

A SOCIAL IDENTITY-BASED APPROACH TO IMPROVING CLIMATE
CHANGE COMMUNICATION AND MOBILIZING COLLECTIVE ACTION

by

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List of Abbreviations

United Nations Intergovernmental Panel on Climate Change	IPCC
National Oceanic and Atmospheric Administration	NOAA

Abstract

A SOCIAL IDENTITY-BASED APPROACH TO IMPROVING CLIMATE CHANGE COMMUNICATION AND MOBILIZING COLLECTIVE ACTION

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Individual actions that contribute to climate change mitigation and adaptation, while important, are insufficient on their own. Unfortunately, there is still a disconnect between the seriousness of the problem and our ability or willingness to take appropriate collective action; political polarization is one explanation. The Social Identity Approach, which includes social identity (Tajfel, 1978; Tajfel & Turner, 1979) and self-categorization theory (Turner, 1985; Turner et al., 1987), provides crucial insight into whether people partake in collective action behaviors, such as voting, to address climate change. Drawing on that literature, this study explored whether highlighting the well-being co-benefits of collective action, benefits such as human health, could create social conditions for people across the political spectrum to shift social identification, or re-categorize, to identify more inclusively and less with their own partisan identity. To test these ideas, an experiment was conducted where participants read one of 8 versions of a vignette depicting a hypothetical community working together to address climate change.

The goal was to learn whether emphasizing the well-being co-benefits of collective action would influence collective action intentions both directly and indirectly via two sets of mediators: (1) the degree to which individuals identified with people in the depicted community as well as perceived social support participants might feel in a similar situation, and (2) participants' history of climate change-related interpersonal communication and efficacy, or the belief that collective actions work. In addition, I included information about the political makeup of community members to explore the influence of political cues in moderating these mediated pathways. I used Hayes' PROCESS macro to explore these relationships.

While exposure to the vignettes did not, by itself, yield significant effects on identification with the community or a sense that one would receive social support as part of the community, hypotheses related to mediated effects were found to be significant. Further, moderation analysis found a boomerang effect for liberals who weakly identified as such. A boomerang effect occurs when a message is strategically constructed with a specific intent but produces a result that is the opposite of that intent (Byrne & Hart, 2009). Conversely, conservatives who weakly and/or moderately identified as such demonstrated a shift toward identification with the depicted community when its members were depicted as an ideological mix. For these conservatives, collective action intentions were heightened by exposure to the vignettes, as mediated by identification and then interpersonal discussion intentions, when the vignette conditions characterized community members as both liberal and conservative: suggesting that recategorization, did occur. For these conservatives, intent to engage in climate change collective action

increased when mediated by identification and intentions to discuss the issue. This research advances climate change communication scholarship by elucidating the conditions that help build collective action intentions for those typically disinclined to address climate change. Results suggest potential pathways to enable individuals to self-select to engage in climate change collective action through social identification processes.

Chapter One: Introduction

An issue of key interest in this study is the collective action problem (Olson, 2009) in the context of climate change.

While individual, voluntary actions can contribute to mitigation and adaptation, they are insufficient on their own to alter our ecological trajectory. Collective action is required to address the social and structural impediments, such as the fact that most transportation and food systems rely on cheap fossil fuels (Ockwell, Whitmarsh, & O'Neill, 2009). Scholars have increasingly explored collective action antecedents and outcomes related to climate change mitigation policy (Roser-Renouf, Maibach, Leiserowitz, & Zhao, 2014),

However, fostering action amid ongoing identity-based political polarization remains challenging (Brenan & Saad, 2018; Dunlap, Liere, Mertig, & Jones, 2000; McCright, Marquart-Pyatt, Shwom, Brechin, & Allen, 2016; McCright, Dunlap, Xiao, 2013; Nisbet, 2009). In the United States and elsewhere, deep social divisions inhibit discussion, and governments are unlikely to act absent broad-based public pressure for climate action or for reform of the campaign finance laws that insulate policymakers from public accountability.

Emphasizing health co-benefits of collective action may help overcome these challenges (Bain, Hornsey, Bongiorno, Kashima, & Crimston, 2013). Drawing on the

Social Identity Approach (SIA), I examine whether highlighting the health-related co-benefits of collective action on the part of local communities may create social conditions for people to recategorize, or shift social identity, in turn, heightening collective action intentions.

I also explore potential mechanisms underlying this effect and whether political identity salience and strength moderate these direct and indirect effects.

First, I turn to the ecological and political contexts we find ourselves in.

The Ecological Climate Crisis

The advent of the “Anthropocene” (Crutzen, 2006; Steffen et al., 2007; Zalasiewicz, et al., 2008) signifies that human activity has become the predominant influence on the global environment. The term also reflects the interwoven relationship between the human prospect and that of Earth’s life-support systems.

Science has delivered an abundant body of knowledge about the dangers of breaching planetary system boundaries (Rockstrom et al., 2009), including through escalating greenhouse gas pollution. In 1995, the United Nations Intergovernmental Panel on Climate Change (IPCC) first laid responsibility for global warming at the feet of humans and our industrial activities (IPCC, 1995), finding a “discernible human influence on global climate” (Houghton et al., 1995, WG1. ch 8, summary, p. xi). Since then, calls for reducing human impacts on the global environment to a safer level have grown increasingly forceful. Yet we are not responding in ways that are commensurate to the threat. Neither are Americans sufficiently engaged in constructive communication about how to do so.

In a review of the latest climate science conducted in October 2018, the IPCC (2018) found that climate change impacts are already occurring at 1°C of warming above pre-industrial levels and will be more severe at 2°C than previously projected. The world's leading climate scientists estimated a window of a dozen years for global warming to be kept to a maximum of 1.5°C, beyond which the risk of catastrophic impacts will significantly worsen.

Absent significant near-term reductions in greenhouse gas emissions, we risk large-scale, irreversible damage to planetary systems, with severe consequences for all.

The Political Climate Crisis

As of April 9, 2019 has brought two weather and climate disaster events with losses exceeding \$1 billion each across the United States (NOAA, n.d.). Even if we remain within the limit of 1.5°C, climate change will cause \$54 trillion in damages by 2100 (Lafakis, Ratz, Fazio, & Cosma, 2019).

Our failure to understand the urgency of climate change is affecting not only Earth systems but also human systems such as the global economy, culture, and security. This is why climate change is commonly referred to as a threat multiplier. Climate impacts, while crises of their own, produce social and political instability, which lead to even more disruption and even conflict (Burke, Hsiang, & Miguel, 2015; Hsiang, Burke, & Miguel, 2013; Nordås & Gleditsch, 2007).

Despite descriptions of the threats, known responses, and the fact that 97% of climate scientists agree on the anthropogenic causes and implications of climate change

(Cook, Nuccitelli, Green, Richardson, Winkler, Painting, et al., 2013), American leaders recently have been taking regressive steps.

On March 28, 2017, U. S. President Donald Trump signed Executive Order 13783, rescinding a suite of Obama administration climate and clean energy initiatives (FedCenter, n.d.) and requiring review of others potentially “burdensome” to domestically produced energy resources. In June of 2017, Trump announced his intention to withdraw the United States from the 2015 Paris Agreement, a multinational pact to reduce the effects of climate change by maintaining global temperatures below 2°C above pre-industrial levels.

Moreover, the U.S. Congress has not considered comprehensive climate change legislation since the House of Representatives passed the American Clean Energy and Security Act of 2009 (Congress.gov, n.d.).

Although climate change has reemerged as a policy issue since the 2018 U.S. elections and the Democrat takeover of the House of Representatives, the U.S. Senate rejected the Green New Deal (Green New Deal, 2019) in March of 2019. Prospects for further policy action remain unclear.

Climate change is now one of the fundamental issues defining what it means to be Republican or Democrat (Nisbet, 2009). Dunlap and colleagues (2016) found that the partisan gap on climate change has not only widened but become incorporated into both political parties’ now-polarized sense of identity. Believing in, talking about, perceiving risk from, and ultimately acting to mitigate climate change is increasingly linked with political identity in terms of what it means to be liberal or conservative, Democrat or

Republican (Brenan & Saad, 2018; Dunlap & McCright, 2008; McCright, et al., 2013; McCright, et al., 2016; Nisbet, 2009).

Political polarization among the broader public both influences, and is influenced by, polarization among policymakers (Dunlap & McCright, 2008). The political backlash against the social identity threat, posed by climate change has been encouraged by elite cues and party-sorting (Brulle, Carmichael, & Jenkins, 2012).

As a result, much of the partisanship afflicting federal decision making extends to the American people. While surveys find that about 74 percent of Americans are “somewhat” or “very” worried about climate change (Deaton, 2018), Democrats (91%) express significantly more concern than Republicans (33%) (Brenan & Saad, 2018). Behind pro-environmentalism, political identity is now the most consistent predictor of climate change views (McCright & Dunlap, 2010). Research suggests that climate change has joined race, gender as one of the most politically polarizing issues in American society (Dunlap, McCright, & Yarosh, 2016).

Communication at the Heart of Social Life

In the sections that follow, I will argue that American publics are reluctant, constrained, and uncomfortable communicating about climate change. This affective state may be caused by political and other social identifications and the either real or perceived sanctions that threaten those identifications. There is ample evidence to suggest that we are not acting on climate change because our affiliations prevent us from speaking about it. Yet constructive communication is a necessary precursor to the process of developing response options.

Scholars have long focused on the importance of communication for shared decision making. In an ideal democracy, concerned citizens would coalesce around risks like climate change, educate themselves, and deliberate toward a consensus to take action. Such discussions serve to amplify and/or attenuate perceptions of risks and benefits associated with issues of public concern (Binder, Scheufele, Brossard, & Gunther, 2011). They also play a formative role in decision makers' responses. For example, Skocpol (2013) attributes the failure of cap and trade legislation to the lack of a broad national movement supporting it.

Further, informal or everyday political discussion serves as a foundation of deliberative democracy, a system of collective decision-making through public deliberation (Asen, 2004; Bohman & Rehg, 1997; Carpini, Cook, & Jacobs, 2004; Elster, 1998; Gutmann & Thompson, 1996; Hicks, 2002; Kim & Kim, 2008; Neblo, 2005).

Such communication can promote a sense of competency on issues such as climate change (Vraga, Anderson, Kotcher, & Maibach, 2015) and serve to mediate political messaging (Cho, et al., 2009). Yet talking about climate change has diminished to such an extent that the phenomenon has garnered a colloquial name: "climate silence" (Romm, 2016; Revkin, 2016). In a recent survey, only 43% of Americans reported hearing about climate change in the media at least once a month. Only 20% said they hear people they know talk about it that frequently. Most "rarely" or "never" discuss it with family and friends (65%). For over a quarter of respondents, it's too political to talk about (Lieserowitz et al., 2018).

Research suggests other fears inhibit talking about climate change. Concern about public disapproval has been shown to hinder discussion about this topic (Geiger & Swim, 2016), possibly contributing to a spiral of silence (Maibach, Leiserowitz, Rosenthal, Roser-Renouf, & Cutler, 2016). When we do communicate about it, we tend to engage with others who share our views (Jasny, Waggle, & Fisher, 2015). Research suggests that social consensus influences climate change beliefs, attitudes, and policy preferences for people across the ideological spectrum, but especially among conservatives (Goldberg, van der Linden, Leiserowitz, & Maibach, 2019).

When communication occurs among people with differing views, it's characteristically uncivil and highly politicized (Pearce, Holmberg, Hellsten, & Nerlich, 2014; Williams, McMurray, Kurz, & Lambert, 2015).

As noted, these findings are concerning because societal problems are unlikely to be resolved if not deliberated (Verba, Schlozman, & Brady, 1995; Neilson & Paxton, 2010). As a result, the question of how to increase communication about our shared future, and do so in a way that fosters action rather than exacerbating existing conflict, is critically important and time-sensitive.

Ineffectiveness of Current Approaches to Encouraging Communication about Climate Change

Barriers to climate change communication. Despite years of work, and in the face of formidable disinformation campaigns (Oreskes & Conway, 2010; Dunlap & McCright, 2011), climate communicators have yet to effectively engage American

publics in dialogue about the risks of climate change and recognized opportunities to diminish them.

For several decades, researchers, politicians, activists, and others have struggled to understand the apparent disconnect between what climate science tells us and our inability or unwillingness to take appropriate action. While it seems perfectly reasonable to assume that knowledge about an identified risk will engender a response, the deficit-model of science communication (Miller, 2001), which says that all science communication problems can be solved by informing stakeholders about the relevant science, has been sorely discredited. A robust body of research has shown that communicating science is much more complex than envisioned in the deficit model (Yeo, Xenos, Brossard, & Scheufele, 2015; Brossard & Lewenstein, 2009; Nisbet & Scheufele, 2009; Davies, 2008). The deficit model has been characterized as simplistic (Hansen, Holm, Frewer, Robinson, & Sandøe, 2003; Sturgis & Allum, 2004), ineffective (Holland, Pleasant, Quatrano, Gerst, Nisbet, & Mooney, 2007; Nisbet & Mooney, 2007), and presupposing ignorance on the part of the lay public (Priest, 2001). Communicators have recognized for decades that simple knowledge transfer, while a necessary component of science communication, is a wholly insufficient approach.

As the 2018 IPCC report attests, the climate change problem is not fully understood, much less resolved, with our current best efforts. There are many powerful reasons why this is the case. Climate change communication involves several distinctive challenges. Most fundamentally, its inherent complexity and uncertainty impedes communication efforts (Moser & Dilling, 2004), even with highly educated audiences

(Stermann & Sweeney, 2007). In addition, many people have viewed climate change as a distant threat spatially, temporally, and socially (van der Linden, Maibach, & Leiserowitz, 2015; Moser & Ekstrom, 2010). People tend to selectively process information, such as confirmation bias (Lewicka, 1998) or motivated reasoning (Taber & Lodge, 2006; Mutz, 2008; van der Linden, Leiserowitz, Rosenthal, & Maibach, 2017). “Reinforcing spirals” can inhibit message transmission and affect information-seeking when people are afraid to talk about a given issue for fear of being ostracized (Geiger & Swim, 2016; Feldman, Myers, Hmielowski, & Leiserowitz, 2014; Zhao, 2009). Other psychological barriers include resistance to change, perceived risks of change, positive but inadequate behavior change, and disbelief of experts and authorities (Gifford, 2011).

Communication scholars have labored to respond to these challenges. How to move publics from information to action on climate change has been studied in the context of sustainability (Newig, 2011) and social change campaigns (Brulle, 2010). Climate change communication can be approached as risk and health communication given that climate change creates considerable risk or danger and an array of harms to human health (Nerlich, Koteyko & Brown, 2010). I focus here on two approaches to communicating about climate change that have advanced our understanding of the problems to an extent.

Current approaches to improving communication about climate change. An alternative approach to delivering more information involves embedding messages in the existing belief systems through which people seek meaning (Goffman, 1974). Framing has been studied in numerous contexts (Ferree, Gamson, Gerhards, & Rucht, 2002);

Price, Nir, & Capella, 2005), including climate change (Nisbet 2009; Nisbet and Scheufele 2009; Maibach, Nisbet, Baldwin, Akerlof, & Diao, 2010). Nisbet (2009) has described frames as “interpretive storylines” that translate climate change science so that the issue is not only comprehensible but personally important. However, the question of how to maximize effectiveness remains. For example, Levine and Kline (2017) found that personal relevance messages could produce a negative effect depending on the context. Specifically, increasing concern can have the deleterious effect of reducing willingness to act on climate change.

Framing a message to resonate with a targeted receiver is not without value. As described in the next chapter, highlighting the benefits of acting on climate change can be highly effective. Messages about co-benefits of acting on climate change include highlighting that limiting greenhouse gas emissions can reduce traffic congestion, improve air quality, and enhance energy options (Beg, Morlot, Davidson, Afrane-Okesse, Tyani, Denton, Sokona, Thomas, LaRovere, Parikh, & Parikh, 2002). Yet framing has not served to mobilize a sufficient percentage of Americans to pressure decision makers, despite extensive efforts to isolate the “right” messages and engage trusted opinion leaders (Nisbet, 2018). Climate change communicators continue to struggle to create the conditions necessary to engender political or collective action.

The effectiveness of framing may be inhibited by the tendency of individuals to perceive risks in keeping with the views of the group culture with which they identify (Tansey & Rayner, 2009).

A second account, cultural theory, holds that shared values and beliefs -- cultural biases -- interact with interpersonal social relations to construct worldviews, or ways of life (Bellamy & Hulme, 2011). Identity-protective cognition (Kahan, Braman, Gastil, Slovic & Mertz, 2007) causes Americans to selectively credit and dismiss communication about climate change's veracity and gravity in ways that comport with their preferred vision of the world. Our cultural attachments shape our appraisal of risk, evidence, and scientific consensus on climate change. For example, concern does not increase with comprehension of scientific information about climate change (Kahan, 2012).

In fact, Kahan (2015) argues that there is little public disagreement about what science knows about climate change. People aren't reasoning to gain knowledge as much as to maintain an affiliation with those with whom they share notions of an ideal life. When a choice presents a conflict between what one knows and who one is, cultural identity usually proves more compelling.

However confounding, these findings help to explain our situation: an impasse rooted in identity and motivated reasoning, with a winnowing timeframe for collective action. Yet these two approaches do put us closer to changing our path.

Social Identity: The Proposed Approach

The present study draws on previous research (Fielding & Hornsey, 2016) in bringing a social identity-based communication strategy to address the root causes of American divisions on climate change. Given research findings that suggest the power of the basic human need for affiliation, a social identity approach (SIA) sheds light on the current conflict over climate change. SIA, which includes social identity theory (Tajfel,

1978; Tajfel & Turner, 1979) and self-categorization theory (Turner, 1985; Turner et al., 1987), seeks to explain how we establish and maintain our individual identity via affiliation with social groups.

Building on work utilizing both framing and the SIA, this study tested an intervention designed to harness group identification processes to improve climate change communication and collective action.

Scholars have examined the value of collective action in helping advance public policy as well as antecedents including interpersonal communication, that is, talk with close others about climate change, and collective efficacy, or the belief that steps like voting can be successful. The SIA literature, which includes social identity theory (Tajfel, 1978; Tajfel & Turner, 1979) and self-categorization theory (Turner, 1985; Turner et al., 1987), provides crucial insight into whether people partake in collective action behaviors.

My framing featured a particular, demonstrated benefit of social identification: well-being. Research points to the value of emphasizing economic, environmental, and (especially) health co-benefits of collective action that resonate across the political spectrum (Bain et al., 2013). Such messages could illustrate how climate action can be compatible with one's political identity – admittedly a tall order in the case of conservatives/Republicans with mixed evidence of success (Feldman & Hart, 2018; Whitmarsh & Corner, 2017).

An experimental design tested whether individuals with diverse political ideologies and climate change beliefs would self-select to identify with a community depicted as communicating and acting collectively to prepare for climate change, and, in

so doing, experiencing heightened well-being. I test whether exposure to such framing positively influenced identification with the depicted community, interpersonal discussion intentions, perceived social support and collective efficacy, and ultimately collective action intentions.

The aim of this study was to provide additional insight into the factors that enable publics to identify more inclusively to surmount divisions, thus enabling public deliberation and potentially collective action on an increasing threat, and suggest ways to motivate a range of stakeholders via incentives to address climate change, such as the range of benefits to their communities.

Chapter Two: Literature Review

Collective Action

Global climate change has become the collective action problem of our era. The overabundance of greenhouse gas emissions represents the classic tragedy of the commons dilemma (Hardin, 1968), which predicts the eventual overexploitation of resources that are commonly held because actors utilize common resources without considering their value to society as a whole. A growth-based economic model which presupposes a limitless ecological system, and, specifically, a reliance on fossil fuels, has led to demonstrable degradation of the global environment. Addressing climate change requires a concerted response on the part of the entire global community, most notably, the political will to set aside divergent short-term self-interests.

In this study, I define collective action (intentions) as any action that individuals undertake as psychological group members with a subjective goal of improving the group's conditions (Wright, Taylor, & Moghaddam, 1990).

Various surveys and scholarly studies have examined and, in some cases, tracked different types of collective action behaviors that Americans perform in the context of climate change (Leiserowitz, Maibach, Roser-Renouf, Feinberg, & Rosenthal, 2016; Roser-Renouf et al., 2014). Examples range from volunteering for/donating to/joining climate advocacy organizations to attending protests to community-based actions (on the

local or state level) to enact climate change mitigation and adaptation policies. The last is increasingly common amid the absence of climate policymaking on the federal level (Seto & Leahy, 2017; United States Conference of Mayors, 2018; Sierra Club, n.d.). Examples aside, collective action can influence portions of a population that may not have an opinion or position on a given issue as well as elites and other decision-makers (Fielding & Hornsey, 2016).

While individual behaviors, such as taking public transportation or maintaining a meatless diet, can ultimately have impact at local, national, and even international levels, such efforts remain insufficient to address the magnitude and pace of climate change. Improving our response entails enabling social conditions for development of collective action, whether carried out by individuals or groups.

Building on research concerning collective action and social movements in the field of sociology (e.g., Della Porta, 1995; Klandermans, 1997), a meta-analysis of over 180 studies affirms that social identity predicts collective action in a variety of contexts (van Zomeren, 2008). In addition, people must have perceived collective efficacy, or the belief that collective action can attain group goals. The social identity model of collective action (Van Zomeren, Spears, & Leach, 2010) begins to sketch a virtuous cycle transition to sustainability. Social identification can lead to feelings of efficacy, subsequent action and positive change, and then further identification (Van Zomeren et al., 2010).

In addition, Fritsche, Barth, Jugert, Masson, and Reese (2018) found that social identification with a group and its norms and goals, as well as a sense of efficacy, can influence participation in collective action. This study sought to demonstrate how

climate-related collective action on the community level can unify rather than divide groups that may otherwise be in conflict (Fielding & Hornsey, 2016).

As discussed, fostering action amid ongoing identity-based political polarization remains challenging. Yet research suggests that emphasizing co-benefits of collective action may help overcome these challenges. It is that opportunity I turn to next.

Co-Benefits of Climate Change Action

While the IPCC (2018) warned that the world's societies must achieve "rapid and far-reaching" changes on an "unprecedented" scale to reduce emissions over the next decade, the report also asserts that meeting the target is affordable, attainable, and even augurs substantial economic, health, and environmental benefits (Beg et al., 2002; (Deng et al., 2017). Van der Linden and colleagues (2015) argued that shifting the policy conversation from the losses due to climate change to the gains of action is likely to increase public support. More specifically, in a meta-analysis across twenty-four countries, Bain et al. (2016) found that such co-benefits resulting from adopting climate mitigation behaviors can be persuasive arguments for climate action, especially those that speak to development (economic and scientific advancement) and benevolence (a more moral and caring community) (see also Bain et al., 2012, 2013). Still others have found value in conveying the health-related co-benefits of mitigation, including reduced air pollution from fossil fuels and associated reductions in morbidity and mortality (Maibach et al., 2010).

Just as the adoption of *individual* mitigation behaviors helps individuals, communities working *collectively* can likewise generate co-benefits when it comes to

health, both physical (e.g., improvements in morbidity/mortality tied to cleaner air) as well as psychological (e.g., greater caring for others and a greater sense of community). These benefits emanate both from the actions community members take as well as the social identities that facilitate these actions by virtue of providing members with self-esteem, belonging, and a sense of purpose (Cruwys et al., 2014; Greenaway et al., 2015). Emphasizing what is arguably a universally sought goal (health and well-being) may appeal to populations that are not just diverse but divergent in their respective social identities. Therefore, I exposed participants to a simulated news vignette about a hypothetical community working collectively to achieve “net zero” emissions via increasing its use of renewable energy – a path that an increasing number of U.S. communities are pursuing – and experiencing resultant community-level health benefits. Examples of collective action included providing more public transportation to cut down on the number of cars; improving the energy efficiency of buildings so they don’t use so much fuel for heating and cooling; and increasing access to renewable energy sources such as solar and wind. I examined whether such a vignette inspired people to themselves engage in collective action behaviors.

The co-benefit I explored extends Bain et al.’s examination of how action to address climate change can contribute to a more benevolent community (Bain, Hornsey, Bongiorno, Kashima, & Crimston, 2013; Bain, Hornsey, Bongiorno, & Jeffries, 2012).

A growing literature suggests that altering the presentation of a group typically seen as different can weaken intergroup borders. Part of making boundaries more permeable, so that people can more readily affiliate with different social groups, involves

creating and presenting a preferred outcome. Given that individuals must self-select to shift identification. In other words, as part of the nurturance of the self, people choose to re-designate who they wish to be in relation to whom. Presenting the possibility of a commonly sought goal such as well-being may appeal to populations that are not just diverse but divergent in their social identifications.

While the co-benefit of well-being is not measured in this study, the “social cure” literature (Haslam, Jetten, Postmes, Haslam, 2009; Jetten, Haslam & Haslam, 2012) informs the experimental vignette. This research suggests that since people’s self-understanding is inherently connected with their social groups, those group memberships (and the social identities that are derived from them) have important implications for mental and physical health and well-being.

When scholars first applied SIA in health domains, it was relative to symptom appraisal and coping. More recently, topics have included depression and trauma resilience (Haslam, Jetten, Postmes, & Haslam, 2009; Jetten, Haslam, & Haslam, 2012). These studies suggest that group memberships can preserve or enhance health by providing members with self-esteem, belonging, and meaning, as well as a sense of purpose, control, and efficacy (Cruwys, Haslam, Dingle, Haslam, & Jetten, 2014; Greenaway, Haslam, Cruwys, Branscombe, Ysseldyk, & Heldreth, 2015).

Extending this research, scholars are pioneering research on social identification as a means to weather climate change conflict (Ferguson, McDonald, & Branscombe, 2016) and as a source of support in disaster situations (Drury, 2018; Ntontis et al., 2018). Conversely, scholars have examined how destabilizing phenomena like climate change

can damage important social identities (Jetten, Haslam, Iyer & Haslam, 2010) as well as personal and collective well-being (Doherty & Clayton, 2011). The broader relevance of social identity-produced well-being in environmental contexts is only now being recognized (Helliwell, 2014). The incentive of well-being, particularly in the face of environmental change, may appeal to multiple, even polarized, stakeholders. We all prefer a future with good physical and mental health.

A Social Identity Approach to Fostering Collective Action

Drawing on the Social Identity Approach (SIA), I examine whether highlighting the health-related co-benefits of collective action on the part of local communities may create social conditions for people to increase their identification with the community.

In contrast to individual, personal identities derived from an individual's unique attributes, social identities are associated with group memberships (Tajfel & Turner, 1979). Tajfel and Turner define social groups as 1) a collection of individuals who perceive themselves to be members of the same categorical group, 2) share emotional involvement in this common definition of themselves, and 3) achieve some degree of social consensus about the evaluation of their group and of their membership in it (p. 40). Social groups serve as a source of self-esteem, belonging, and purpose (Burke & Stets, 2009; Cruwys, Haslam, Dingle, Haslam, & Jetten, 2014; Greenaway, Haslam, Cruwys, Branscombe, Ysseldyk, & Heldreth, 2015). Who we are stems, in part, from how we are seen by others – or, more precisely, how we *think* others see us.

While social identity can influence perceptions and attitudes, membership in groups also has implications for human experience and behavior (Cartwright & Zander,

1968; Tajfel & Turner, 1979; Turner, Hogg, Oakes, Reicher & Wetherell, 1987).

Awareness of one's membership in a social group leads one to think and to act in the ways members of the group does.

Therefore, the salience and strength of one's group-based social identity -- that is, whether and how important that identity is to who we are based on past experiences and/or present needs (Doosje & Ellemers, 1997) -- leads one to think and to act in a manner consistent with perceived group expectations. A high degree of social identification can influence group members to become biased toward one's own group relative to other groups, producing in-group favoritism and outgroup derogation: the classic "us" versus "them" (Tajfel & Turner, 1986). Such comparisons may not be accurate or fair, but they serve the purpose of accentuating intergroup differences for the purpose of self-enhancement.

SIA and Climate Change

SIA has a strong relevance to climate change communication research (Ellemers, Spears, & Doosje, 2002) including the need for collective action. A given social identity can influence participation in collective action, which in turn reinforces identity salience and strength (Fritsche et al., 2018; Van Zomeren et al., 2008, 2010).

Moreover, scholars have suggested a powerful link between individuals' views on climate change and social identity (Bliuc, McGarty, Thomas, Lala, Berndsen, & Misajon, 2015; Clayton & Meyers, 2009; Fielding, Hornsey, & Swim, 2014; Leary, Toner & Gan, 2011; Pearson & Schuldt, 2015; Postmes, Rabinovich, Morton, & van Zomeren, 2013; Rees & Bamberg, 2014; Schuldt & Pearson, 2016; Swim & Becker, 2012).

Bliuc et al. (2015), for instance, found that climate change believers and skeptics belong to divergent social groups with conflicting values and beliefs and that are working to achieve opposed policy objectives.

Discourse between the subgroups of American society commonly described as “skeptics” and “believers”¹ does show symptoms of social identity threat (Tajfel & Turner, 1979; Branscombe et al, 1999), which delegitimizes shared narratives, creates contestation, and produces a struggle for legitimacy (Korostelina, 2007). That is, social identity threat serves to undermine the value of group membership and thus devalues the individual member.

It could be argued that these subgroups of U.S. society are in competition for decision making power, driven by conflicting values and beliefs. Both groups seek control over how to orient society in light of the (purported, for skeptics) risk.

As noted, believing in, talking about, and ultimately acting to mitigate climate change is increasingly linked with political identity in terms of what it means to be liberal or conservative. While there are clear value-based and trait-based antecedents of political identity, who we are politically also stems from membership in social groups (be it liberal-conservative or Democrat-Republican) whose beliefs, expectations, and standards mirror our own (Caprara et al., 2006; Piurko, Schwartz, & Davidov, 2011). Van Boven, Ehret, and Sherman (2018) discuss one such example of in-group bias and outgroup derogation in the context of climate change, finding that both Democrat and Republican

¹ This is a gross level of categorization of the views of the American public.

rank-and-file members and party elites tend to support policies from their own party and devalue policies from the other.

As early as the 1980s, Tajfel and Turner dedicated research to questions surrounding whether and how social identity can change – and possibly even be *caused* to change. Their theoretical approach sought not just to describe or explain the theoretical relationships but predict and perhaps control outcomes.

Since SIA holds that social identification begins as an internal process of self-categorization, efforts to facilitate recategorization or identity shift are contingent upon making positive intergroup evaluations (Stone & Crisp, 2007) based on norms and the shared understandings they create (Thomas, McGarty, & Mavor, 2009).

Fielding and Hornsey (2016) suggest the use of frames that unify groups otherwise in conflict about environmental issues. Specifically, they argue for strategies that make salient an identity incorporating pro-environmental norms or otherwise provide avenues for people to identify with pro-environmental social identities.

In the context of this study, the depicted social identity is a fictional community which is collectively enacting climate change-related goals and accruing the co-benefit of well-being. My interest in this study was to better understand how the potent force of social identity might break the climate silence and the impasse on climate change collective action.

First, I examined whether highlighting the health-related co-benefits of collective action on the part of local communities would create social conditions for people to identify more with the depicted community members – or recategorize.

My experimental conditions involved a vignette depicting a hypothetical community working together to achieve “net zero” emissions via increasing its use of renewable energy – a collective action path that an increasing number of U.S. communities are pursuing – and experiencing resultant community-level health and well-being benefits. The story invites them to envision being a part of this community acting on climate change, a necessary precursor to action.

Specifically, I provided participants one of eight simulated news stories about one of four community actions on climate change with well-being outcomes, as well as a no-well-being outcome, to learn whether identification occurs, whether social support is perceived, and whether interpersonal discussion intentions, perceived collective efficacy, and collective action intentions result.

Direct Effects

Given this analysis, I first hypothesized that exposure to a vignette including well-being benefit would directly influence collective action intentions:

H1: Exposure to a vignette about a community experiencing health-related co-benefits of climate change-related collective action will be associated with heightened collective action intentions.

Identification with the community depicted in the vignettes. As noted, SIA seeks to explain how we establish and alter our individual identity via affiliation with social groups and suggests that people strive to achieve and maintain positive social identities associated with their group memberships (Tajfel & Turner, 1979). Greenaway et al., 2015). As part of the ongoing management of the self, the social groups with which

one feels connected and, thus, the social identities that are salient at any one time, are dynamic and changeable (Tajfel, 1981). Shifting a social identity, called recategorization, is an internal process that can lead to the adoption of new social categories/identities based on a variety of individual and contextual factors including: 1) one's current psychological needs or expectations tied to a particular identity (Postmes & Branscombe, 2010); 2) the perceived ability of any one social group to meet those needs/expectations relative to other groups based on perceptions of comparative and normative fit; and 3) perceiver readiness to shift (Oakes, Haslam, & Turner, 1994; Turner & Oakes, 1997; Turner & Onorato, 1999; Turner & Reynolds, 2011; Turner et al., 1994).

Scholars have examined various dimensions of recategorization in the context of climate change and sustainability. For example, Meleady and Crisp (2017) found that study participants' construal of future generations as an outgroup could be attenuated via a simple exercise of citing things that members of the present generation and members of future generations may have in common, a perception shift that influenced intentions to engage in sustainable behavior.

Postmes, Hasam and Jans (2013) argue that the essence of Tajfel's (1978) conceptualization of identification is the self-investment dimension, or the positive emotional valuation of the relationship between self and ingroup. Whether certain subjects in this experiment identify with the depicted community will test the paradox innate to recategorization: the fact that people are attracted to both similar (ingroup) and "better" others (Turner, 1985). The hierarchical nature of self-categorization allows individuals to alternatively be attracted to those prototypical of their valued self-category

or a different “valued-but-better” self-category at the next higher level of abstraction. As Postmes and Branscombe explain:

“Thus similarity leads to attraction only to the degree that the similarity is a valued self-category, i.e., one perceived as ‘better’ than nonself categories at that level, and attraction to ‘different,’ better others simply reflects the fact that they are perceived as more similar than oneself to a valued superordinate self-category” (Postmes & Branscombe, 2010, p. 263).

This process, which distinguishes recategorization from framing (Goffman, 1974), is identical regardless of the outcome: others are perceived as exemplary of a valued category. The difference, according to Turner (1985), is that “others may sometimes be more similar than is oneself to some relevant superordinate self-category” (Postmes & Branscombe, 2010, p. 263).

Self-categorization also varies with context; it is social category salience that determines which identity prevails in a given situation. An identity becomes salient when an individual’s attention is directed to an aspect of his or her social identity, prompting that person to categorize him or herself by identity-oriented criteria (Forehand, Deshpandé, & Reed, 2002).

As a result, people may be invited to shift based on attraction to either similar in-groups or “better” others in an out-group (Postmes & Branscombe, 2010; Turner, 1985). (As one hypothetical example, consider a case of members of one group seeking to associate themselves with a historically competitive outgroup whose members have

excelled in an international sporting event.) In this study, the incentive was the benefit of well-being tied to community-level health, such as physical and mental health. Since community-level health and well-being is a goal all communities and individuals within them would like to see attained, arguably most if not all people could at least somewhat identify with community-level health and well-being co-benefits of community action on climate change. Highlighting these co-benefits may create social conditions for people to identify more with the community successes (and, hence, the community and its members) and less with their own partisan identity -- in other words, recategorization with a “better” social group.

Regardless of the motivating mechanism, I hypothesize:

- **H2:** Exposure to a vignette about a community experiencing health-related co-benefits of climate change-related collective action will be associated with heightened identification with that community.

Perceived social support. Extensive research has focused on social support as a means of reducing the harmful effects of stress (Aspinwall & Taylor, 1997; Berkman, 1985; Cohen & Wills, 1985; Underwood, 2000). House (1981) suggests that social support serves four explicit functions, including providing emotional support, companionship, instrumental support, and informational support. Haslam, O'Brien, Jetten, Vormedal, and Penna (2005) define these, respectively, as a sense of acceptance and self-worth; affiliation and contact with others; concrete aid, material resources, and financial assistance; and information useful in understanding and coping with potentially stressful events.

Research also suggests that the influence of social support depends on the social identity of the giver (Haslam, Jetten, O'Brien, & Jacobs, 2004) – that a sense of shared identity is a basis for both giving and receiving social support (Haslam, 2004). I argue that people who read a vignette depicting a community acting on climate change and enjoying health-related co-benefits (especially a heightened sense of community and social support) will perceive that they likewise would experience social support if part of the depicted community.

Virtanen and Isotalus (2012) characterize the essence of social support in interpersonal communication as emanating from the helper's "way of being" (p. 32) or intention to contribute to a person's need for something in a way that makes it possible for the effectiveness of the message(s) to be evaluated. It is this experience of the receiver that constitutes the social support. Therefore, the essence of social support can be characterized as the perceiver's experience of another's intent to fill a void or need, and/or the experience of that need made better or even whole as a result. Haslam (2004) argues that a sense of shared identity is a basis for both giving and receiving social support.

Van Boven and colleagues (2018) offer an example of how a *lack of* social support impedes communication and action in the context of climate change: fear or retaliation from political identity ingroups inhibits support for bipartisan policy proposals. Therefore, I hypothesize the following:

- **H3:** Exposure to a vignette about a community experiencing health-related co-benefits of climate change-related collective action will heighten perceptions that one, too, would have social support in such a community.

Interpersonal discussion (intentions). There is some evidence correlating social identification and the occurrence and character of communication between individuals. As noted, interpersonal discussion about climate change remains infrequent. But when we do communicate about it, we tend to engage with others who share our views (Jasny et al., 2015). As noted, when communication occurs among people with differing views, it's often uncivil and highly politicized (Pearce et al., 2014; Williams et al., 2015). Yet in instances where they share a common social identity due to a mutual affiliation with a particular social group, interpersonal communication may occur more readily (Hogg & Reid, 2016). I therefore hypothesize:

- **H4:** Identification with the community described in the vignette will be associated with heightened interpersonal discussion intentions about climate change.

Interpersonal discussion is a key means for providing social support, whether emotional, companionship, instrumental, or informational (Virtanen & Isotalus, 2012). The import of social support on interpersonal discussion is also plausible albeit with less empirical scrutiny. One example comes from a study adults with communication disorders, which found that perceived social support facilitated communication, whereas a lack of or poorly delivered social support impeded communication (Eadie, Kapsner-Smith, Bolt, Sauder, Yorkston, & Baylor, 2018). Therefore, in examining the relationship between social support and increased communication, I hypothesize the following:

- **H5:** Perceptions of social support within the community described in the vignette will be associated with heightened interpersonal discussion intentions about climate change.

Informal, everyday discussion of important issues serves as a foundation of deliberative democracy (Kim & Kim, 2008; Carpini et al., 2004), or the communicative processes of opinion formation that precede behavior such as voting (Carpini et al., 2004, p. 317). Interpersonal discussion helps to promote understanding of issues such as climate change (Vraga et al., 2015); amplifies or attenuates perceptions of risks and benefits (Binder, et al., 2011); and serves as a bridge between exposure to news media consumption and collective action behaviors related to political participation, such as attending a rally or working for a political party or candidate (Cho, Shah, McLeod, McLeod, Scholl, & Gotlieb, 2009). However, climate change-related interpersonal discussion has diminished to such an extent that the phenomenon has garnered a colloquial name: “climate silence” (Revkin, 2016; Romm, 2016). In a recent survey, only 43% of Americans reported hearing about climate change in the media at least once a month. Only 20% said they hear people they know talk about it that frequently. Most “rarely” or “never” discuss it with family and friends (65%). For over a quarter of respondents, it’s too political to talk about (Lieserowitz, Maibach, Roser-Renouf, Rosenthal, Cutler, & Kotcher, 2018). Concern about public opprobrium, furthermore, has been shown to hinder discussion about climate change (Geiger & Swim, 2016), possibly contributing to a spiral of silence (Maibach et al., 2016).

Despite these challenges, the role of discussion in helping galvanize collective action leads me to the following hypothesis:

- **H6:** Interpersonal discussion intentions regarding climate change action will be associated with stronger collective action intentions.

Collective efficacy. Bandura (1997, 2000) defined collective efficacy as shared beliefs in a group's power to organize and execute the courses of action required to achieve a desired goal. The higher the perceived collective efficacy, the higher the groups' motivational investment in their undertakings, the stronger their staying power in the face of impediments and setbacks, and the greater their performance accomplishments (Bandura, 2006). As noted, Van Zomeren and colleagues (2012) found that experiences gained during collective action also help reinforce collective efficacy beliefs: social identification can lead to feelings of efficacy, subsequent action, and then further identification.

Since identification with a group can influence individuals' participation in collective action in which that group may be engaged (Fritsche et al., 2018), I hypothesize the following:

- **H7:** Identification with the community described in the vignette will be associated with stronger perceptions of collective efficacy.

As noted, social support has demonstrated positive impacts on physical and mental health and well-being. Researchers have also found a causal relationship between social support and collective efficacy (Hampson & Jowett, 2014). Thus, I hypothesize:

- **H8:** Perceived social support within the community described in the vignette will be associated with stronger perceptions of collective efficacy.

In the context of climate change, Jugert and colleagues (2016) found that collective efficacy messages promoted individual engagement in climate change action by increasing the perception that one's group and, by extension, oneself, is capable of effecting change. I therefore hypothesize the following:

- **H9:** Perceived collective efficacy regarding climate change will be associated with stronger collective action intentions.

Mediated Pathways

Based on the direct effects outlined in the preceding sections, I hypothesize a series of sequential mediation pathways, in which exposure to a vignette about a community experiencing health-related co-benefits of climate change-related collective action indirectly influences heightened collective action intentions via the following:

- **H10:** Identification with the community described in the vignette and, in turn, greater interpersonal discussion intentions about climate change.
- **H11:** Identification with the community described in the vignette and, in turn, greater perceptions of collective efficacy.
- **H12:** Perceived social support within the community and, in turn, greater interpersonal discussion intentions about climate change.
- **H13:** Perceived social support within the community and, in turn, greater perceptions of collective efficacy.

Moderated and Moderated-Mediated Pathways

Finally, since it can be difficult to escape the partisan ramifications of climate action, I also included information about the political makeup of community members and decision-makers as a nod to the power of political cues in shaping identity-based political polarization (Brulle et al., 2012). As noted previously, beliefs about the existence, magnitude, and severity of climate change has become incorporated into both political parties' identity in terms of what it means to be liberal-conservative and Democrat-Republican (see Dunlap et al., 2016), and cues from political elites further strengthen these associations and amplify these differences (Brulle et al., 2012). Numerous studies have shown that individuals respond to political cue information that matches their political identity, and individuals tend to perceive risks in keeping with the views of the groups with which they identify (Tansey and Rayner, 2009).

Ideology as an identity. As noted, political identity is virtually a proxy for climate change beliefs and attitudes. In a meta-analysis of correlates of belief in climate change across 56 countries, Hornsey, Harris, Bain, & Fielding (2016) found that values, ideologies, worldviews and political orientation were better predictors of beliefs than education, sex, subjective knowledge, and experience of extreme weather events. In an example of climate change ingroup bias and outgroup derogation, Van Boven et al. (2018) found that both Democrat and Republican rank-and-file members and party elites tend to support policies from their own party and devalue policies from the other. Further, Bolsen & Druckman (2018) suggest that political identity can limit the effect of a scientific consensus statement about climate change. Political identity may affect the

extent to which one identifies with (and perceives potential social support from) the depicted community in question as well as subsequent effects on collective action antecedents and intentions. As a result, I likewise tested whether political salience and strength moderated the influence of exposure to the treatment vignette and 1) identification with the depicted community, and 2) perceived social support.

Strength of ingroup identification. One important factor affecting people's readiness to use a social category in specific situations is the extent of their identification with an ingroup, or the degree to which it is central, valued, and ego-involving (Doosje & Ellemers, 1997). In most instances, identification is the internalization of, and adherence to, those norms and values, although identity strength can temper both. Strength of identification with a subject's climate change belief ingroup, or their identification as a person who does or does not believe in human-caused global warming, was examined as a moderator between exposure to a treatment vignette and 1) identification with the depicted community and 2) perceived social support.

I anticipated that the salience and strength of one's political identity (liberal-conservative) is likely to affect the extent to which one identifies with (and perceives potential social support from) the depicted community. I expected liberals and conservatives would gravitate toward political cue information that matched their political in-group (i.e., liberals to liberal cues, conservatives to conservative cues). Moreover, I tested a moderated-mediation model whereby the indirect effect of exposure to a vignette about a community experiencing health-related co-benefits of climate

change-related collective action on collective action intentions differed for liberals and conservatives based on the political cue present. Overall, I hypothesize the following:

- **H14:** The effect of vignette exposure on collective action via identification with the community described in the vignette and greater interpersonal discussion intentions about climate change will be moderated by the salience and strength of one's political ideology identity. Respondents who identify with a conservative political identity will exhibit stronger identification with a community described as conservative and vice-versa for respondents who identify with a liberal political identity.
- **H15:** The effect of vignette exposure on collective action via perceived social support within the community and greater interpersonal discussion intentions about climate change will be moderated by the salience and strength of one's political ideology identity. Respondents who identify with a conservative political identity will exhibit stronger social support when the community is described as conservative and vice-versa for respondents who identify with a liberal political identity.
- **H16:** The indirect effect of vignette exposure on collective action via identification with the community and greater interpersonal discussion intentions about climate change will be moderated by the salience and strength of one's political ideology identity. Respondents who identify with a conservative political identity will exhibit stronger social support when the community is described as conservative and vice-versa for respondents who identify with a liberal political identity.

- **H17:** The indirect effect of vignette exposure on collective action via identification with the community described in the vignette and greater perceptions of collective efficacy will be moderated by the salience and strength of one's political ideology identity. Respondents who identify with a conservative political identity will exhibit stronger identification with a community described as conservative and vice-versa for respondents who identify with a liberal political identity.

- **H18:** The indirect effect of vignette exposure on collective action via perceived social support within the community and greater interpersonal discussion of climate action will be moderated by the salience and strength of one's political ideology identity. Respondents who identify with a conservative political identity will exhibit stronger social support when the community is described as conservative and vice-versa for respondents who identify with a liberal political identity.

- **H19:** The indirect effect of vignette exposure on collective action via perceived social support within the community and greater perceptions of collective efficacy will be moderated by the salience and strength of one's political ideology identity. Respondents who identify with a conservative political identity will exhibit stronger social support when the community is described as conservative and vice-versa for respondents who identify with a liberal political identity.

Finally, if, as has been suggested (Bliuc et al., 2015), the matter of climate change has activated a social conflict in American society, the broader literature on intergroup conflict may contribute to our understanding of the communication and collective action impasse, and possibly its resolution.

Tilly (2015) characterizes social identity as the tendency of human beings to organize a significant part of their social interaction around the formation, transformation, activation, and suppression of social boundaries. On each side of a social boundary, individuals maintain relationships within the ingroup, as well as between groups across the boundary (intergroup relations). People receive rewards (e.g., self-esteem) and incur penalties (e.g., discrimination from outgroups) as they routinely engage in ingroup-outgroup boundary processes. According to Tilly (2015), changes in boundary-maintaining incentives – the reasons why people identify with social groups -- regularly cause boundary changes. What Tilly refers to as social boundary “site transfer,” but which can also be understood as recategorization, occurs when individual persons or clusters of persons move from one side of a boundary to another. Drawing on this concept, I explored whether presenting a desirable social identity -- of an inclusive (mixture of liberals and conservatives) community acting together on climate change and enjoying health and well-being benefits -- could foster site transfer by “inviting the outgroup in.” In contrast to my hypothesized outcomes of political cues inducing participants to gravitate toward their respective ideological in-groups, my research question focused on the possibility of creating the social conditions that enable people to choose to identify with the community.

Finally, if, as has been suggested (Bliuc et al., 2015), the matter of climate change has activated a social conflict in American society, the broader literature on intergroup conflict may contribute to our understanding of the communication and collective action impasse, and possibly its resolution.

Tilly (2015) characterizes social identity as the tendency of human beings to organize a significant part of their social interaction around the formation, transformation, activation, and suppression of social boundaries. When such a social boundary has been activated, such as whether or not someone “believes” in climate change, it creates a system of risks and incentives depending on how people position themselves around the identity boundary (Tilly, 2004). On each side of a social boundary, individuals maintain relationships within the ingroup, as well as between groups across the boundary (intergroup relations). What Tilly refers to as social boundary “site transfer,” but which can also be understood as recategorization, occurs when individual persons or clusters of persons move from one side of a boundary to another. Drawing on this concept, I explored whether presenting a desirable social identity -- of an inclusive (mixture of liberals and conservatives) community acting together on climate change and enjoying well-being benefits -- could foster site transfer by “inviting the outgroup in.” Thus, I pose my final research question:

RQ: Can altering the presentation of climate “believers” to be more inclusive attenuate intergroup divisions by inviting individuals to recategorize?

Effective Climate Change Communication

Finally, effective climate change communication can be identified by outcomes that sustain human society in a “safe and just space” (SJS) (Raworth, 2012) relative to planetary boundaries (“Four of Nine Planetary Boundaries Crossed,” 2017). The planetary boundaries framework conceives of the Earth as constituting nine system processes which have boundaries. Four of nine thresholds, above which ecological

systems are compromised, have already been crossed. These include climate change, biosphere integrity, biogeochemical flows, and land system change. The SJS introduces the idea of a safe operating space necessary to maintaining the environmental conditions that support human life on Earth. It visualizes sustainability as a doughnut-shaped space where resource needs are high enough to meet needs (inner boundary) but also high enough to breach planetary boundaries (outer boundary). The SJS links the concept of planetary boundaries with the complementary concept of social boundaries, and operationalizes the concept of “strong sustainability (O’Neill, 2018). It is in the context of these planetary system dynamics that humanity must make choices, which presupposes that constructive communication can occur.

The purpose of this study was to explore how social identity and people’s attitudes about climate change are interrelated, and the implications for communication and collective action on behalf of all the Earth’s inhabitants. Social identity processes have proven complex, confounding, and yet compelling in a variety of theoretical applications. Given the increasing risks of inaction on climate change and numerous other sustainability imperatives, we need to better understand how to this fundamental aspect of human nature might serve to mitigate our worst tendencies.

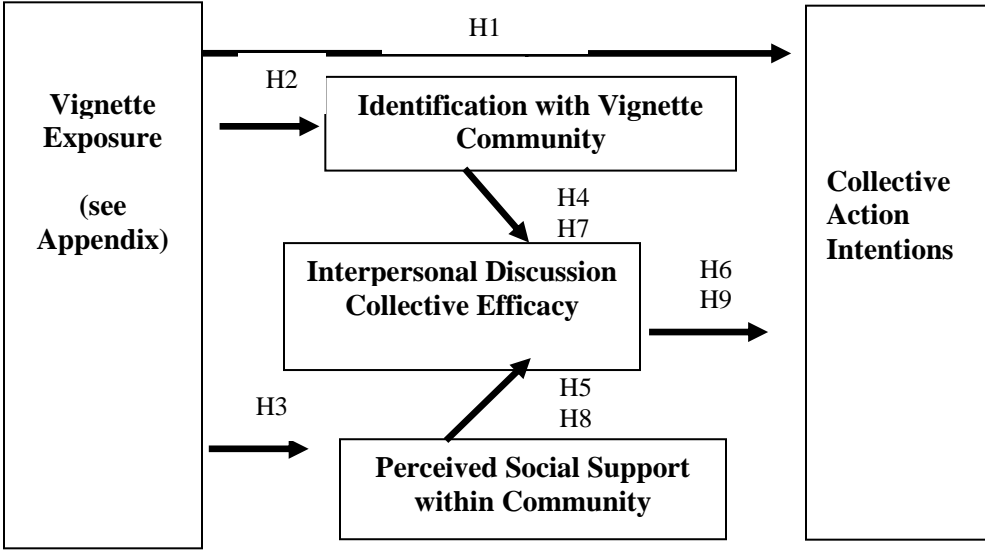


Figure 1: Proposed Model with Hypotheses (Direct Effects Only)

Note: Hypotheses describing mediated pathways (**H10-H13**) and moderated mediation pathways (**H14-H19**) are not shown.

Chapter Three: Method

Experimental Design

Study participants were recruited via survey research vendor Amazon's Mechanical Turk (MTurk) in May of 2019. MTurk is a fairly common data collection platform for messaging experiments in the communication, psychology, and political science fields, among others (e.g., Bliuc et al., 2015; McCright, Charters, Dentzman, & Dietz, 2016; Van der Linden, S., Leiserowitz, A., Rosenthal, S., & Maibach, E. (2017), Swim & Bloodhart, 2015). As an open online marketplace that gives developers the ability to create Human Intelligence Tasks (HITs) and distribute them to a population of thousands of anonymous workers through Amazon's web portal, MTurk provides research participants for Web-based studies. Individuals received payment of \$1.00 upon completion of the study.

Sample

Compared to the U.S. population, my participant sample had a slightly greater percentage of males relative to females and was more highly educated (see Appendix B for the sample's demographics). Racial/ethnic distribution did not markedly differ from the U.S. population, although Hispanics/Latinos were somewhat less well-represented in the sample. Also, a greater percentage of sample participants reported being liberal or

leaning liberal, while a lower percentage were self-reported moderates. The percentage of participants self-identifying as conservative almost exactly mirrored the U.S. population.

Following is a table reflecting the demographics of my sample of 406 American adults as compared to the U. S. population. See Table 7 in Appendix B for all survey measures, including demographic measures.

Table 1 *Sample Demographics Compared to the United States Population*

Variable	Sample Demographics	United States Population
Gender	41.9% female	50.8%
% White	77.8%	76.6%
% Black or African American	11.8%	13.4%
% American Indian or Native American	2.7%	1.3%
% Asian	9.6%	5.8%
% Native Hawaiian or Pacific Islander	0.2%	0.2%
% Hispanic or Latino	14.0%	18.1%
% Bachelor’s degree or higher	61.10%	30.9%
% Liberal/Leaning Liberal	41.6%	26%
% Moderate	23.9%	35%
% Conservative/Leaning Conservative	34.5%	35%

Gender and race data courtesy of the United States Census Bureau Quick Facts estimates as of May 26, 2019 (<https://www.census.gov/quickfacts/fact/table/US/PST045218>).

Political ideology data courtesy of Gallup as of January 8, 2019 (<https://news.gallup.com/poll/245813/leans-conservative-liberals-keep-recent-gains.aspx>).

Independent Variable

In part two of the survey, participants were randomly assigned to read one of 8 vignettes about a hypothetical community working together on climate change and either experiencing well-being benefits or not.

The simulated news story, or vignette (See Appendix A), drew upon the concept of environmental citizenship, defined as a sub-class of pro-environmental behaviors that are more likely to be exhibited across the broad community in comparison to direct activism such as participating in protests (Stern, 2000). All of the conditions described a hypothetical community working together to achieve “net zero” emissions – a path that an increasing number of U.S. communities are pursuing (Seto & Leahy, 2017) and that arguably serves as a relatable example of both collective action and environmental citizenship. Carlisle, Van Geet, & Pless (2009) define net zero communities as consuming no more energy than they produce through renewables located in the community’s perimeter or in surrounding non-urban areas, and assuming that the spatial scale of the community also includes energy used for industry, vehicles, and community-based infrastructure (Kallushi, Harris, Miller, Johnston, & Ream, 2012). The Historic Green Village, a real-world net zero energy community in Florida, serves as an example (He, Xiong, & Shi, 2017).

In addition, the vignettes described community members – leaders and citizens -- as liberal, conservative, or a mixture of both liberals and conservatives, or no cue information present.

Thus, the messaging experiment involved a 2 (well-being as a co-benefit of community collective action: mentioned/not) X 4 (political cue – liberal, conservative, mixed, or no cue) between-subjects factorial design.

Table 2 *Vignette Design Characteristics*

Community experiencing health-related co-benefits of collective action	Political cues: Political makeup of community members and decision-makers			
	None	Conservative	Liberal	Liberal and Conservative
Mentioned	1	2	3	4
Not mentioned	5 (control)	6	7	8

Pilot Tests

Once developed, the vignette conditions were pre-tested on a George Mason University (Mason) undergraduate communication class for clarity, readability, and other improvements. The passages were then edited and piloted with a second class of Mason undergraduate communication students. Based on that additional feedback, further refinements were made, such as providing additional examples of the collective actions taken.

Mediating Variables

Identification with the community group. Drawing on Hart and Nisbet (2017), post-exposure social identification was measured by asking participants how much they agreed with the following statements: 1) “The people in the story have problems like my own;” 2) “I identify with the people featured in the story;” 3) “The people in the story are like me;” and 4) “I feel connected to the people featured in the story.” These questions were measured on a 7-point Likert scale ranging from 1 (strongly agree) to 7 (strongly disagree). Answers were aggregated into a single social identification scale ($M = 4.27$,

SD = 1.16). An un-rotated exploratory factor analysis (Kaiser-Meyers-Olkin (KMO) measure of sampling adequacy = 0.86 Bartlett Test of Sphericity $X^2 = 1311.44$, $p = .000$) revealed a 1-factor solution (eigenvalue = 3.29; explained variance = 82.19%; all loadings $\geq .766$).ⁱ Using Cronbach's alpha, a reliability estimate was calculated for the post-exposure identification scale ($\alpha = .928$). Therefore, the items were averaged into one reliable scale ($M = 4.27$, $SD = 1.16$; $\alpha = .928$).

Perceived social support. Drawing on the scale developed by Praherso and colleagues (2017), a four-item social support scale was used to assess participants' perceptions of social support within the vignette communities. A seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) assessed four distinct aspects of social support (House, 1981). Perceived emotional support was measured by asking participants to respond to the following: "If I were in this situation, I think I would get the emotional support I need from other people." Perceived companionship was measured by asking participants to respond to: "If I were in this situation, I would get the help I need from other people." Instrumental support was measured by asking participants to respond to: "If I were in this situation, I would get all the resources I need from other people." Lastly, perceived informational support was measured by asking participants to respond to: "If I were in this situation, I would get the advice I need from other people." Answers were aggregated into a single perceived social support scale ($M = 4.38$, $SD = 1.07$). An un-rotated exploratory factor analysis (Kaiser-Meyers-Olkin (KMO) measure of sampling adequacy = 0.84; Bartlett Test of Sphericity $X^2 = 1196.44$, $p = .000$) revealed a 1-factor solution (eigenvalue = 1.849; explained variance = 80.66%;

loadings $\geq .839$). Using Cronbach's alpha, reliability estimates were calculated for the scale ($\alpha = .918$).

Interpersonal discussion intentions. Post-exposure interpersonal discussion intentions were measured using the question: "In the next year, how often do you *intend to discuss* how to address climate change with your family and friends?" Interpersonal discussion intentions were measured on a 4-point Likert scale ranging from 1 (never) to 7 (often). Answers were aggregated into a single interpersonal discussion intentions scale ($M = 2.70$, $SD = 0.84$).

Collective efficacy. Pre- and post-exposure collective efficacy relative to climate change was measured using the statements: "I think together we are able to act on climate change" and "I think that we can, collectively, make a real difference in addressing the challenges of climate change," derived from Van Zomeren, Spears, Fischer, and Leach (2004) with answers scored using a six-point Likert scale with options ranging from strongly disagree to strongly agree.

Post-exposure perceived collective efficacy. An un-rotated exploratory factor analysis for the post-exposure scale (Kaiser-Meyers-Olkin (KMO) measure of sampling adequacy = 0.5; Bartlett Test of Sphericity $X^2 = 495.63$, $p = .000$) revealed a 1-factor solution (eigenvalue = 3.226; explained variance = 92.0%; loadings $\geq .879$). Using Cronbach's alpha, reliability estimates were calculated for the scale ($\alpha = .906$). Answers were aggregated into a single perceived collective efficacy scale ($M = 4.63$, $SD = 0.93$).

Moderating Variables

Moderating variables were measured after condition exposure so as to avoid rendering them salient as participants responded to pre-exposure questions.

Political ideology. Political ideology was measured by using the question “In general, would you describe your political views as...” Response options on a 7-point Likert scale will include: 1) Very conservative; 2) conservative; 3) slightly conservative; 4) slightly liberal; 5) moderately liberal; 6) Liberal; and 7) Very liberal. (M = 2.88, SD = 1.27).

Strength of ingroup identification. Strength of ingroup identification with political ideology was measured by asking participants to respond to indicate their level of agreement with two statements based on their description of their political ideology (Leach et al., 2008). Specifically, participants were asked: “Based on your description of your political ideology, please indicate your level of agreement with each of the following statements:”

- “When someone praises this ideological group, it feels to me like a personal compliment.”
- “This ideological group's successes are my successes.”

Response options on a six-point Likert scale included the following: 1) Strongly disagree; 2) Disagree; 3) Slightly disagree; 4) Slightly agree; 5) Agree; 6) Strongly agree ($\alpha = .902$, M = 3.13, SD = 1.10).

Dependent Variable

Intentions to engage in collective action over the coming year were measured using questions drawn from Bliuc, et al. (2007), Participant were asked: “In the next year, how often do you intend to discuss how to address climate change with your family and friends?” Response options included: 1) Not at all likely; 2) Not too likely; 3) Somewhat likely; 4) Very likely.

- Donate money to an advocacy organization.
- Go to a political rally that focuses on climate action.
- Volunteer for a community event that focused on climate action.
- Contact a political leader to show support for climate action.
- Sign an online petition that focused on climate action.
- Vote for a candidate that supports climate action.

An un-rotated exploratory factor analysis (Kaiser-Meyers-Olkin (KMO) measure of sampling adequacy = 0.888 Bartlett Test of Sphericity $X^2 = 1624.95$, $p = .000$) revealed a 1-factor solution (eigenvalue = 4.19; explained variance = 69.83%; loadings $\geq .587$). Using Cronbach’s alpha, a reliability estimate was calculated for the scale ($\alpha = .913$). Answers were aggregated into a single collective action intentions scale ($M = 2.37$, $SD = 0.93$).

Sociodemographic Questions

Please see Appendix B for all sociodemographic measures and results.

Chapter Four: Results

This report of results begins with descriptions of the sample, factor analysis of the survey items, and then results of hypothesis testing. Table 6 lists all supported and unsupported hypotheses.

While exposure to the vignettes did not, by itself, yield significant effects on identification with the community or a sense that one would receive social support as part of the community, hypotheses related to mediated effects were found to be significant.

Further, moderation analysis found a boomerang effect (which occurs when occurs when a message is strategically constructed with a specific intent but produces a result that is the opposite of that intent (Byrne & Hart, 2009), for people who self-identified as somewhat liberal and who weakly identified as such.

Finally, conservatives who weakly and/or moderately identified as such demonstrated a shift toward identification with the depicted community when its members were depicted as an ideological mix. For these conservatives, collective action intentions were heightened by exposure to the vignettes, as mediated by identification and then interpersonal discussion intentions, when the vignette conditions characterized community members as both liberal and conservative. These results suggest that recategorization, did occur.

Mediated Effects

These data relate to the health co-benefit versus no-health co-benefit condition comparison (irrespective of which political cue was present, if any). To examine my hypothesized direct and indirect effects of condition on my various outcome variables, I used the PROCESS macro for SPSS (Hayes, 2017) to run an OLS-based path analysis. I calculated point estimates and 95% bootstrapped confidence intervals for all such effects.

First, several (but not all) of the hypothesized **direct effects** emerged:

- H1 (Condition → collective action intentions) was not supported - those who read the vignette that described the health and well-being-related co-benefits of climate action were no more likely to intend to engage in collective action than those who saw the version without such content ($b = -0.04, p = 0.51; 95\% \text{ CI: } -0.18, 0.09$).
- H2 (Condition → identification with the vignette community) was not supported - those who read the vignette that described the health and well-being-related co-benefits of climate action were no more likely to identify with the community than those who saw the version without such content ($b = -0.001, p = 0.99; 95\% \text{ CI: } -0.22, 0.22$).
- H3 (Condition → perceived social support from the vignette community) was not supported - those who read the vignette that described the health and well-being-related co-benefits of climate action were no more likely to perceive that they, too, would have social support in such a community than those who saw the version without such content ($b = -0.02, p = 0.85; 95\% \text{ CI: } -0.23, 0.19$).

- H4 (Identification with the vignette community → Interpersonal discussion intentions) was supported - the more respondents identified with the vignette community (irrespective of whether information on health and well-being-related co-benefits of climate action was included), the more likely were they to intend to discuss climate action in the future ($b = 0.3, p < 0.001$; 95% CI: 0.23, 0.39).
- H5 (Perceived social support from the vignette community → interpersonal discussion intentions about climate change) was supported - the more respondents perceived that they would receive social support in the vignette community (irrespective of whether information on health and well-being-related co-benefits of climate action was included), the more they were likely to intend to discuss climate change in the future ($b = 0.94, p = 0.0285$; 95% CI: 0.01, 0.18).
- H6 (Interpersonal discussion intentions about climate change → collective action intentions) was supported - the more respondents intended to engage in interpersonal discussion (irrespective of whether information on health and well-being-related co-benefits of climate action was included), the more likely they would be to intend to engage in climate action in the future ($b = 0.51, p < 0.001$; 95% CI: 0.42, 0.61).
- H7 (Identification with the vignette community → perceived collective efficacy) was supported - the more respondents identified with the vignette community (irrespective of whether information on health and well-being-related co-benefits of climate action was included), the stronger their perception of collective efficacy ($b = 0.52, p < 0.001$; 95% CI: 0.42, 0.62).

- H8 (Perceived social support from the vignette community → perceived collective efficacy) was supported - the more respondents perceived social support within the community described in the vignette (irrespective of whether information on health and well-being-related co-benefits of climate action was included), the stronger their perception of collective efficacy ($b = 0.21, p = 0.001; 95\% \text{ CI: } 0.10, 0.31$).
- H9 (Perceived collective efficacy → collective action intentions) was supported - the more respondents perceived that the community would be effective in acting on climate change, the more likely were they to intend to engage in collective action ($b = 0.08, p = 0.0251; 95\% \text{ CI: } 0.01, 0.16$).

Second, since several of the composite direct effect pathways were not statistically significant, all of the 95% confidence intervals for the hypothesized **indirect effects** of condition on collective action included 0 and were, thus, not statistically meaningful.

- H10 was not supported, as there was no significant indirect effect of exposure to the well-being co-benefit vignette (versus those who saw the vignette without this information) on collective action intentions via identification with the vignette community and, in turn, intentions to talk about climate change ($b = -0.0002; 95\% \text{ CI: } -0.035, 0.036$).
- H11 was not supported, as there was no significant indirect effect of exposure to the well-being co-benefit vignette (versus those who saw the vignette without this information) on collective action intentions via identification with the vignette

- community and, in turn, perceived collective efficacy ($b = -0.0001$; 95% CI: $-0.0123, 0.0111$).
- H12 was not supported, as there was no significant indirect effect of exposure to the well-being co-benefit vignette (versus those who saw the vignette without this information) on collective action intentions via perceived social support from the vignette community and, in turn, intentions to talk about climate change ($b = -0.0010$; 95% CI: $-0.0136, 0.0110$).
 - H13 was not supported, as there was no significant indirect effect of exposure to the well-being co-benefit vignette (versus those who saw the vignette without this information) on collective action intentions via perceived social support from the vignette community and, in turn, perceived collective efficacy ($b = -0.0004$; 95% CI: $-0.0049, 0.0040$).

Moderation and Moderated-Mediation

To test hypotheses H14-19, I used the PROCESS macro for SPSS (Hayes, 2017) once again, this time to run a moderated-mediation model using OLS-based path analysis. This model simultaneously estimated (1) hypothesized 3-way interactions involving various condition comparisons influencing identification with (or social support from) the vignette community contingent on respondent salience and strength of political ideology identity as well as (2) a series of indirect effects (with identification/social support and interpersonal discussion intentions/perceived collective efficacy as the first and second set of mediators respectively), also contingent on these two moderators. I calculated point estimates and 95% bootstrapped confidence intervals for all moderated and moderate-

mediated effects. For the condition comparison, I first took the 4 political cue conditions (liberal, conservative, mixed, and none) and – for each – combined the versions that mentioned/did not mention the health and well-being co-benefit of climate action due to the lack of significant differences for the latter on our model variables (see previous section). In other words, my 8 conditions (4 X 2) were collapsed into 4 conditions (e.g., 4 political cues, irrespective of whether well-being co-benefits were mentioned or not).

Here, I only focus on the first set of results related to the 3-way interactions (H14-H15).

Moderation - 3-way interaction: perceived identification with the vignette community. First, I tested H14, which predicted a 3-way interaction whereby political cues would interact with respondent political identity and the salience of that identity to influence perceived identification with the vignette community. More specifically, I expected that conservatives would identify the vignette community when conservative cues were present and vice-versa for liberals and liberal cues. Full results for all potential condition comparison combinations are described below in Table 3.

Table 3 *3-way Interactions for Perceived Identification with the Vignette Community*

Condition Comparison	Results – 3-way interaction (condition comparison X political ideology X strength of identification with one’s ideology → identification with vignette community)
No cue (0) versus mixed cue (1)	b = 0.2006; p = 0.1602; 95% CI: -0.0801, 0.4813.

Conservative cue (0) versus mixed cue (1)	b = 0.0750; p = 0.6554; 95% CI: -0.2559, 0.4058.
Conservative cue (0) versus no cue (1)	b = -0.2985; p = 0.0694; 95% CI: -0.4268, 0.0164.
Liberal cue (0) versus mixed cue (1)	b = 0.3245, p= 0.0420, 95% CI = 0.0118, 0.6371.
Liberal cue (0) versus no cue (1)	b = -0.0149; p = 0.9022; 95% CI: -0.2538, 0.2239
Liberal cue (0) versus conservative cue (1)	(b = 0.2495; p = 0.1847; 95% CI: -0.1202, 0.6192

Overall, H14 was partially supported, with two 3-way interactions emerging as statistically significant (and one as ultimately statistically meaningful). Specifically, I found a significant 3-way interaction involving exposure to the mixed cue condition (coded 1) versus the liberal cue condition (coded 0), political ideology, and strength of identification with that ideology on perceived identification with the vignette community ($b = -0.3245$; $p = 0.0420$; 95% CI: -0.6371, -0.0118). However, the test of highest order unconditional interaction showed that this interaction did not add a meaningful amount of explanatory power to the model; $F(3, 186) = 1.6068$, $p = 0.1893$ and, thus, was not analyzed further.

Second, I also found a significant 3-way interaction involving exposure to the mixed cue condition (coded 1) versus the no cue condition (coded 0), political ideology,

and strength of identification with that political ideology identity on perceived identification with the vignette community ($b = -0.2985$, $p = 0.0051$, 95% CI = -0.5072, -0.0899). The test of highest order unconditional interaction showed that this result *did* add a meaningful amount of explanatory power to the model; $F(3, 390) = 3.5349$, $p = 0.0149$. Probing this interaction further revealed that those who read the vignette with mixed political cue (coded 1) compared to those who saw the vignette with no political cue (coded 0):

1. Were *less* likely to identify with the vignette community *if* they weakly identified as “somewhat liberal” ($b = -0.8582$, $p = 0.0246$; 95% CI = -1.6062, -0.1102; test of equality of conditional means, $F(3, 390) \geq 4.1350$, $p = 0.0066$);
2. Were more likely to identify with the vignette community *if* they weakly identified as “very conservative” ($b = 1.0165$, $p = 0.0246$; 95% CI = 0.3348, 1.6982; test of equality of conditional means, $F(3, 390) \geq 3.2868$, $p = 0.0208$);
3. Were more likely to identify with the vignette community *if* they moderately identified as “very conservative” ($b = 0.4855$, $p = 0.0036$; 95% CI = 0.0720, 0.8991; test of equality of conditional means, $F(3, 390) = 2.8639$, $p = 0.0366$).

Relative to my research question, which sought to explore whether an inclusive message can foster recategorization in the context of climate change, exposure to the mixed cue condition (versus the no cue condition) *decreased* identification with the depicted community for those who identified as somewhat liberal, and who weakly identified as such, were less likely to identify with the vignette community ($b = -0.8582$,

$p < 0.05$; 95% CI = -1.6062, -0.1102). Not only did this result offer no evidence of recategorization, but suggests a boomerang effect.

However, results would suggest recategorization did occur for those who identified as very conservative, and who weakly identified as such, as well for those who identified as very conservative and who moderately identified as such ($b = 0.4855$, $p < 0.05$; 95% CI = 0.0720, 0.8991). Given the ineffectiveness of the vignettes to elicit identification with the vignette community, this partial support for H14 may result from the inclusive political cue – or a community of liberals and conservatives working together.

Moderation- 3-way interaction: perceived social support from the vignette community. Next, I tested H15, which predicted a 3-way interaction whereby political cues would interact with respondent political identity and the strength of identification with that identity to influence perceived social support from the vignette community. More specifically, I expected that conservatives would perceive support from the vignette community when conservative cues were present and vice-versa for liberals and liberal cues. Full results for all potential condition comparison combinations are described below in Table 4.

Table 4 *3-way Interactions for Perceived Social Support from the Vignette Community*

Condition Comparison	Results – 3-way interaction (condition comparison X political ideology X strength of identification with one’s ideology → social support within vignette community)
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No cue (0) versus mixed cue (1)	b = 0.1452; p = 0.2750; 95% CI: -0.1164, 0.4068
Conservative cue (0) versus mixed cue (1)	b = -0.0262; p = 0.8673; 95% CI: -0.3346, 0.2822
Conservative cue (0) versus no cue (1)	(b = -0.2032; p = 0.0536; 95% CI: -0.4096, 0.0031
Liberal cue (0) versus mixed cue (1)	b = 0.2336; p = 0.1156; 95% CI: -0.579, 0.5250
Liberal cue (0) versus no cue (1)	b = -0.1439; p = 0.2042; 95% CI: -0.3663, 0.0786
Liberal cue (0) versus conservative cue (1)	b = 0.2589; p = 0.1388; 95% CI: -0.0849, 0.6044.

Overall, H15 was not supported, with no 3-way interactions emerging as statistically significant and statistically meaningful. I did find a significant 3-way interaction involving exposure to the mixed cue condition (coded 1) versus the liberal cue condition), political ideology identity, and strength of identification with that identity on perceived social support within the vignette community (b = -0.2253; $p = 0.0231$; 95% CI: -0.4196, -0.0311). However, the test of highest order unconditional interaction showed that this result did not add a meaningful amount of explanatory power to the model; $F(3, 390) \geq 1.9903$, $p = 0.1149$. Therefore, I did not proceed further with it.

This null finding shed no light on my research question. As exposure to a vignette mentioning social support within the community was not moderated by the salience and strength of political ideology identity, there was no indication that an inclusive message served to foster recategorization for participants.

Moderated-Mediation. Finally, I tested H16-H19, which examined whether the indirect effect of condition on collective action intention via the following sequence of

mediators would depend on (and potentially differ by) respondent political identity and the strength of identification with that identity

- H16: Identification with the vignette community (mediator 1) and interpersonal discussion intentions about climate change (mediator 2)
- H17: Identification with the vignette community (mediator 1) and perceived collective efficacy (mediator 2)
- H18: Perceived social support from the vignette community (mediator 1) and interpersonal discussion intentions (mediator 2)
- H19: Perceived social support from the vignette community (mediator 1) and perceived collective efficacy (mediator 2)

Again, I expected that a given vignette would heighten collective action intentions for conservatives when conservative cues were present and vice-versa for liberals and liberal cues. Since significant moderated effects are first needed to establish moderated-mediation, and the only significant 3-way interactions observed involved the condition comparing the mixed cue vignette (coded 1) to the vignette with no cues (0), I only present conditional indirect effects involving this condition comparison. Full results for all potential condition comparison combinations are described below in Table 5.

Overall, H17 – H19 were not supported, with no statistically meaningful indirect effect emerging that did not contain 0. However, H16 was partially supported. I identified a statistically meaningful indirect effect (that did not include 0) of exposure to the mixed cue condition (coded 1) versus the no cue condition (coded 0) on *heightened* collective action intentions via greater identification with the vignette community and *heightened*

interpersonal discussion intentions, but only for those who were *very conservative* and who *weakly identified* as such (indirect = 0.1663; 95% CI: 0.0387, 0.3191) and those who were *very conservative* and *moderately identified* as such (indirect = 0.0794; 95% CI: 0.0134, 0.1574

In other words, exposure to the mixed cue condition (versus the control condition) heightened collective action intentions via identification with the vignette community and interpersonal discussion intentions for people who were very conservative and who weakly identified as such, as well as for those who were very conservative and who moderately identified as such.

Again returning to my research question, which sought to explore whether an inclusive message can foster recategorization in the context of climate change, the fact that the inclusive political cue *strengthened* collective action intentions through the mediator of greater identification and, in turn, interpersonal discussion intentions, suggests that for some individuals this pathway *did* produce recategorization, namely, conservatives who were weakly or moderately identified with that political ideology identity. Given the need for and complexity of fostering collective action on climate change, the fact that this result was significant suggests that my research question may be worth exploring further.

Table 5 *Indirect Effect of Condition on Collective Action Intentions via Different Sets of Mediators, by Respondent Political Identity and Strength of Identification with that Identity*

	Indirect effect – coefficient (95% CI)
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Condition Comparison	Political ideology	Strength of identification with political ideology	Indirect effect #1	Indirect effect #2	Indirect effect #3	Indirect effect #4
Mixed cue (1) versus no cue (0)	Liberal	Low	-0.1404 (- 0.3003, 0.0026)	-0.0331 (- 0.0952, 0.0091)	0.0244 (- 0.0897, 0.8171)	-0.0078 (- 0.0288, 0.0049)
	Liberal	Moderate	-0.0441 (- 0.1227, 0.0276)	-0.0104 (- 0.0370, 0.0078)	-0.0167 (- 0.0549, 0.0078)	-0.0053 (- 0.0194, 0.0024)
	Liberal	High	0.0137 (- 0.0839, 0.1074)	0.0032 (- 0.0229, 0.0342)	-0.0121 (- 0.0538, 0.0173)	-0.0038 (- 0.0183, 0.0055)
	Moderate	Low	0.0641 (- 0.0302, 0.1709)	0.0151 (- 0.0083, 0.0582)	0.0292 (- 0.0044, 0.0821)	0.0093 (- 0.0020, 0.0299)
	Moderate	Moderate	0.0383 (- 0.0064, 0.0881)	0.0090 (- 0.0030, 0.0305)	0.0117 (- 0.0030, 0.0352)	0.0037 (- 0.0011, 0.0129)
	Moderate	High	0.0228 (- 0.0329, 0.0819)	0.0054 (- 0.0082, 0.0260)	0.0012 (- 0.0165, 0.0187)	0.0004 (- 0.0052, 0.0066)
	Conservative	Low	0.1663 (0.0387, 0.3191)	0.0392 (- 0.0076, 0.1123)	0.0560 (- 0.0076, 0.1421)	0.0179 (- 0.0036, 0.0533)
	Conservative	Moderate	0.0794 (0.0134, 0.1574)	0.0187 (- 0.0041, 0.0535)	0.0259 (- 0.0037, 0.0655)	0.0083 (- 0.0016, 0.0248)
	Conservative	High	0.0273 (- 0.0064, 0.0674)	0.0064 (- 0.0132, 0.0260)	0.0078 (- 0.0132, 0.0377)	0.0025 (- 0.0049, 0.0100)

			0.0516, 0.1090)	0.0131, 0.0345)	0.0080, 0.0306)	0.0024, 0.0110)
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Note:

Indirect effect 1: Identification with the vignette community (mediator 1) and interpersonal discussion intentions about climate change (mediator 2)

Indirect effect 2: Identification with the vignette community (mediator 1) and perceived collective efficacy (mediator 2)

Indirect effect 3: Perceived social support from the vignette community (mediator 1) and interpersonal discussion intentions (mediator 2)

Indirect effect 4: Perceived social support from the vignette community (mediator 1) and perceived collective efficacy (mediator 2)

To summarize, results were not significant for any of the hypotheses related to vignette effects (H1-H3), yet direct effects between variables were all significant (H4-H9). Indirect effects of exposure to the vignettes through the mediators (identification with the depicted community, perceived social support, interpersonal discussion intentions, and perceived collective efficacy) on collective action were not significant (H11-13), while I found mixed results for moderated and moderated-mediated effects. H14 and H16, which predicted that vignette exposure on identification, and identification and interpersonal discussion intentions, respectively, would be moderated by the salience and strength of political ideology identity, were partially supported. H15, which predicted the effect of vignette exposure on perceived social support would be moderated by the

salience and strength of political ideology identity, was not supported. H17-19, which examined moderated-mediated effects, were not supported.

Table 6 *Summary of Hypotheses and Results*

(H1 – H13): Direct and indirect effects of exposure to a vignette about a community experiencing health and well-being-related co-benefits of climate change-related collective action (versus a vignette without that information)	
H1: Vignette exposure will heighten collective action intentions.	Not Supported
H2: Vignette exposure will heighten identification with that community.	Not Supported
H3: Vignette exposure will heighten perceptions that one, too, would have social support in such a community.	Not Supported
H4: Identification with the community described in the vignette will be associated with heightened interpersonal discussion intentions about climate change.	Supported
H5: Perceptions of social support within the community described in the vignette will be associated with heightened interpersonal discussion intentions about climate change.	Supported
H6: Interpersonal discussion intentions about climate change will be associated with stronger collective action intentions.	Supported
H7: Identification with the community described in the vignette will be associated with stronger perceptions of collective efficacy.	Supported
H8: Perceived social support within the community described in the vignette will be associated with stronger perceptions of collective efficacy.	Supported
H9: Perceived collective efficacy regarding climate change will be associated with stronger collective action intentions.	Supported
H10: Vignette exposure → identification with the community described in the vignette →	Not Supported

interpersonal discussion intentions about climate change → collective action intentions.	
H11: Vignette exposure → identification with the community described in the vignette → perceptions of collective efficacy → collective action intentions.	Not Supported
H12: Vignette exposure → perceived social support within the community → interpersonal discussion intentions about climate change → collective action intentions	Not Supported
H13: Vignette exposure → perceived social support within the community → perceptions of collective efficacy → collective action intentions.	Not Supported
(H14-H19): Moderated and moderated-mediated effects of exposure to a vignette containing a political cue (liberal, conservative, mixed, or none) with or without information about the health and well-being-related co-benefits of climate change-related collective action	
H14: The effect of vignette exposure on identification with the community described in the vignette will be moderated by the salience and strength of one's political ideology identity.	Partial support
H15: The effect of vignette exposure on perceived social support within the community will be moderated by the salience and strength of one's political ideology identity.	Not Supported
H16: The indirect effect of vignette exposure on collective action intentions via identification with the community and greater interpersonal discussion intentions about climate change will be moderated by the salience and strength of one's political ideology identity.	Partial support
H17: The indirect effect of vignette exposure on collective action intentions via identification with the community described in the vignette and greater perceptions of collective efficacy will be moderated by the salience and strength of one's political ideology identity.	Not Supported
H18: The indirect effect of vignette exposure on collective action intentions via perceived social support within the community and greater interpersonal discussion intentions about climate	Not Supported

change will be moderated by the salience and strength of one's political ideology identity.	
H19: The indirect effect of vignette exposure on collective action intentions via perceived social support within the community and greater perceptions of collective efficacy will be moderated by the salience and strength of one's political ideology identity.	Not Supported

Chapter Five: Discussion

Overall Results

Some problems are best addressed by encouraging *individuals* to change their behavior. Climate change is *not* one of those problems. Climate scientists have established that collective action by nations around the world is needed to reduce the amount of heat trapping gasses currently released into the planet's atmosphere to levels that cause only moderate harm. Given the importance of collective action to address climate change, this study examined factors that might encourage collective action. As noted, a robust and diverse literature attests to how the powerful human desire for a positive self-concept through identification with social groups might help to break the climate silence (Romm, 2016; Revkin, 2016), and the associated impasse on taking action in our own interest -- as well as that of the planet. Research also suggests that the benefits of community well-being such as physical and mental health may be a persuasive way to promote collective action regarding climate change.

Therefore, this study brought a SIA-based approach to designing vignettes that highlighted the co-benefits of climate change, and examined their direct and indirect impact on climate change collective action intention. The indirect effects focused on potential mechanisms for heightening collective action intentions through two sets of mediators: identification with the depicted community and perceived social support

within the community, as well as interpersonal discussion intentions about climate change and perceived collective efficacy.

In addition, I included information about the political makeup of community members and decision-makers in the vignettes (e.g., as liberal, conservative, or a bipartisan mix) to test the power of political in-group/out-group cues in shaping identity-based political polarization regarding climate change (Brulle et al., 2012). The purpose was to understand the potentially moderating role of political ideology salience and the strength of that political identity in order to identify when these cue-based messages might “work” best.

Since recategorization is an internal process that can lead to the adoption of new social categories (or identities) based on a variety of individual and contextual factors, I sought to explore the conditions under which people shifted identity based on perceived “better” others in an out-group (Postmes & Branscombe, 2010; Turner, 1985). I chose to present vignettes of people acting together on climate change and enjoying wellbeing benefits, and compared them to vignettes in which these outcomes were not mentioned. In so doing, I questioned whether presenting a group of people acting collectively on climate change) as more inclusive (consisting of both liberals and conservatives) could weaken the social boundary between these groups (Tilly, 2015), and, so doing, “invite” the outgroup of conservatives to recategorize, or shift identity, toward the depicted community.

While my results were mixed, they nonetheless suggest promising paths forward.

Direct Effects for the Vignettes Involving Health/Well-being Co-benefits or No Such Co-benefits

I found no significant direct effect of reading these vignettes. First, reading a vignette that described the well-being-related co-benefits of climate action had no impact on collective action intentions. Nor was exposure to those vignettes associated with identification with the community. Third, exposure to those vignettes was not associated with a perception that they would have social support in such a community. Specifically, the vignette content – by itself -- proved inadequate to encourage participants to identify with those depicted in the vignette. In addition, exposure to the vignettes, by itself did not engender a sense that the vignette community would be mutually supportive. Items used to assess identification with the vignettes asked participants to agree or disagree with statements such as: “I identify with the people in the story,” or “If I were in this situation, I would get the help I need from other people.”

There are several plausible reasons why the vignettes were not effective. First, while the links between social support (that is, being emotionally, informationally, and materially generous to others [e.g., Burleson, 2003]) and community well-being -- including in the context of climate change -- were clear to the investigator, and while many of these links are well established in natural and social science literatures, participants may not have understood the links between climate change, health, and community well-being. Supporting this possibility is evidence in the pilot test that some undergraduates at a Mid-Atlantic university did not know what climate change is, why it is harmful, and what steps address these harms. Despite efforts to clarify these issues in

the vignettes by citing more clear examples, etc., insufficient knowledge of these topics among the study participants may have hampered any possible impacts the vignettes may have had.

Second, the vignettes may have been too abstract for participants to evaluate. They may have had more impact if, rather than focusing mainly on how well a community was doing in combating climate change, they had more specifically reported concrete outcomes. This approach may have been easier to understand and identify with. For instance, perhaps a vignette might report that scientists have found communities that prioritize clean energy production also experience less asthma and other disease than communities that do not. Concrete descriptions of easy to conceptualize findings and benefits also may have made the vignettes more likely to affect participants' sense that they identified with the people described. Indeed, research shows that *people do not address risks they do not feel* (Loewenstein et al., 2001; Slovic, Finucane, Peters, & MacGregor, 2004; Weber, 2006). It could be that participants would have felt and understood climate risk more than they did, and identified with the depicted community, had the vignettes included emotion-evoking concerns like asthma, which can be exacerbated by climate change. An effect may have resulted if the experience of an asthma attack had been described, in a very clear account, of what it can be like to be asthmatic and living near a coal plant.

A third possibility is that the vignettes may have been more effective at shifting participants' identifications if they had included stories of a person or persons (e.g., a human interest angle) rather than providing a descriptive report of community actions.

For instance, in the future, it may be possible to locate a story about an individual who has asthma, and who, for instance, learns that her asthma symptoms will improve if there are steps taken to reduce the amount of carbon emissions in her region. She talks to her neighbors about this benefit and persuades them to lobby for the coal plant in their region to be transformed into a manufacturing facility producing wind turbines instead. Their political efforts are successful, their energy sources shift to renewables, and their community becomes known as a clean, healthful place where people like to live. Perhaps a story of this sort, where steps to address climate change are expressed as shifting from fossil fuels to clean energy sources, would be easier to understand and to identify with than more abstract accounts of climate change, its harms, and benefits of addressing climate change. In short, a narrative about an individual or other “story” could have engendered an emotional experience of becoming involved with the people and events portrayed. In such instances, “participants are primarily engaged in the storyline ... and [are] experiencing vicarious cognitive and emotional responses to the narrative as it unfolds” (Moyer-Guse, 2008). In addition, research by Corner and Clarke (2016) has found the use of narrative to be strongly effective in making climate change more relevant to people’s lives.

Yet another possibility is that the manipulation of the vignette conditions added substantially to their length, possibly confounding the results. Adding information about co-benefits, political affiliation, and so forth may have given participants too much to consider, and therefore reduced the chances of finding direct effects of the experimental conditions.

Finally, it's also possible that the vignettes were not relatable to a range of individuals from different types of communities, e.g., a rural area or a low-income suburb. If a person has never experienced life in the kind of setting where people actually might have the capacity or social capital to undertake initiatives to become a net zero locality, it is unlikely that he or she will be able to imagine him or herself as a community member.

Mediated Pathways Involving Vignettes with Health/Well-being Co-benefits or No Such Co-benefits

Despite these results, the study did yield some intriguing findings.

First, and irrespective of whether information on health and well-being-related co-benefits of climate action was included, the more respondents identified with the vignette community, the more likely were they to intend to discuss climate change. Research suggests that where people share a common social identity, interpersonal communication may occur more readily (Bain et al., 2016). This finding is consequential given previous research (Rabinovich, Morton, Postmes, & Verplanken, 2012) discovering a process through which intergroup comparisons shape individual intentions and behavior in the context of climate change: identification shift occurred as a result of seemingly subtle changes in social context. In the present study, identification with a community working together on climate change may have encouraged people to see environmental values as defining of their group, and inclining them to talk about climate change. In a real-life context, such discussion would further ground that positive ingroup attribute, creating a

virtuous cycle of mutually reinforcing ingroup perceptions and behavior (Rabinovich et al., 2012).

Likewise, the more respondents perceived that they would receive social support in such a community, the more likely they were to intend to discuss the subject. In contrast, a perceived lack of social support has been shown to impede climate change-related interpersonal discussion (Van Boven et al., 2018; Geiger & Swim).

In addition, the more likely respondents were to discuss the issue, the more likely there were to intend to engage in collective action. This comports with previous research suggesting that interpersonal discussion facilitates collective action on issues such as climate change (Kim & Kim, 2008; Carpini et al., 2004; Vraga et al., 2015; Binder et al., 2011; Cho et al., 2009).

Fourth, identification with the vignette community was associated with stronger perceived collective efficacy. While as noted, research suggests that identification with a group can influence individuals' participation in collective action (Fritzsche et al., 2018), the relationship between identification and efficacy is critical for creating a sense of empowerment based in shared norms (Thomas, McGarty, & Mavor, 2009), with significance for sustainable social and political action. Drury and Reicher (2005) suggest that when a feeling of empowerment endures beyond the collective action itself, it can motivate involvement in further collective action, with implications for social change.

Fifth, while research has shown a relationship between social support and collective efficacy (Hampson & Jowett, 2014), the literature on the relationship between

these two variables remains thin. I found that the more respondents perceived that they would enjoy social support within the community, the stronger were their perceptions of collective efficacy. I suggest opportunities for additional exploration of this relationship later in this section.

Finally, a growing literature attests to the importance of collective efficacy for collective action participation intentions on environmental issues (Fritsche et al., 2018; Bamberg, Rees, & Seebauer, 2015), including climate change (van Zomeren et al., 2010). Consistent with that research, the present study found that the greater that perception of efficacy, the more likely people were to intend to engage in collective action.

These findings for Hypotheses 4 -9 suggest relationships between these mediating factors that may hold promise for addressing the communication and action deficits regarding climate change. Further engaging in collective action can produce various outcomes for participants, creating a context in which participants may express a new categorization of self and the world (Vestergren, Drury, & Hammar Chiriatic, 2019). Ongoing participation can produce feelings of empowerment (Bamberg, Rees, & Schulte, 2018), and group efficacy can lead to increased group identification (Van Zomeren et al., 2010). The relationships examined in this study may serve as constituent elements to fuel a virtuous cycle to transition to sustainability: conditions that invite social identification, collective action, and then further identification (Van Zomeren et al., 2010).

Given the null effect of the vignettes on identification with the vignette community and perceived social support within the community, as the first set of mediators in the model, it remains unclear whether any or better message conditions

might influence either interpersonal discussion intentions about climate change or perceptions of collective efficacy through social identification with the depicted community. Neither did this experiment support the prediction that perceived social support would be associated with interpersonal discussion intentions or contribute to a sense that collective action will be effective.

However, overall, these findings extend previous research by highlighting the role of social identity processes in communication about climate change, a highly polarizing topic. These findings should encourage continued exploration regarding how these relationships might be utilized to further climate change communication and action. For instance, more research should be done on factors that encourage discussion of climate change among family and friends, and factors that cause communities to be socially supportive and welcoming.

Moderated Pathways Involving Vignettes with Health/Well-being Co-benefits or No Such Co-benefits and Political Cues

Further, moderation analysis found a boomerang effect for liberals who weakly identified as such. Specifically, findings showed that the effect of exposure to the mixed cue condition (versus the no cue condition) on perceived identification with the vignette community was negative (e.g., less identification) people who were *somewhat* liberal and who *weakly* identified as such.

While this result was surprising given liberals' typical concern about climate change (Brenan & Saad, 2018), perhaps some people with a weakly-held liberal political identity simply do not prioritize the issue of climate change. Just as people who identify

as conservative may eschew expressing individually-held concern about climate change when they participate in Republican groups, liberals who are less concerned about the issue may choose not to broadcast that fact in Democratic circles. Thus, self-reported liberals who are relatively less concerned about climate change, and conceal that view to preserve their ingroup status (van Prooijen, Krouwel, Boiten, & Eendebak, 2015), may have an aversive response to the mixed cue stimulus.

Another interpretation relates to previous findings about the potential for association with the far left end of the political spectrum to act as a deterrent to participation in collective action. Stuart, Thomas, and Donaghue (2018) found that people may avoid participating in some types of groups when they perceive that their association with – in this case, the stereotypically extreme, climate-activist Left – will be detrimental to the social identity of people who are *somewhat* liberal and whose identity strength is weak. Unless and until collective action on climate becomes prevalent and normative, this dynamic may remain a barrier to social identification among more moderate political social identities.

A simpler yet more distressing explanation points to the divisive political and cultural landscape, which may poison the well for liberals for whom even a mixed community seems undesirable.

Conversely, the effect of exposure to the mixed cue condition (versus the no cue condition) on perceived identification with the vignette community was positive (e.g., more identification) for people who were very conservative and who either weakly or moderately identified as such. The fact that conservatives with a high political identity

strength did not shift is consistent with previous research suggesting fear of retaliation from political identity in-groups (Van Boven et al., 2018). Again, the ample research on the partisan divisiveness surrounding climate change (e.g., Brulle, 2012) may be relevant here, but SIA-based research indicates that people with a high degree of social identification typically more strongly favor their ingroup, tend to derogate outgroups (Tajfel & Turner, 1986), and emphasize intergroup differences for the goal of self-enhancement. In sum, strongly-identifying individuals magnify perceptions of difference between groups (Tajfel & Turner, 1986). Unsworth, and Fielding (2014) found that people *most aligned with the right wing of politics* were less likely to support government climate change policies when their political identity was made salient.

Yet the findings for conservatives who were either weakly or moderately tied to that identity may suggest a means to counter this tendency. The recategorization effect may have emerged for conservatives with low and moderate identity strength, as opposed to conservatives with high identity strength, simply because the social boundary was more impermeable.

For even those very conservative individuals with weak and moderate identity strength, the need to maintain the social barrier may – at least in the context of this study – be less important than other potential benefits to be realized through intergroup affiliation. In sum, the salience of one’s identity is important in connection to our perceived needs, which can be influenced by social context.

Moderated Mediation Pathways

While, H17, H18, and H19 were not supported, H16 was partially supported.

In probing the interactions that had shown a moderated effect when comparing a mixed cue to no cue on collective action intentions via identification, and, in turn, intentions to talk about climate change, the boomerang effect on liberals was no longer present. Yet I found a statistically meaningful indirect effect of exposure to the mixed cue condition on *heightened* collective action intentions via greater identification with the vignette community and heightened interpersonal discussion intentions, but only for those who were *very conservative* and who *weakly identified* as such, and those who were *very conservative* and *moderately identified* as such.

These results suggest that encouraging identity shift by emphasizing inclusivity may be a step that would lead, eventually, to talking about climate change and engaging in collective action to address it. Rather than pressing for climate action by highlighting risks, it may be more fruitful to *invite* recategorization by members of outgroups. In this study, the description of the vignette community as a mix of different people acting together may have made the community's social identity appealing to those with a weak- or moderate-strength conservative political identity. Even though the vignettes mentioning the health and well-being co-benefits of collective action were not effective, these conservatives may have been more attracted to the social identity of the "different, better other" of an "inclusive, successful community" (Postmes & Branscombe, 2010) than their political ideology ingroup.

Research Question

As a result, the most interesting outcome of this experiment pertained to my research question: can altering the presentation of people concerned about climate change

-- to be more inclusive -- attenuate intergroup divisions with people who are less inclined to focus on climate change? In other words, can characterizing a group engaged in collective action as a mix of political identities strengthen identification with that group, with consequent outcomes for communication and action?

While results showed a boomerang effect for people who were somewhat liberal and weakly tied to that identity, presenting an inclusive, or “mixed” social identity (as opposed to no cue) by casting a group as both liberal and conservative arguably *did assist* highly conservative participants in identifying with a community acting climate change. That is, when the strength of their political identity was weak, or moderate, people who were very conservative and who read a vignette about a community comprised of both liberals and conservatives were able to identify with the depicted community.

While equivocal, these results may suggest that cues characterizing a community as inclusive helped conservative individuals feel welcome to identify with the community, more so than reading that a community was entirely liberal.

Therefore, altering the presentation of a group typically seen as different to depict them as inclusive (or a “mix” of liberals and conservatives) may make permeable intergroup borders. These findings may not provide a means to counter the tendency of group members with a high degree of social identification to magnify perceptions of difference between groups (Tajfel & Turner, 1986), but they do point to the possibility of creating social conditions that encourage people of low or moderate identity strength to think of themselves in the “clothes” of a more inclusive identity (i.e., as people who belong to a group of liberals and conservatives, not just one or the other group).

In the terms of the conflict analysis literature, it may be possible to incent, or invite, people to re-categorize, resulting in site transfer, where individual persons or clusters of persons move from one side of a social boundary to another (Tilly, 2015). In sum, the partial support for H14 is simultaneously confounding and encouraging.

Climate Change Communication Implications

These findings have intriguing implications for further research and for application in climate change campaigns.

Theoretical implications. First, this study adds to the breadth of research conducted using SIA in the context of climate change. My findings affirm the importance of understanding polarization on climate change as a group behavior that takes place in a social context (Hornsey, 2008).

This study offers a few ways to build on that understanding. Scholars, working with practitioners, might explore other ways of using climate change action co-benefits to invite the outgroup in. While the vignettes in this study were not effectual, perhaps future research might employ a strategy of substantiating the *actual* benefits experienced by actual communities acting together on climate change – emphasizing the *actual* economic, environmental, and health and well-being outcomes (Bain et al., 2016).

Further, climate change communication scholars might explore research on social support and how it is generated and communicated, since results showed that perceptions of social support within the vignette community were associated with heightened interpersonal discussion intentions about climate change, and stronger perceptions of collective efficacy. Examples include better understanding when and how receiving

social support is helpful (Goldsmith, 2004; Cawyer & Smith-Dupre', 1995), the implications of the social contexts in which social support is provided (Adelman, 1988), and the role of technology in producing or impeding social support (Rains, Peterson, & Wright, 2015; Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2014; Wright, 2000; Sharf, 1997).

Overall, if social identification leads to interpersonal discussion intentions (H4) and feelings of efficacy (H7), perceived social support heightens interpersonal discussion intentions (H5) and feelings of efficacy (H8), and interpersonal discussion intentions (H6) and perceived collective efficacy (H9) strengthen collective action intentions, climate communicators may want to further explore how these relationships promote sustained social change (Vestergren, Drury, & Hammar Chiriatic, 2019; Bamberg, Rees, & Schulte, 2018; Fritsche et al., 2018; Bamberg, Rees, & Seebauer, 2015; Rabinovich et al., 2012; van Zomeren, 2010; Thomas, McGarty, & Mavor, 2009; Drury & Reicher, 2005).

Finally, findings relative to the moderated effect of the mixed-versus-no-cue vignette on identification (which was negative for people who were somewhat liberal and weakly identified as such and positive for people who were very conservative and either weakly or moderately identified as such) suggest merit in SIA approaches to understanding and perhaps addressing the polarization that exists regarding climate change. In extending previous research on social identity and self-categorization in the context of climate change, these results may provide yet another entry point for better understanding and addressing the group processes that impede climate change communication and action.

Practical implications. On a very pragmatic level, the mixed results of this study suggest that transdisciplinary collaboration with actors in the field might be more successful in inviting the outgroup in. For example, such situated partnerships could permit climate communicators to: 1) define and report the accrual of *actual* benefits to specific communities acting collectively; 2) emphasize the critical difference of social support in preparing for or recovering from climate impacts; and 3) better understand how to broaden “the ingroup” across social sites and geographic spaces. This iterative, on-the-ground approach is advisable given the winnowing timeframe for transition to that “safe and just space” (Raworth, 2012) which will sustain human society within planetary boundaries.

Most importantly, climate communicators can develop social identity-based forums for participants – and would-be participants – to talk about climate change: ideally, to deliberate actions that can be taken collectively.

As Hobson and Niemeyer (2011) note, leadership by climate communicators in such contexts is a key element since, of course, not all deliberative groups produce positive outcomes. The experience of simply encountering an outgroup can be sufficient to activate social identity boundaries (Tilly, 2004), induce self-categorization into distinct subgroups, and the creation – not attenuation -- of intergroup bias (Tajfel, Billig, Bundy, & Flament, 1971). As my null findings attest, it is important to avoid making assumptions about the groups one is dealing with, and rather to build group forums, and eventually interventions, around social identities that have some prior meaning and fit for participants (Haslam, Jetten, & Haslam, 2012).

First, creating conditions in deliberative fora which may serve to reduce threats to identity could start with simply inviting individuals to participate, but the conduct of such events is critical. In a deliberative group, a demonstrated norm of interpersonal respect may increase members' belief that they are valued (Emler & Hopkins, 1990; Tyler & Smith, 1999), which tends to increase members' collective identification (Simon & Sturmer, 2003).

In this way, deliberation can be seen as a social group process in and of itself. Barnes, Newman and Sullivan (2006) draw on social movement theory to argue that individual and collective identities are constructed through such participative processes. There is a recognition of a "we" engaged in discussion in comparison to others (Cheney, 1983; Hogg & Williams, 2000), however temporary.

Second, reducing psychological distance between participants has been shown to attenuate social identity threat. Specifically, the Common Ingroup Identity Model (Gaertner, Dovidio, Nier, Banker, Ward, Houlette, & Loux, 2000) has been applied in the realm of climate change and sustainability to show that recategorization of subgroups can decrease self-outgroup conflict by diminishing psychological distance.

Third, deliberative groups may offer participants the opportunity to "test-drive" cooperative relations. Cooperative activity, such as undertaking a community-based initiative, has been shown to reduce intergroup bias when the integrity of the original subgroup identities are not threatened (González & Brown, 2003). This dual-identity approach (in which groups form other groups based on an activity, for example) is a common feature of intergroup interventions.

Limitations

This study's first limitation pertains to stimulus design. The null effects of the health co-benefit information (versus no such info) on identification and social support may be due to the way the vignettes were designed. Specifically, the content of the treatment vignettes was inadequate to induce respondents to see depicted communities as "like themselves" or supportive regardless of whether or not those communities were enjoying the well-being benefits that ensue from social support. In addition, the political cues -- a single sentence embedded deep in the manipulation -- may not have been robust enough to produce effects for some participants. Even if they noted the presence of this manipulation, the description of town residents as "liberal," "conservative," or "mix of liberal and conservatives" may not have been sufficient to play a role in making political ideology salient.

Another potential reason why the vignettes did not have the predicted effects could be that the study intentionally was not "advertised" on MTurk as a climate change-related study, to maximize the potential of enlisting a diverse a participant pool.

A second limitation was the skewed nature of the sample. Although MTurk has become a popular provider of samples for survey experiments (Clifford, Jewell, & Waggoner, 2015), its samples typically differ from that of the U.S. population. This study was no different in that the percent of liberals and moderates diverged from the national average, limiting interpretation of experimental effects (Levay, Freese, & Druckman, 2016; Mullinix, Leeper, Druckman, & Freese, 2015; Paolacci & Chandler, 2014; Weinberg, Freese, & McElhattan, 2014). Nearly 42.6% of the sample self-identified as

somewhat or very liberal (versus an estimated 26% of the U.S. population), 23.5% identified as moderate or middle of the road (versus an estimated 35% of the population), and 34.5% identified as somewhat or very conservative (versus an estimated 35% of the population (Gallup, 2019). With respect to conservatives, my sample was reflective of the U.S. population, possibly because I expressly did not identify the study as focusing on *climate change* communication. Fortunately, though, liberals and conservatives recruited via MTurk tend to share similar psychological dispositions as those in the broader population (Clifford et al., 2015), which suggests my sample was sufficiently representative of the U.S. population, if not completely so, to allow for some interesting findings.

That said, future research using more effective stimuli and politically diverse, nationally representative samples would produce more generalizable results (Mullinix et al., 2015).

Future Directions

This research advances climate change communication scholarship by exploring the conditions that foster communication and collective action intentions on climate change. Results suggest potential approaches to enable individuals to self-select to engage in climate change collective action through social identification processes. I have argued that, at least in part, the polarization Americans are experiencing in the context of climate change can be attributed to social identity threat. The results of this study raise interesting questions for further research.

If identities take shape in the context of social groups, and social identities can shift as relations shift, then climate communicators can work to create the inclusive social conditions that invite people to self-select to shift identity, and encourage them to feel welcome in to engage in climate change collective action through processes that link identification and, in turn, interpersonal discussion. In so doing, we may make permeable the intergroup boundary that political ideology has established on climate change.

Communication scholars also may benefit from aspects of conflict resolution and other disciplines such as social psychology that focus on the mechanisms and practices involved in shifting social boundaries (e.g., Tilly, 2015). For example, climate communicators may want to examine the impacts of the *functions of social identity* (e.g., group recognition) on its salience (Korostelina, 2007) in the context of climate change. As noted, identity salience can be influenced by factors such as positive or negative intergroup comparisons (Tajfel & Turner, 1979), and permeable group boundaries have been associated with low identity salience (Wright, 1997).

An increasingly relevant factor affecting social identity salience is the evolution of people's goals and values due to situational changes (Korostelina 2007). With nearly four in ten Americans (38%) now saying they have personally experienced the effects of climate change (Leiserowitz, Maibach, Rosenthal, Kotcher, Bergquist, Ballew, Goldberg, & Gustafson, 2019), social identification may increasingly shift along with the ecological context in which we find ourselves.

Climate communicators also might draw on the social support literature for associations between perceptions of support among one's family and friends and feelings

of efficacy. The social support literature and the interpersonal communication literature can yield valuable contributions regarding what conditions encourage people to talk about tough issues; this too seems relevant to future work.

Conclusion

This research sought to better understand the social conditions that precipitate collective action addressing climate change across the political spectrum. I integrated two previously segregated areas of research pertaining to the Social Identity Approach and efforts to communicate the co-benefits of climate action by conveying the community health and well-being-related benefits of climate change action and cues about the partisan makeup of community members and decision-makers.

This study involved an experiment where 406 participants read one of 8 vignettes depicting a community that was addressing climate change, with some versions depicting the community as enjoying a number of benefits from doing so. I examined their direct and indirect impact on climate change collective action intention. While the experiment did not yield significant effects for hypotheses relating to the influence of the vignettes on identification and perceived social support, hypotheses about direct relationships among variables key to collective action were supported. Indirect effects spoke to potential mechanisms (identification and interpersonal discussion intentions) for heightening collective action, possibly creating conditions – via inclusive political cues -- for some conservative groups to intend to participate in collective action on climate change. These results suggest the moderated role of political ideology (salience/strength), as a means to identify when these cue-based messages will “work” best, based on the social identity

theory (Tajfel, 1978; Tajfel & Turner, 1979) and self-categorization theory (Turner, 1985; Turner et al., 1987), which seek to explain how we establish and maintain our individual identity via affiliation with social groups.

Specifically, evidence of recategorization among conservatives in identifying with the community members when the community was depicted as a *mix of political ideologies* (i.e., liberal and conservative) suggests the value of approaches that incentivize, or invite, people to shift identification. In sum, encouraging people to see themselves not through political lenses but as part of a group coming together – and enjoying the benefits of doing so -- may indirectly foster belief in the value of collective action on climate change.

To my knowledge, this is the first study to test whether presenting a social identity approach based in the benefits of building collective capacity on climate change attenuates barriers to collective action through antecedents like interpersonal communication, as well as perceived social support and collective efficacy. In extending previous work, this study holds potential to advance climate change communication best practices by providing additional insight into the factors that enable publics to identify more inclusively to surmount divisions, thus enabling public deliberation and action on an increasing threat.

Appendix A: Vignettes

1. Health/wellbeing, no political cue



Arts & Life Feature Story

April 3, 2019 7:00 AM ET

JULIA HATHAWAY

This story spotlights a community dealing with climate change. Its location isn't important, just its story. This could be any town, anywhere. Even yours.

From raging wildfires to devastating floods, natural disasters and their connections to climate change continue to dominate the headlines. However, there is hope especially in our spotlight community, where efforts to prepare for climate change here have advanced in a place that has struggled with climate change-related impacts, from hotter summers to more frequent floods.

Researchers have been studying this city's efforts to combat climate change by reducing carbon emissions from sources like cars. These greenhouse gases collect in the atmosphere, trap heat, and contribute to global temperature increases. The city has been testing several strategies including providing more public transportation to cut down on the number of cars; improving the energy efficiency of buildings so they don't use so much fuel for heating and cooling; and increasing access to renewable energy sources such as solar and wind. The purpose of the study was to evaluate the city's progress.

The researchers were interested to learn that, over the same time period, illnesses such as heart disease and depression have significantly decreased in this community, compared to three similar localities in the region.

To investigate this surprising health trend, the researchers surveyed the residents of this and the three other cities and were intrigued by what they learned. The only identifiable difference between this city and others was this community's collective action to become more sustainable by moving away from climate-altering fossil fuels and toward clean energy.

The researchers shared their findings at a town hall. Rather than questioning the health and wellbeing results, residents affirmed them.

One resident said, “We had a ton of people show up for the city council vote to commit to becoming a sustainable city. Even though that vote was a huge victory, it was just the beginning of our work.”

A community leader was applauded as she commented, “Our community is not waiting and watching to see what happens with climate change. Instead, we are raising money to fund these projects, navigating bureaucracy and collaborating with everyone from local community groups to state agencies.”

Another resident said, “We have organized to foster action in this community.” The community health and wellbeing benefits the researchers are seeing are not so surprising.”

The researchers are also studying the city’s efforts to transition to 100% renewable energy to serve as a guide for other communities to reduce their greenhouse gas emissions. The researchers think the reason that residents’ health has improved may be the high levels of community involvement in making their city more sustainable. They hypothesize that other communities where people are working together toward similar goals may enjoy not just increased resilience against the extreme weather events that climate change can bring, like storms, but also better physical and mental health.

2. Health/wellbeing, liberal political cue



Arts & Life Feature Story

April 3, 2019 7:00 AM ET

JULIA HATHAWAY

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The researchers were interested to learn that, over the same time period, illnesses such as heart disease and depression have significantly decreased in this community, compared to three similar localities in the region.

To investigate this surprising health trend, the researchers surveyed the residents of this and the three other cities and were surprised intrigued by what they learned. The only identifiable difference between this city and others was this community's collective action to become more sustainable by moving away from climate-altering fossil fuels and toward clean energy.

The researchers shared their findings at a town hall. Rather than questioning the health and wellbeing results, residents affirmed them.

One resident said, "We had a ton of people show up for the city council vote to commit to becoming a sustainable city. Even though that vote was a huge victory, it was just the beginning of our work."

A community leader was applauded as she commented, "The people who live in this town and the people who run it are liberal. Our community is not waiting and watching to see what happens with climate change. Instead, we are raising money to fund these projects, navigating bureaucracy and collaborating with everyone from local community groups to state agencies."

Another resident said, "We have organized to foster action in this community." The community health and wellbeing benefits the researchers are seeing are not so surprising."

Researchers are also studying the city's efforts to transition to 100% renewable energy in order to serve as a guide for other communities to reduce their greenhouse gas emissions. The researchers think the reason that residents' health has improved may be the high levels of community involvement in making their city more sustainable. They hypothesize that other communities where people are working together toward similar goals may enjoy not just increased resilience against the extreme weather events that climate change can bring, like storms, but also better physical and mental health.

2. Health/wellbeing, conservative political cue



Arts & Life Feature Story

April 3, 2019 7:00 AM ET

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5. No health/wellbeing, no political cue



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6. No health/wellbeing, liberal political cue



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7. No health/wellbeing, conservative political cue



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8. No health/wellbeing, mixed political cue



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Appendix B: Measures

Table 7 Measures

Variable	Question	Response Scale
Climate change view	Which of the following statements comes closest to your view?	1 = Climate change definitely is not happening. 2 = Climate change is probably not happening. 3 = Climate change is probably happening. 4 = Climate change is definitely happening. 5 = I don't know.
View about anthropogenic cause of climate change	How much of climate change is human-caused?	1 = Very little/none at all. 2 = A slight amount. 3 = A moderate amount. 4 = A large amount/almost all.
Frequency of interpersonal discussion about climate change	How often do you discuss how to address climate change with your family and friends?	1 = Never 2 = Seldom 3 = Sometimes 4 = Often
Pre-exposure perceived collective efficacy	Please indicate your level of agreement with each of the following statements: I think that together, we are able to act on climate change. I think that we can, collectively, make a real difference in addressing the challenges of climate change.	1 = Strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree

<p>Pre-exposure Collective Action over past year</p>	<p>In the past year, have you engaged in any of the following activities specifically related to taking action on climate change?</p> <ul style="list-style-type: none"> -Donated money to an advocacy organization. -Went to a political rally that focuses on climate action. -Volunteered for a community event that focuses on climate action. -Contacted a political leader to show support for climate action. -Signed an online petition that focuses on climate action. -Voted for a candidate that supports climate action. 	<p>Yes/No</p>
<p>Post-exposure identification with depicted community group</p>	<p>Please indicate your level of agreement with each of the following statements:</p> <ul style="list-style-type: none"> The people in the study have problems like my own. I identify with the people featured in the story. The people in the story are like me. I feel connected to the people featured in the story. 	<ul style="list-style-type: none"> 1 = Strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree

<p>Post-exposure perceived social support</p>	<p>Please indicate your level of agreement with each of the following statements:</p> <p>If I were in this situation, I think I would get the emotional support I need from other people.</p> <p>If I were in this situation, I would get the help I need from other people.</p> <p>If I were in this situation, I would get the resources I need from other people.</p> <p>If I were in this situation, I would get the advice I need from other people.</p>	<p>1 = Strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree</p>
<p>Post-exposure interpersonal discussion (about climate change) intentions</p>	<p>In the next year, how often do you intend to discuss how to address climate change with your family and friends?</p>	<p>1 = Never 2 = Seldom 3 = Sometimes 4 = Often</p>
<p>Post-exposure perceived collective efficacy</p>	<p>Please indicate your level of agreement with each of the following statements:</p> <p>I think that together, we are able to act on climate change.</p> <p>I think that we can, collectively, make a real difference in addressing the challenges of climate change.</p>	<p>1 = Strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree</p>
<p>Post-exposure collective action intentions</p>	<p>When it comes to taking action on climate change, how likely are you to</p>	

	<p>engage in the following activities <u>in the next year?</u></p> <p>-Donate money to an advocacy organization.</p> <p>-Go to a political rally that focuses on climate action.</p> <p>-Volunteer for a community event that focuses on climate action.</p> <p>-Contact a political leader to show support for climate action.</p> <p>-Sign an online petition that focuses on climate action.</p> <p>-Vote for a candidate that supports climate action.</p>	Yes/No
Age	What is your age?	Text input
Gender	What is your gender?	1 = Male (56.9%) 2 = Female (41.9%) 3 = I identify with some other group (1.0%) 4 = Prefer not to say (0.2%)
Educational attainment	What is the highest level of formal education you have completed?	1 = Less than high school (no diploma) (0.5%) 2 = High School graduation (GED) (12.3%) 3 = Attended college but currently no degree (16.5%) 4 = 2-year (Associates) degree or trade school (9.6%) 5 = 4-year (Bachelors) degree (50.5%) 6 = Advanced degree beyond 4-year degree (10.6%)
Race and Ethnicity	Which racial group do you identify with? Select all that are applicable.	White (77.8%) Black or African American (11.8%)

	Do you consider yourself Hispanic or Latino/Latina?	American Indian or Native American (2.7%) Asian (9.6%) Native Hawaiian or Pacific Islander (0.2%) Multiple races (2.2%) Some other race (0.2%) Hispanic or Latino? Yes (14.0%) Yes/No
Political ideology	How would you describe your political ideology?	1 = Very liberal 2 = Somewhat liberal 3 = Moderate/Middle of the road 4 = Somewhat conservative 5 = Very conservative
Strength of identification with political ideology	Based on your description of your political ideology, please indicate your level of agreement with each of the following statements: -When someone praises this ideological group, it feels to me like a personal compliment. -This ideological group's successes are my successes.	1 = Strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree

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Biography

Julia Hathaway holds a Master of Environmental Management from Yale University and a B.A. in Communication from the George Washington University. Prior to starting the doctoral program at George Mason University, Julia worked for many years in the environmental policy arena. Her roles included advising two Members of the Florida Congressional Delegation, Representative Harry Johnston and Senator Bob Graham, serving in the U.S. Fish and Wildlife Service Office of Congressional and Legislative Affairs, and leading the lobby shop at the Ocean Conservancy. Subsequently, she returned to Capitol Hill as staff for the House Committee on Natural Resources' Subcommittee on Oceans and Wildlife. Most recently, she launched two state-wide environmental justice campaigns on behalf of the Florida office of the Sierra Club.

ⁱ Kaiser-Meyer-Olkin (KMO) Test is a measure of how suited data are for Factor Analysis. The test measures sampling adequacy for each variable in the model and for the complete model. The statistic is a measure of the proportion of variance among variables that might be common variance.