



# Message framing influences perceived climate change competence, engagement, and behavioral intentions

Robert Gifford<sup>a,\*</sup>, Louise A. Comeau<sup>b</sup>

<sup>a</sup> University of Victoria, Canada

<sup>b</sup> Royal Roads University, Canada

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## ABSTRACT

The effect of motivational versus sacrifice message framing on perceived climate change competence, engagement, and 15 mitigative behavioral intentions was examined in a large Canadian community sample ( $n = 1038$ ). Perceived competence, engagement, and several behavioral intentions were significantly greater after exposure to motivational framing than after sacrifice framing. Gender, age, income, and educational level moderated some results, and moral engagement and agentic language also played a role. The results support the use of motivational frames rather than sacrifice frames to increase the climate-related engagement and activation of community members.

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## 1. Introduction

If climate change is to be mitigated, global emissions should not exceed the capacity of the biosphere to absorb them. One IPCC projection is for a 2 °C warming. To avoid that level of warming or more, global emissions must peak by 2015 and fall by 50–85% by 2050, an important threshold for ecosystems and people (IPCC, 2007). However, rather than declining, global emissions are projected to climb almost 60% by 2025 (World Resources Institute, 2008).

To achieve reductions relatively soon, new forms of discourse to support the emergence of a sustainability ethic will be required (Bandura, 2007; Corbett, 2006; Dale, 2005; Dietz et al., 1999; Jamieson, 2007, 2008; Leiserowitz and Fernandez, 2007; Moser and Dilling, 2007b; Phoenix, 2006). Social scientists, policy-makers, and non-governmental organizations are grappling with the question of how to increase citizen engagement in climate change issues (e.g., Dale and Onyx, 2005; Dilling and Moser, 2007). The primary purpose of this study was to assist in this effort by comparing the efficacy, in a large representative community sample, of message frames that emphasize sacrifice with those that emphasize motivation.

Households are one important target segment for attempts to reduce greenhouse gas emissions. Household energy use signifi-

cantly contributes to greenhouse gas emissions. For instance, in the United States, households account for about 32% of total energy use (Gardner and Stern, 2002). Apart from this direct use, households also use energy in many indirect ways, for example in the production, transportation, and disposal of goods and services (e.g., Vringer and Blok, 1995). In the Netherlands, for example, about 45% of total energy use by households involves direct energy use and about 55% involves indirect energy use (Noorman and Schoot Uiterkamp, 1998; Vringer and Blok, 1995).

Global climate change is a diffuse phenomenon that can even involve temporary local cooling, one that can seem beyond the control of individuals. Therefore, one would expect that an element of empowerment is required if social mobilization is to be achieved. To date, little evidence supports this statement, although studies with children suggest that increasing their knowledge can add to their sense of empowerment (Devine-Wright et al., 2004; Taber and Taylor, 2009). Messaging can be an important key to success in this endeavor.

### 1.1. Framing

Message framing refers to communication in words, images, and phrases for the purposes of relaying information about an issue or event (Chong and Druckman, 2007). Frames can be used to define problems, suggest who is responsible or guilty, and what the most effective solution might be (Corbett, 2006; Cox, 2006; McComas et al., 2001; Shanahan and Good, 2000). The present study primarily investigates the effect of sacrifice-oriented versus

\* Corresponding author. Tel.: +1 250 721 7532.

E-mail address: [rgifford@uvic.ca](mailto:rgifford@uvic.ca) (R. Gifford).

motivational-oriented message framing on priming the perceived competence, engagement, and intent to act on climate change of a general population. Demographic variations and the role of moral engagement are also considered.

### 1.2. Sacrifice versus motivational framing

A number of guidelines and strategies for effectively communicating climate change issues have begun to emerge (e.g., [NESTA, 2008](#)). Among these is the suggestion that messages should portray the possible benefits to the individual of climate action, such as positive changes in lifestyle and subsequent improvements in quality of life, rather than sacrifice or fear appeals. Some writers have begun to challenge environmental and governmental organizations for their frequent use of sacrifice-oriented messages and communications (e.g., [Nordhaus and Shellenberger, 2007](#)). For example, shifting discourse toward a motivational-oriented approach that involves “solutions, values, and visions” instead of sacrifices by citizens has been proposed as a more effective strategy for encouraging climate-change-related behaviors ([Moser and Dilling, 2007a](#), p. 496). However, to the best of our knowledge, no previous study has empirically demonstrated this, particularly in a large community sample.

### 1.3. Objectives

This study evaluated the influence of two environmental message frames (motivational or sacrifice, and a control condition) on perceived competence, engagement, and behavioral intentions for a series of residence- and transportation-based mitigative behaviors.

**Hypothesis 1.** Exposure to motivational framing will be associated with greater perceived competence to deal with climate change than will exposure to sacrifice framing.

**Hypothesis 2.** Exposure to motivational framing will be associated with greater climate change engagement than will exposure to sacrifice framing.

**Hypothesis 3.** Exposure to motivational framing will be associated with stronger intentions to change home- and transportation-based mitigative behaviors than will exposure to sacrifice framing.

**Hypothesis 4.** Demographic factors will (a) moderate the influence of priming frame on perceived competence, engagement, and behavioral intentions, and (b) be associated with variations in climate-related concern, knowledge, competence, engagement, and intentions.

**Hypothesis 5.** Motivational-oriented requests for justifications of pro-environmental behavior will elicit stronger elements of moral engagement than will sacrifice-oriented requests.

## 2. Methods

### 2.1. Overview

The study employed both quantitative and qualitative methodologies. An online questionnaire was used to administer the motivational and sacrifice priming frame conditions, plus a control condition in which neither frame was presented. The respondents were queried on their climate change concern, knowledge, perceived competence, engagement, intention to adopt a series of mitigative behaviors, and demographic items. The priming frame conditions were placed after the concern and knowledge

items and before the perceived competence, engagement, and behavioral intention items. Apart from the three framing variations, the questionnaire was identical for each group.

### 2.2. Participants

The participants were 1038 (502 male and 536 female) residents of the province of Ontario, Canada.<sup>1</sup> To recruit them, a random sample representative of the Ontario population that balanced gender, age, and regional distribution was purchased from a commercial polling organization. The population of Ontario is approximately 12 million. For this population size, with  $p < .05$  and a significance interval of 3%, a sample size of 1067 is required ([www.surveysystem.com/sscalc.htm](http://www.surveysystem.com/sscalc.htm)). The study's sample size of 1038 was, therefore, sufficient to meet these requirements.

The survey was sent via a link in an email message in April, 2008. The questionnaire was tested through a “soft launch” with 100 participants. When no issues related to respondent understanding of the items, privacy, etc., arose, the full instrument was launched and continued until enough were received to meet the requirements of a random sample (i.e., the provincial averages for age, gender, and regional distribution). The sample objectives were achieved within one week.

The respondents' ages ranged from 18 to 81, with an average of 43.40 years and a standard deviation of 14.49 years. Seventy-eight percent had more than a high school education. Sixty-three percent owned their homes, and 49% had an annual household income of more than C\$60,000. They were randomly assigned to one of three conditions: sacrifice priming ( $n = 369$ ), motivational priming ( $n = 344$ ), or a no-priming control ( $n = 325$ ). The groups did not significantly differ in gender, age, education, income, or owning versus renting their residence.

### 2.3. Measures

#### 2.3.1. Concern and knowledge

First, climate change concern was measured on a seven-point scale: “How concerned are you about climate change?” (1 = “not at all concerned” to 7 = “very concerned”). Second, factual knowledge about climate change was measured by two items, one about the causes of global warming (6 choices: emissions from power plants, thinning ozone layer, air pollution, carbon dioxide and other greenhouse gases, industrial chemicals, and do not know), and one about the processes leading to it (5 choices: carbon-based gases trapping heat at the Earth's surface, letting more of the sun's heat into the Earth's atmosphere through a thinner ozone layer, chemical reactions using up the air's oxygen, pollution changing the chemical makeup of the air, and do not know).

#### 2.3.2. Sacrifice or motivational priming

Next, the priming was accomplished by presenting the respondents with four items to consider. The sacrifice items were designed to clearly state the case for individual sacrifice that seems present when climate change solutions are discussed within the context of a consumer culture, particularly as presented in the media. Rather than hint at sacrifice, the items were explicit: “To stop climate change, I have to make sacrifices,” “I am going to have to get used to driving less, turning off the lights, and turning down the heat,” “I am going to have less money in my pocket because solving climate change is going to make energy and everything else

<sup>1</sup> Careless responding was monitored by the amount of time taken to complete a check question that instructed respondents to select a particular response. This procedure resulted in the removal of data from some individuals. Others did not complete the survey and so their data was dropped.

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