Creating a climate for change: Interventions, efficacy and public discussion about climate change

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ABSTRACT

Interpersonal discussions about climate change among the public are important for creating positive social change to addressing the issue, yet a majority of the public does not regularly discuss the topic. Previous correlational research connects avoidance of climate change discussions to low efficacy about these discussions. The present research tests whether a knowledge-based intervention which 1) uses evidence-based communication techniques to increase science knowledge and 2) highlights community-level solutions can promote public discussion through improving efficacy beliefs. A lab experiment (N = 173) with university students and a field quasi-experiment with two nationally representative samples of visitors to *informal science learning centers* (e.g., aquariums, N_a = 1068, N_b = 907) demonstrates that those that received a knowledge-based intervention (vs. those who do not receive this intervention) report higher efficacy beliefs, which subsequently enhance engagement in climate change discussion. Our results suggest the potential for national-level knowledge-based interventions which improve efficacy beliefs to catalyze public engagement.

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1. Introduction

Regular public discussion about social issues, especially on the interpersonal level, is a fundamental component of civic engagement (Swim, Fraser, & Geiger, 2014). These discussions create the space for social change to emerge and foster an environment of cooperation in productively engaging in solutions to address climate change (Swim et al., 2014). The vast scientific consensus that large-scale shifts in the service of mitigation and adaptation to climate change may be necessary to avoid the most severe consequences (IPCC, 2014) might suggest that climate change is an important social issue worthy of public attention. Yet, only a small minority of Americans currently engage in discussion about this topic (Leiserowitz, Maibach, Roser-Renouf, Feinberg, & Rosenthal, 2015). Given this disengagement, an emerging avenue of research seeks to understand why so many avoid discussing climate change (Geiger & Swim, 2016; Maibach, Leiserowitz, Rosenthal, Roser-Renouf, & Cutler, 2016; Marshall, 2014; Norgaard, 2011). In the present research, we examine the role of efficacy beliefs about discussing climate change (i.e. individuals' self-perceived agency in

addressing climate change through conversation) in promoting discussion and how public interventions could increase discussion through increasing public efficacy beliefs.

One type of intervention that could be used to promote public discussion is a *knowledge-based* (i.e., educational) intervention. Specifically, we propose that a knowledge-based intervention which communicates climate change information in a simple, accurate, and engaging manner that is easy for learners to recall and repeat will promote increased public discussion of this topic. Knowledge-based interventions are perceived as relatively uncontroversial and could potentially help promote depoliticized discussion based on factual negotiation of the scientific implications, as well as creating other potential benefits to society. Yet, researchers have warned against making the assumption that a knowledge-based intervention will increase public engagement with a topic without empirically testing this claim (e.g., Jenkins, 1994; Schultz, 2002; Ziman, 1991). In the present research, we empirically examine the process by which large-scale knowledge-based interventions could promote public discussion.

2. Interpersonal context of responding to climate change

Responsible mitigation of climate change requires that

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developed countries immediately and sharply reduce their overall carbon emissions in order to maintain the habitability of the planet for current and future generations (Anderson & Bows, 2011; Jacobson & Delucchi, 2011; World Bank, 2012, pp. 1—106). The scale and speed of whole-scale energy and manufacturing transition to a post-carbon economy implicated as necessary in this shift makes it unlikely that small incremental behavioral change or minor policies designed to address climate change without upsetting existing economic and socio-cultural systems will satisfactorily address the issue (Clayton et al., 2015; Jacobson & Delucchi, 2011; Klein, 2014; Milinski, Semmann, Krambeck, & Marotzke, 2006; Oreskes, 2015; Rockström, 2015; Skocpol, 2014). Rather, this so-called "Great Transition" will require effort to unite people of different backgrounds and social identities to act cooperatively, and at a level and speed that some have compared to the mobilization in the US during WWII (Klein, 2014, p. 89; New Economics Foundation, 2009; Parks, Joireman, & Van Lange, 2013; Rao, 2015).

At the most basic level, a post-carbon transition will require interpersonal negotiation in order to create social momentum and coordinated action. The importance of interpersonal discussion in fostering cooperation has been illustrated in classic game theory experiments which demonstrate that individuals are more likely to cooperate with each other if they are allowed to communicate among themselves — especially when the communication is about the game itself (Dawes, McTavish, & Shaklee, 1977; Isaac & Walker, 1988; Kerr & Kaufman-Gilliland, 1994). Topic-relevant communication may facilitate effective cooperative action on climate change through facilitating situation-appropriate social norms (Ostrom, 2014), increasing the likelihood of personal behavior and attitude change (Abrahamse & Steg, 2013; Gastil, 2000; Leombruni, 2015), encouraging the convergence of shared risk perceptions (Kasperson et al., 1988), promoting civic participation with the topic (Barabas, 2004; Gastil, 2000; Mcleod, Scheufele, & Moy, 1999), facilitating increased awareness of the need for change (Kotter & Schlesinger, 2008), devising plans for effective collective action toward social change (Swim et al., 2014), and fostering innovative solutions to the problem (Mulgan, 2006).

Despite the potential benefits of climate change discussions, few Americans report regular discussion about climate change. Only 31% of Americans report that they regularly discuss climate change with friends and family, a reported decrease from the 40% reporting regular discussion in 2008 (Maibach et al., 2016). Even more telling, only 16% of Americans report hearing people they know talk about climate change at least once a month (Leiserowitz et al., 2015). The silence on this topic cannot be explained by lack of public interest; majorities of Americans both report concern about climate change (Chicago Council, 2014; Maibach et al., 2016) and indicate that they would like to hear others discuss the topic more often (Leiserowitz et al., 2015).

In the present paper, we build on previous work which identifies the climate silence as a social phenomenon that has been traced in part to lack of efficacy about discussing the topic (Swim et al., 2014). The difficulty of discussing this topic may be further complicated by concerns about vilification by a vocal, politically powerful minority that has worked to cast doubt on the scientific evidence that human activities are changing the climate (Fraser & Brandt, 2013; Geiger & Swim, 2016; Oreskes & Conway, 2011). We suggest that this lack of efficacy could be remediated through interventions which address the public's lack of familiarity with the mechanisms by which climate change is occurring (Ranney & Clark, 2016; Swim et al., 2014; Weber & Stern, 2011). The present research examines whether a knowledge-based intervention linking climate change and rhetoric studies can be effective at catalyzing climate change discussions by increasing a sense of efficacy discussing the topic.

3. Efficacy and discussion

Individuals will tend to avoid tasks that they believe exceed their coping abilities, preferring situations where they perceive they have *efficacy* to handle challenges (Ozer & Bandura, 1990). Research from a variety of fields suggests that individuals are unlikely to take action to resolve a threat if they believe that a personal action is unlikely to resolve the issue and that they are unable to take the desired action (Ajzen, 1991; Floyd, Prentice-Dunn, & Rogers, 2000; Sheeran, Harris, & Epton, 2014; Witte, 1992). Thus, two components of efficacy are likely important for engaging in discussions about climate change: a) *response efficacy* - perceptions that engagement in a given behavior is likely to have positive, desired outcomes; and b) *self-efficacy* - perceptions that one has the ability to engage in the behavior (Bandura, 1977; Beck & Frankel, 1981; Cismaru, Cismaru, Ono, & Nelson, 2011; Maddux & Rogers, 1983). Meta-analyses suggest the importance of both of these dimensions of efficacy in responding to risk (Floyd et al., 2000). In the following sections we explore the importance of both of these dimensions of efficacy in promoting public discussion about climate change.

3.1. Response efficacy

One factor that influences individuals' willingness to engage in discussions about climate change is the degree to which they believe that progress or action is likely to occur as a result of these discussions (*response efficacy*; Norgaard, 2011; Swim et al., 2014). High response efficacy encourages active responses to threat (Maddux & Rogers, 1983), while low response efficacy is associated with a condition referred to as *learned helplessness* (Abramson, Seligman, & Teasdale, 1978), in which individuals psychologically disengage from taking action. Consistent with this theory, qualitative research suggests that individuals are more likely to talk about climate change if they perceive solutions to be "doable" and therefore worth the difficulties associated with talking about it (Norgaard, 2011). Quantitative research further supports this link between response efficacy and willingness to engage in discussion about climate change: the belief that politicians would be responsive to citizen input on climate change (a form of response efficacy) is associated with increased frequency of discussion about climate change (Swim et al., 2014). In addition, environmental educators who felt more hopeful that the country could take successful action on climate change reported discussing the topic of climate change more frequently with their coworkers (Swim & Fraser, 2013). These findings suggest that beliefs and emotions consistent with empowerment and the possibility for individuals to influence the societal response to climate change through discussion of the issue (response efficacy) is likely to facilitate increased frequency of discussion.

3.2. Self-efficacy

Independently of whether they believe discussions are effective, individuals may be more likely to discuss climate change when they believe that they are equipped to discuss the topic (*self-efficacy*; Swim et al., 2014). Self-efficacy alters individuals' goal orientation toward difficult tasks, encouraging them to adopt a mastery (or approach) orientation rather than an avoidance orientation (Elliot, 1999). Thus, those with high self-efficacy are likely to manage stressful situations by attempting to resolve problems, while those with low self-efficacy are more likely to avoid active coping techniques, instead focusing on reducing their own emotional distress. Further, self-efficacy typically increases the intrinsic satisfaction anticipated and provided by activities (Deci & Ryan, 2000).