not to disregard it*).

Indeed, people find it increasingly important to engage in (*safeguard against*) actions to take care of nature (*that my cause harm to nature*). It has also been found that merely thinking about potential positive (*negative*) consequences for nature motivates people to give up time and energy in order to help the natural environment flourish (*to prevent the natural environment from destruction*). For example, more and more people believe that recycling is important to ensure a better (*avoid a worse*) tomorrow and that they should do their share for cleaner air (*to prevent dirty air*). They are also eager to (*vigilant not to*) further advance (*destroy*) the natural environment because it makes them feel more connected (*less disconnected*) with nature. Furthermore, they are concerned about the well-being and growth (*suffering and extinction*) of animal populations in the wild.

In short, there are reasons to have more hope (*less fear*) for the future as people are increasingly convinced that it is important to care for (*not to harm*) nature and to advance its welfare and flourishing (*to prevent its pollution and destruction*).

S3: Separate regression analyses for perceived text persuasiveness and text liking

Prior to regression analyses all continuous variables were mean centered and the condition coded accordingly (-0.5 prevention-framing, +0.5 promotion-framing).

As shown in Table S1, regressing participants' perceived text persuasiveness on the framing condition, their promotion and prevention focus, their nature values, all further 2-way and 3-way interactions, as well as the 4-way interaction, revealed a marginal nature values by prevention interaction, but more importantly a significant higher-order promotion by framing by nature values interaction. No other effects emerged.

Decomposing this significant interaction via simple slopes (Aiken & West 1991), the promotion by framing interaction was positive and significant for those relatively high in nature values (+1SD), $B = .592$, $SE = .265$, $t = 2.228$, $p = .026$, $CI_{95} [.070, 1.113]$, but negative and marginal for those relatively low in nature values (-1SD), $B = -.533$, $SE = .298$, $t = -1.789$, $p = .074$, $CI_{95} [-1.118, 0.052]$. Further decomposing the promotion by framing interaction for those relatively high in nature values showed that with stronger promotion focus, the text was rated as more persuasive when it was promotion-framed, $B = .359$, $SE = .171$, $t = 2.099$, $p = .036$, $CI_{95} [.023, .694]$, and less persuasive, though not significantly so, when it was prevention-framed, $B = -.233$, $SE = .203$, $t = -1.146$, $p = .252$, $CI_{95} [-.623, .166]$.

Regressing participants' liking of the text on the same predictors revealed the same pattern of results. There was a significant nature values by prevention interaction and, more importantly, again a significant higher-order promotion by framing by nature values interaction, with no further effects emerging (see Table S1). Simple slope analyses again indicated that the promotion by framing interaction was positive and marginally significant for those relatively high in nature values (+1SD), $B = .461$, $SE = .248$, $t = 1.824$, $p = .063$, $CI_{95} [-.025, .948]$, but negative, though non-significantly so, for those relatively low in nature values (-1SD), $B = -.318$, $SE = .278$, $t = -1.145$, $p = .253$, $CI_{95} [-.863, .228]$. Further decomposing the promotion by framing interaction for those relatively high in nature values

showed that with stronger promotion focus, the text tended to be liked more when it was promotion-framed, $B = .279$, $SE = .159$, $t = -1.751$, $p = .081$, $CI_{95} [-.034, .592]$, whilst it was liked less, though not significantly so, when it was prevention-framed, $B = -.182$, $SE = .189$, $t = -.963$, $p = .336$, $CI_{95} [-.555, .190]$.

Table S1

Results of Multiple Regression Analyses Testing for Effects of all Predictors on Perceived Text Persuasiveness and Text Liking.

Predictor	Perceived text persuasiveness					Text liking				
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI (<i>B</i>)	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI (<i>B</i>)
Framing (Fr)	-.058	.125	-.462	.644	[-.304, .188]	.059	.117	.507	.612	[-.170, .289]
Nature values (Nv)	-.139	.193	-.723	.470	[-.518, .239]	-.128	.180	-.711	.478	[-.481, .225]
Promotion (Prom)	-.034	.098	-.351	.726	[-.226, .157]	.040	.091	.443	.658	[-.138, .219]
Prevention (Prev)	-.008	.068	-.121	.904	[-.143, .126]	-.015	.064	-.299	.819	[-.140, .111]
Prom x Fr	.029	.195	.151	.880	[-.354, .413]	.072	.182	.395	.693	[-.285, .429]
Prev x Fr	.038	.137	.281	.779	[-.230, .307]	-.036	.128	-.284	.777	[-.287, .214]
Nv x Fr	-.501	.386	-1.300	.194	[-1.259, .256]	-.499	.360	-1.387	.166	[-1.205, .208]
Nv x Prom	.294	.308	.952	.341	[-.312, .899]	.024	.287	.084	.933	[-.540, .589]
Nv x Prev	-.358	.198	-1.807	.071	[-.747, .031]	-.390	.185	-2.112	.035	[-.753, -.027]
Prev x Prom	.024	.117	.205	.837	[-.206, .254]	.072	.109	.663	.508	[-.142, .287]
Prom x Prev x Fr	.140	.234	.599	.550	[-.320, .601]	.271	.218	1.241	.215	[-.158, .700]
Prom x Prev x Nv	.297	.327	.908	.364	[-.345, .938]	.239	.305	.783	.434	[-.360, .837]
Prev x Fr x Nv	-.297	.396	-.751	.453	[-1.075, .481]	-.146	.369	-.394	.694	[-.871, .580]
Prom x Fr x Nv	1.700	.616	2.758	.006	[.489, 2.911]	1.178	.575	2.050	.041	[.049, 2.307]
Prom x Prev x Fr x Nv	.538	.653	.823	.411	[-.746, 1.821]	.181	.609	.296	.767	[-1.016, 1.377]

Note. *N* = 557. CI = confidence interval for unstandardized beta (*B*).

S4: Separate regression analyses for the universalism-animals and -nature items

These analyses present results when considering the two items measuring nature values separately, that is for universalism-animals (“Caring for the welfare of all animals”) and universalism-nature (“Protecting the natural environment from destruction or pollution”).

For text evaluations, prior to regression analyses all continuous variables were again mean centered and the condition coded accordingly (-0.5 prevention-framing, +0.5 promotion-framing). Participants’ mean text evaluation was regressed on the framing condition, their promotion focus, their prevention focus, and their score on the universalism-animal or -nature item, all 2-way and 3-way interactions, as well as the 4-way interaction between these variables.

For donations made, two logistic regressions regressed participants’ donation choices on the same predictors as before (with framing condition coded 0 = prevention-frame, 1 = promotion-frame). The first regression contrasted donations to environmental charities (coded 1) vs. other charities (coded 0) – thus comparing donation receivers, *if* donations indeed were made. The second regression contrasted donations to environmental charities (coded 1) vs. other charities *and* the option of not donating (coded 0) – thus comparing targeted donations to *all* other options.

Universalism-animals item

Regarding text evaluations, regression analyses revealed a significant higher-order promotion by framing by universalism-animals item interaction (see Table S2). No other effects emerged.

Decomposing this significant interaction via simple slopes (Aiken & West, 1991), the promotion by framing interaction was positive and significant for those who had a relatively high universalism-animals item score (+1SD), $B = .556$, $SE = .243$, $t = 2.292$, $p = .022$, $CI_{95} [.080, 1.033]$, but negative and non-significant for those with relatively low universalism-animals item scores (-1SD), $B = -.481$, $SE = .281$, $t = -1.715$, $p = .087$, $CI_{95} [-1.033, .070]$.

Further decomposing the promotion by framing interaction for those with relatively high universalism-animals item scores showed that with stronger promotion focus, the text was evaluated more positively when it was promotion-framed, $B = .340$, $SE = .157$, $t = 2.164$, $p = .031$, $CI_{95} [.031, .648]$, and less positively, though not significantly so, when it was prevention-framed, $B = -.217$, $SE = .185$, $t = -1.170$, $p = .242$, $CI_{95} [-.580, .147]$.

Regarding donations made, as shown in Table S3, both regressions revealed a strong main effect of the universalism-animals item score. Participants with relatively high scores on this item were more likely to donate to environmental charities, with an odd ratio of 12.43 for donations to environmental charities versus other charities and an odds ratio of 6.57 for donations to environmental charities versus other charities and no donations made. No other significant effects emerged.

Overall, for the universalism-animals item the exact same results emerged as when considering universalism-animals and -nature items jointly regarding both text evaluations and donations made.

Universalism-nature item

Regarding text evaluations, regression analyses revealed a significant prevention by universalism-nature item interaction that was further qualified by a higher-order promotion by prevention by universalism-nature item interaction (see Table S4). No other effects emerged.

Decomposing this significant interaction via simple slopes (Aiken & West, 1991), the promotion by prevention interaction was positive and significant for those with a relatively high universalism-nature item score (+1SD), $B = .294$, $SE = .139$, $t = 2.112$, $p = .035$, $CI_{95} [.021, .567]$, but negative and non-significant for those with relatively low universalism-nature item scores (-1SD), $B = -.203$, $SE = .159$, $t = -1.278$, $p = .202$, $CI_{95} [-.514, .109]$.

Further decomposing the promotion by prevention interaction for those with a relatively high universalism-nature item score showed that with stronger prevention focus the text tended to be evaluated more positively the stronger their promotion focus was, $B = .338$,

$SE = .206, t = 1.637, p = .102, CI_{95} [-.067, .743]$, and less positively the weaker their promotion focus was, $B = -.208, SE = .159, t = -1.308, p = .192, CI_{95} [-.20, .104]$.

Regarding donations made, as shown in Table S5, participants with relatively high scores on the universalism-nature item tended more to donate to environmental charities versus other charities, though this fell short of statistical significance (OR of 2.94, $p = .105$). At the same time, they were more likely to donate to environmental charities versus other charities and no donations made (OR of 2.79, $p = .045$). No other significant effects emerged.

Overall, for the universalism-nature item similar results emerged, albeit weaker, for donations made as when considering universalism-animals and -nature items jointly (see main text). At the same time, regarding text evaluations results differed, and framing no longer exerted an impact. Instead, stronger promotion and prevention focus along with a high score on the universalism-nature item tended to contribute to positive text evaluations.

Table S2

Results of Multiple Regression Analyses Testing for Effects of all Predictors with the Universalism-animals Item on Text Evaluation

Predictor	Text evaluation				
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI (<i>B</i>)
Framing	.031	.118	.263	.793	[-.201, .263]
Universalism-animals item	-.009	.145	-.060	.952	[-.294, .277]
Promotion (Prom)	-.032	.092	-.349	.727	[-.213, .149]
Prevention (Prev)	-.019	.065	-.300	.764	[-.147, .108]
Promotion x Framing	.038	.184	.204	.839	[-.324, .399]
Prevention x Framing	-.028	.130	-.213	.831	[-.283, .228]
Universalism-animals item x Framing	-.320	.291	-1.101	.271	[-.891, .251]
Universalism- animals item x Promotion	.229	.228	1.002	.317	[-.220, .677]
Universalism- animals item x Prevention	-.235	.149	-1.572	.116	[-.528, .059]
Prevention x Promotion	.087	.112	.778	.437	[-.133, .308]
Prom x Prev x Framing	.229	.225	1.020	.308	[-.212, .671]
Prom x Prev x Universalism-animals item	-.113	.243	-.464	.643	[-.590, .364]
Prev x Framing x Universalism-animals item	-.056	.299	-.188	.851	[-.643, .530]
Prom x Framing x Universalism-animals item	1.268	.456	2.778	.006	[.371, 2.164]
Prom x Prev x Framing x Universalism-animals item	.513	.486	1.057	.291	[-.441, 1.468]

Note. *N* = 557. CI = confidence interval for unstandardized beta (*B*).

Table S3

Results of Logistic Regression Analyses Testing for Effects of all Predictors with the Universalism-animals Item on Donations Made

Predictor	Donations to pro-environmental charities (1) vs. other charities (0)					Donations to pro-environmental charities (1) vs. other charities and no donations made (0)				
	<i>B</i>	<i>SE</i>	Wald χ^2	<i>p</i>	OR, 95% CI (OR)	<i>B</i>	<i>SE</i>	Wald χ^2	<i>p</i>	OR, 95% CI (OR)
Framing (Fr)	-.066	.311	.045	.831	.94 [.51, 1.72]	-.049	.268	.034	.854	.95 [.56, 1.61]
Un-a	2.520	.658	14.673	.000	12.43 [3.43, 45.14]	1.882	.453	17.288	.000	6.57 [2.71, 15.95]
Promotion (Prom)	.179	.350	.263	.608	1.20 [.60, 2.38]	.187	.307	.370	.543	1.21 [.66, 2.20]
Prevention (Prev)	.013	.223	.003	.954	1.01 [.65, 1.57]	.040	.196	.042	.838	1.04 [.71, 1.53]
Prom x Fr	-.543	.477	1.294	.255	.58 [.23, 1.48]	-.520	.413	1.588	.208	.60 [.27, 1.34]
Prev x Fr	.175	.366	.184	.668	1.17 [.57, 2.40]	-.046	.296	.025	.876	.96 [.53, 1.71]
Un-a x Fr	1.746	1.078	2.624	.105	5.73 [.69, 47.42]	.568	.636	.796	.372	1.77 [.51, 6.14]
Un-a x Prom	.789	1.048	.567	.451	2.20 [.28, 17.15]	.842	.751	1.256	.262	2.32 [.53, 10.12]
Un-a x Prev	.008	.610	.000	.990	1.01 [.31, 3.33]	-.834	.434	3.683	.055	.44 [.19, 1.02]
Prev x Prom	.405	.422	.922	.337	1.50 [.66, 3.43]	.383	.348	1.211	.271	1.47 [.74, 2.90]
Prom x Prev x Fr	-1.298	.680	3.642	.056	.27 [.07, 1.04]	-.774	.522	2.203	.138	.46 [.17, 1.28]
Prom x Prev x Un-a	.062	1.116	.003	.955	1.06 [.12, 9.48]	-.495	.746	.440	.507	.61 [.14, 2.63]
Prev x Fr x Un-a	.434	1.126	.149	.700	1.54 [.17, 14.04]	.927	.642	2.087	.149	2.53 [.72, 8.89]
Prom x Fr x Un-a	.691	1.522	.206	.650	2.00 [.10, 39.37]	-.186	.969	.037	.847	.83 [.12, 5.54]
Prom x Prev x Fr x Un-a	1.889	1.748	1.168	.280	6.62 [.22, 203.57]	.394	1.059	.138	.710	1.48 [.19, 11.82]

Note. *N* = 557. Un-a = universalism-animals item. OR = Odds ratio. CI = confidence interval for odds ratio.

Table S4

Results of Multiple Regression Analyses Testing for Effects of all Predictors with the Universalism-nature Item on Text Evaluation

Predictor	Text evaluation				
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI (<i>B</i>)
Framing	.003	.118	.025	.980	[-.229, .235]
Universalism-nature item	-.250	.164	-1.519	.129	[-.573, .073]
Promotion (Prom)	.039	.091	.426	.670	[-.140, .217]
Prevention (Prev)	-.022	.064	-.350	.726	[-.148, .103]
Promotion x Framing	.074	.182	.409	.682	[-.283, .431]
Prevention x Framing	.026	.128	.206	.837	[-.225, .278]
Universalism-nature item x Framing	-.416	.329	-1.267	.206	[-1.062, .2291]
Universalism-nature item x Promotion	.070	.262	.268	.788	[-.444, .584]
Universalism-nature item x Prevention	-.382	.167	-2.287	.023	[-.710, -.054]
Prevention x Promotion	.045	.106	.428	.669	[-.164, .255]
Prom x Prev x Framing	.173	.213	.813	.417	[-.245, .591]
Prom x Prev x Universalism-nature item	.666	.280	2.375	.018	[.115 1.217]
Prev x Framing x Universalism-nature item	-.137	.334	-.412	.681	[-.793, .518]
Prom x Framing x Universalism-nature item	.645	.523	1.232	.218	[.383, 1.673]
Prom x Prev x Framing x Universalism-nature item	-.237	.561	-.423	.673	[-1.339, .865]

Note. *N* = 557. CI = confidence interval for unstandardized beta (*B*).

Table S5

Results of Logistic Regression Analyses Testing for Effects of all Predictors with the Universalism-nature Item on Donations Made

Predictor	Donations to pro-environmental charities (1) vs. other charities (0)					Donations to pro-environmental charities (1) vs. other charities and no donations made (0)				
	<i>B</i>	<i>SE</i>	Wald χ^2	<i>p</i>	OR, 95% CI (OR)	<i>B</i>	<i>SE</i>	Wald χ^2	<i>p</i>	OR, 95% CI (OR)
Framing (Fr)	.014	.272	.003	.958	1.01 [.60, 1.73]	-.027	.240	.013	.911	.97 [.61, 1.56]
Un-n	1.078	.665	2.626	.105	2.94 [.80, 10.82]	1.026	.512	4.012	.045	2.79 [1.02, 7.61]
Promotion (Prom)	.235	.315	.554	.457	1.26 [.68, 2.35]	.324	.275	1.392	.238	1.38 [.81, 2.37]
Prevention (Prev)	-.207	.193	1.151	.283	.81 [.56, 1.19]	-.172	.177	.946	.331	.84 [.60, 1.19]
Prom x Fr	-.381	.418	.828	.363	.68 [.30, 1.55]	-.424	.368	1.333	.248	.65 [.32, 1.35]
Prev x Fr	.246	.301	.667	.414	1.28 [.71, 2.31]	.134	.260	.267	.605	1.14 [.69, 1.90]
Un-n x Fr	.709	.878	.653	.419	2.03 [.36, 11.35]	.483	.666	.527	.468	1.62 [.44, 5.98]
Un-n x Prom	.333	1.215	.075	.784	1.40 [.13, 15.10]	-.043	.825	.003	.958	.96 [.19, 4.82]
Un-n x Prev	-.332	.601	.305	.580	.72 [.22, 2.33]	-.521	.498	1.095	.295	.59 [.22, 1.58]
Prev x Prom	.099	.333	.088	.767	1.10 [.58, 2.12]	.132	.299	.196	.658	1.14 [.64, 2.05]
Prom x Prev x Fr	-.526	.511	1.062	.303	.59 [.22, 1.61]	-.267	.433	.380	.538	.77 [.33, 1.79]
Prom x Prev x Un-n	.383	1.191	.103	.748	1.47 [.14, 15.15]	.581	.874	.441	.507	1.79 [.32, 9.92]
Prev x Fr x Un-n	.625	.919	.462	.497	1.89 [.31, 11.33]	1.018	.697	2.134	.144	2.77 [.71, 10.84]
Prom x Fr x Un-n	-.970	1.502	.417	.519	.38 [.02, 7.20]	-1.076	1.077	.999	.318	.34 [.04, 2.81]
Prom x Prev x Fr x Un-n	-3.098	1.720	3.244	.072	.05 [.00, 1.31]	-2.359	1.221	3.731	.053	.10 [.01, 1.04]

Note. *N* = 557. Un-n = universalism-nature item. OR = Odds ratio. CI = confidence interval for odds ratio.