Full Title: The Effect of a Goal-Framing Manipulation on Environmentalism

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Abstract

We promoted pro-environmental action as aligned with hedonic, gain and normative goal-frames to test the influence on liberal and conservative environmentalism. Environmentalism was not affected by goal-frame condition, but a main effect of political orientation showed liberals reported greater climate belief and willingness to take action. Overall, frames were equally (in)effective, regardless of political leaning.

Keywords: goal-framing theory, environmentalism, hedonic, gain, normative, political orientation

The Effect of a Goal-Framing Manipulation on Environmentalism

Despite the imminent threat of climate change, many individuals fail to engage in pro-environmental behaviours (PEBs; [1]). Lindenberg and Steg's [2] goal-framing theory identifies three drivers of environmentalism: the hedonic (seeking pleasure, avoiding discomfort), gain (seeking to preserve and maximise resources) and normative goal-frames (seeking to act appropriately, conform to norms).

To date, just one study examines the effects of all three goal-frames on environmentalism, implicating the gain goal as most influential over travel intentions [3]. The remaining studies in this area are correlational and contradictory: while Chakraborty, Singh, and Roy [4] found the strongest correlation between the normative goal-frame and PEB, Rezvani, Jansson, and Bengtsson's [5] work favoured the hedonic goal-frame. We contribute to this literature by testing how emphasising the emotional (hedonic), economic (gain) and moral (normative) aspects of pro-environmental action work to motivate pro-environmentalism.

There are known groups in society especially *resistant* to accepting climate change. Hornsey et al. [6] identified conservative political orientation as among the strongest barriers to climate change belief. As well as examining the extent environmentalism differs by political orientation, we extend upon research that considers whether environmental interventions are differentially effective for political groups (e.g., Whitmarsh & Corner [7]).

Some research suggests conservatives may be more responsive to gain and normative interventions. For example, for climate change “deniers”, Bain et al. [8] demonstrated that highlighting economic and technological benefits of climate policies were most effective. Conservatives are also particularly responsive to messages emphasising the moral sanctity of environmental behaviour (e.g., Feinberg & Willer [9]). These messages are broadly aligned with

gain and normative goal-frames, thus providing preliminary evidence that conservatives may be more responsive to interventions that highlight the personal economic benefits (gain) and moral duty (normative) of engaging in PEB.

Based on goal-framing theory, we expected manipulating hedonic, gain and normative goal-frames would increase pro-environmentalism compared to an information-only condition. Liberals would likely report higher environmentalism than those with no political orientation and conservatives, regardless of experimental condition. Furthermore, we predicted experimental effects would depend on political orientation, such that the gain and normative frames would be most effective for conservatives, while the hedonic frame would be more effective for liberals.

Method

Participants

Members of the general Australian population were recruited for an online survey using non-probability sampling techniques, including convenience and snow-balling methods via social media platforms. After 132 participants were removed for failing a manipulation check, the final sample was 365 participants, surpassing the 280 participants required to detect an expected effect size of .20 with adequate power (.80) from an a priori power analysis conducted using G*Power (Faul et al. [10]). Participants were 58% female and 1% other, aged between 14 and 81 years ($M = 33.43$, $SD = 13.81$).

Materials and Procedure

Participant's indicated their political orientation (from 1 = *very liberal*, 7 = *very conservative*), which was later grouped into liberal (1-3), no political orientation (4), and conservative (5-7; consistent with Whitmarsh & Corner [7]). Participants were then randomly allocated to view one of four posters (hedonic, gain, normative or control; see Supplementary

Material, Table S1). The control poster relayed information included in traditional climate change communications derived from Sapiains, Beeton, and Walker [11]. In the experimental conditions, the same information was presented in the same style, however the messages were framed in terms of either hedonic, gain or normative factors.

Participants then completed a series of environmentalism measures (all items are listed in the Supplementary Material). This included Liu and Sibley's [12] two related ($r = .80$) items measuring willingness to make sacrifices for the environment on a Likert scale from 1 (*definitely no*) to 7 (*definitely yes*). Climate change beliefs were measured using Brownlee and Verbos's [13] fourteen-item Occurrence and Anthropogenic Causations Scale ($\alpha = .96$), with responses from 1 (*completely disagree*) to 7 (*completely agree*). We adapted the scale to include "animal agriculture", as research shows that the animal agricultural sector is one of the largest contributors to anthropogenic climate change [14]. This item had a high corrected item-total correlation ($r = .65$), indicating excellent fit with the remainder of the scale. Dunlap and Van Liere's [15] twelve-item New Environmental Paradigm (NEP) Scale reliably ($\alpha = .85$) measured pro-environmental attitudes on a 5-point Likert scale.

Finally, participants were asked to identify the title of the poster they viewed. This allowed us to identify and remove those participants who may not have attended to the experimental manipulation.

Results

A 4 (condition) x 3 (political orientation) factorial analysis of variance (ANOVA) was conducted to evaluate the effects of goal-frame condition (hedonic, gain, normative, control) and political orientation (liberal, no political orientation, conservative) on each measure of environmentalism. A Bonferroni correction and a conservative alpha of .017 was employed to

control for familywise error, and a Games-Howell correction was used during post-hoc analyses due to the unequal distribution of political groupings.

Figure 1 graphs means for each outcome variable as a function of condition and political orientation (see also Table S2). Across each aspect of environmentalism, goal-framing condition had a non-significant main effect (willingness to sacrifice: $F(3, 352) = 1.65, p = .178, \eta^2_p = .014$; climate change belief: $F(3, 352) = 1.15, p = .330, \eta^2_p = .010$; pro-environmental attitudes: $F(3, 352) = 0.46, p = .713, \eta^2_p = .004$), suggesting the poster participants viewed did not significantly influence their environmentalism.

Instead, we observed significant main effects for political orientation on willingness to sacrifice ($F(2, 352) = 14.19, p < .001, \eta^2_p = .075$), climate change beliefs ($F(2, 352) = 36.19, p < .001, \eta^2_p = .171$), and pro-environmental attitudes ($F(2, 352) = 4.35, p = .014, \eta^2_p = .024$). Post hoc analyses (Table S3) revealed that liberals were significantly more willing to make sacrifices for the environment (medium effect size) and had greater climate change beliefs (largest effect size), than individuals with no political orientation and conservatives. Counter to hypotheses and the significant overall ANOVA, political groups did not differ significantly on pro-environmental attitudes.

We also did not find support for the prediction that environmentalism would differ as a function of the interaction between the goal-frame conditions and political orientation for any environmental indicator (willingness to sacrifice: $F(6, 352) = 0.83, p = .545, \eta^2_p = .014$; climate change beliefs: $F(6, 352) = 1.55, p = .160, \eta^2_p = .026$; pro-environmental attitudes: $F(6, 352) = .57, p = .752, \eta^2_p = .010$).

Discussion

The goal-framing manipulation in our study did not motivate pro-environmental responses. Instead, participants in each goal-frame condition reported similar levels of environmentalism as those in a control condition. Existing research on this topic suggested that the hedonic, gain and normative goal-frames would positively influence environmentalism [3,4,5]. However, this existing research is either correlational or has a narrow focus on a single aspect of environmentalism (e.g., green transport). Our findings are the first to report on an experimental design examining effects on a broader range of pro-environmental responses.

The main predictor of environmentalism in our study was political orientation. Consistent with existing research, liberals reported greater environmentalism: significantly higher willingness to make sacrifices for the environment (medium effect) and climate change beliefs (large effect) than individuals with no political orientation and conservatives. Regardless of how climate action was framed to participants, levels of environmentalism remained constant across the political divide. This has important implications for persuasive environmental campaigns, as it suggests that political orientation is more influential than the way in which climate action is framed.

One potential reason our manipulations did not significantly influence environmentalism is that participants might not have engaged with the framed information enough to affect their dominant goal-frame. Our posters were consistent with real-world environmental campaigns, such as environmental posters, fact sheets and infographics distributed by the Environmental Protection Agency, and the Queensland and Victorian Government (see State websites for examples). Therefore, findings perhaps give a more accurate reflection of the real-life attentiveness of participants to environmental messaging and campaigns. Future studies ought to

examine the ideal ‘dose’ of framed information, keeping in mind the extent to which individuals engage with environmental campaigns in real-life settings, to inform the design of future environmental interventions. In the absence of a true no-climate information control group, it is impossible to determine whether the posters had overall positive or negative effects on environmentalism, just that they were equally (in)effective.

Taken together, these findings stress the importance of ensuring individuals *engage* with pro-environmental manipulations, and that future research determines whether presenting framed information does affects one’s dominant goal-frame. In the context of political polarisation of climate change, more work is needed to determine whether the three main motives for environmental engagement can be leveraged to motivate environmentalism across the political divide.

Author statement

Teaghan L. Hogg: Conceptualization, Methodology, Formal Analysis, Investigation, Data Curation, Writing – Original Draft, Writing – Review and Editing.

Samantha K. Stanley: Supervision, Writing – Review and Editing.

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Figure 1. The effects of condition and political orientation on environmentalism. Error bars represent 95% confidence intervals based on 2000 bootstrap iterations.