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Personal experience with climate change predicts intentions to act

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ABSTRACT

The public's willingness to engage in mitigation actions has not received as much attention as the level of belief in Global Warming (GW), especially on the international stage. Research in Western nations indicates that people systematically misunderstand GW and the actions required for mitigation. Important factors that influence judgments about mitigation actions include personal experiences, beliefs, knowledge, values, and worldviews. We present results of an international survey (25 samples from 24 countries) measuring general intentions to act and willingness to engage in specific actions. Our analysis reveals that endorsement of specific actions is (a) lower than general endorsement of mitigation, (b) accompanied by higher intra-individual variance, and (c) more strongly related to personal experiences with GW. This pattern can be attributed to the compatibility between the proximal construal of specific actions and the nature of the personal experience. Lastly we provide recommendations on how these findings can be used to encourage mitigation action.

1. Introduction

Communication about climate science defies a "one size fits all" solution (Budescu et al., 2012; CRED, 2009; Pidgeon and Fischhoff, 2011; Spence et al., 2012; Weber, 2006, 2013). Weber and Stern (2011) provide a constructivist account of human judgment to explain the cognitive strategies that leave the general public vulnerable to systematic misunderstanding about climate change. They list the important factors that can influence judgments about climate change: (a) personal experiences (Akerlof et al., 2013; Li et al., 2011; Myers et al., 2013; Weber, 2006, 2010, 2013), (b) mental models that represent the respondents' knowledge about climate (Bord et al., 2000; Bostrom et al., 1994), and (c) beliefs, values, and worldviews (Bain et al., 2012; Dunlap and McCright, 2008; Feygina et al., 2010; Heath and Gifford, 2006; Stern, 2000).

The public's perception of climate science is quite inaccurate (Weber and Stern, 2011). For example, Leiserowitz et al. (2013) report that only 49% of Americans believe global warming (GW) is caused mostly by human activities and only 42% know that most scientists agree that GW is happening. While communication about GW by scientists plays an important role in shaping the political and policy debate (see CRED, 2009; Pidgeon and Fischhoff, 2011), recent research has shown that personal experiences with GW also play a role in individual decision making and potentially override knowledge about climate science (Li et al., 2011; Spence et al., 2011; Weber, 2006, 2010, 2013).

Previous theoretical frameworks such as the theory of reasoned action (Fishbein and Ajzen, 1975) and the expanded theory of planned behavior (Ajzen, 1991) have identified behavioral intentions as a precursor to action, assuming there are no barriers to physically perform the action. These theories build on the expectancy-value model (Eccles et al., 1983) and suggest that the intention to perform a behavior is predicted by (a) attitudes, (b) subjective norms, and (c) behavioral control, which are represented in more recent investigations of GW mitigation actions by (a) beliefs in GW, (b) values and ideology, and (c) knowledge and self-efficacy respectively (Bord et al., 2000; Heath and Gifford, 2006). Empirical tests of the theory of reasoned action found that general intentions were easier to predict than specific intentions (see Fishbein and Ajzen, 1975 for review). The prediction of specific actions is highly context dependent and such models require additional theoretical development.

Fishbein and Ajzen (1975) describe four elements of the specificity of intention important for accurate prediction: (a) the behavior, (b) the target object, (c) the situation, and (d) the time. Each element is theorized to vary along its own dimension of specificity. We differentiate between general endorsement of mitigation actions and endorsement of specific impactful actions by manipulating the specificity of the *behavior* element that

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defines the mode of behavior through which mitigation of GW will be performed. For example, a general mitigation action refers ambiguously to behavior to ameliorate GW while a specific mitigation action pertains to a particular concrete behavior, such as changing one's commute, home thermostat settings, or voting behavior.

Intentions to take mitigation actions are, most likely, influenced by a multitude of factors. This paper focuses on the role of personal experiences with GW for predicting the endorsement of mitigation actions. Li et al. (2011) suggests that in the context of climate change *attribute substitution* takes place when the complex and subjective attribute of climate change is substituted by one's personal experience with the local weather, which is easier to evaluate. Personal experience can therefore potentially be used to guide one's intention to take mitigation actions.

1.1. Personal experiences with global warming

Personal experiences with GW are salient and psychologically proximal (Spence et al., 2011; Weber, 2006, 2013). Risen and Critcher (2011) have shown that, through manipulation of the laboratory's temperature, subjects judged states of the world as more likely if they matched their current visceral experience. However, people can differ in their perceptions and reports of these experiences because (a) their experiences are different, and/or (b) their social construction of these experiences are different (e.g., Myers et al., 2013). The psychological mechanism is under debate: perceptions may be formed by personal values (e.g., one cannot see GW unless one believes in it), and personal values may be formed by experiences (e.g., one believes in GW because one sees it). Myers et al. (2013) provided evidence for both: (a) personal experiences mold beliefs and (b) beliefs mold personal experiences and postulated that the two processes occurred for different audiences. Weber (2013) points out that if everyone had the same experiences, beliefs held by the public should converge over time, but this has not been the case. Research has documented the role of social construction in shaping experiences, but there is also evidence that experiencing GW is not entirely socially constructed (e.g., Goebbert et al., 2012). For example, Akerlof et al. (2013) show that residents of Alger County Michigan noticed changes in the climate that matched the climatic record for the county, and their reports of personal experiences of GW predicted local risk perceptions (controlling for political affiliation). Research is just beginning to investigate the relationship between the polarization of public opinion and the public's tendency to view local weather events they experience as manifestations of GW (Li et al., 2011; Weber, 2013; Zaval et al., 2014).

1.2. Self-efficacy

Self-efficacy was originally defined by Bandura (1986) as "a judgment of one's capability to accomplish a certain level of performance." This concept has been invoked and applied in theories of behavioral intention. For example, Bandura's self-efficacy is conceptually connected to *perceived behavioral control* in the theory of planned behavior (Ajzen, 1991). In the context of social dilemmas, Kerr (1992) introduced the concept of *self-efficacy of cooperation* reflecting one's belief that cooperative behavior will have a significant effect on the outcome of a large group. Self-efficacy of cooperation was identified as an important predictor of intention to perform mitigation action by Heath and Gifford (2006).

1.3. Research goals

Previous research on behavioral intentions has demonstrated little predictive ability for specific behavior intentions of the kind that will make a meaningful difference toward reducing the threats of climate change. For example, Bord et al. (2000) were able to account for 17% of variance in their action scale that included ratings of air conditioning usage, energy efficient purchases, and carpooling intentions. However, Bostrom et al. (2012) report an international survey administered to undergraduates in the U.S., Europe, and Asia that predicted successfully support of climate change policies. General pro-environmental policies (e.g., planting trees) received the most support while policies for reducing carbon (e.g., fuel efficiency) and engineering solutions (e.g., nuclear power) received less support. The variance in the support for these policies was associated with mental models that either linked GW mainly to carbon emissions or linked GW to any environmentally harmful activity. We contribute to this line of work by studying the role of personal experiences in endorsements of various impactful mitigation actions across the world.

Rabinovich et al. (2009) present evidence in support of their hypothesis based on construal level theory and goal setting research suggesting that environmental behavior performed in abstract mindsets is mediated by self-efficacy while behavior performed in specific mindsets is mediated by the perceived value of the action. The authors described these predictions through the expectancy-value framework that views behavioral motivation as the product of the expectancy of achieving a result and its value. Therefore, behavior is more likely occur when both expectancy and value are high, and less likely to occur when only one component is present. In their framework, abstract mindsets implicitly define the value of action and motivation is only achieved by those with high self-efficacy (or expectancy). Alternatively, specific mindsets implicitly trigger high expectancy of performing the action and motivation is only achieved by those with high perceived value of the action. Therefore, self-efficacy (similar to the theory of planned behavior) should be highly predictive of general behavioral intentions. Additionally, assuming personal experiences with GW represent the concrete value of mitigation through attribute-substitution, then perceived personal experience with GW should be highly predictive of specific behavioral intentions.

Previous research has examined commitment to mitigation actions without distinguishing between specific and general. For example, Spence et al. (2011) studied responses to flood experience with a general measure which does not identify specific behaviors ("I am prepared to greatly reduce my energy use to help tackle climate change") while Bain et al. (2012) measured endorsement of specific impact-oriented actions (e.g., voting, writing to politicians, donating money, etc.) in response to different frames of climate change actions. We study systematically the two levels of actions.

We hypothesize that the endorsement of general, abstract mitigation action will be associated with feelings of self-efficacy of cooperation (henceforth, self-efficacy), while endorsement of concrete actions (e.g., carpooling, thermostat settings) will be more strongly associated with personal experiences that highlight the value of these actions. This compatibility hypothesis relies on principles from Construal Level Theory (CLT; Trope et al., 2007; Liberman and Trope, 2008) which describes the relation between psychological distance and the extent to which people's thinking is abstract or concrete. CLT defines psychological distance as being connected to one's temporal, social, and geographical distance to the entity under consideration, and links perceived psychological distance with the mental construal of events. General intentions to take actions (e.g., "I plan to take some actions to stop GW") are represented at higher levels of abstraction and are psychologically further from the individuals. When thinking about GW at the abstract level, individuals focus on the bigger picture and the central features that provide an overview of the situation. This will direct attention to their perception of *self-efficacy* to solve this