Identity, Intergroup Relationships, and Environmental Conflict

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Academic Absract

This dissertation explores strategies for addressing identity-related barriers to environmental problem-solving through the lens of two social-psychological theories: self-affirmation theory and moral foundations theory. Through one theoretical review, two online experiments and one in-lab experiment I explore, integrate and test theoretically grounded strategies for reducing the defensive information processing that can exacerbate intergroup divisions in multi-stakeholder settings. The specific objectives of this dissertation are to 1) integrate self-affirmation theory and moral foundations theory into the current knowledge about collaborative conservation (Chapter 2), 2) evaluate ways of tailoring environmental communication to better reach socially and politically diverse audiences (Chapter 3), and 3) experimentally test the effectiveness of an approach, based on self-affirmation theory, to facilitate productive discussion of complex, value-laden issues in group settings. Before presenting the results of this work, I provide a broad overview of the problem of group-based divisions in environmental conflict and the theoretical underpinnings of the dissertation (Chapter 1). Finally, I summarize the results and discuss the broader implications of the research (Chapter 5). The results of this research offer initial insights into how tools grounded in these theories can most effectively be applied to help alleviate identity-based barriers to environmental problem-solving.

General Audience Absract

This dissertation explores strategies for addressing identity-related barriers to environmental problem-solving through the lens of two social-psychological theories: self-affirmation theory and moral foundations theory. Through one theoretical review, two online experiments and one in-lab experiment I explore, integrate and test theoretically grounded strategies for reducing the defensive information processing that can exacerbate intergroup divisions in multi-stakeholder settings. The specific objectives of this dissertation are to 1) integrate self-affirmation theory and moral foundations theory into the current knowledge about collaborative conservation (Chapter 2), 2) evaluate ways of tailoring environmental communication to better reach socially and politically diverse audiences (Chapter 3), and 3) experimentally test the effectiveness of an approach, based on self-affirmation theory, to facilitate productive discussion of complex, value-laden issues in group settings. Before presenting the results of this work, I provide a broad overview of the problem of group-based divisions in environmental conflict and the theoretical underpinnings of the dissertation (Chapter 1). Finally, I summarize the results and discuss the broader implications of the research (Chapter 5). The results of this research offer initial insights into how tools grounded in these theories can most effectively be applied to help alleviate identity-based barriers to environmental problem-solving.

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Attribution

The research reported in this dissertation was led and primarily carried out by me. However, some of my committee members will serve as co-authors on the manuscripts submitted for publication (chapters 2-4). Co-authors assisted with the research and writing in a number of ways. These included contributing ideas, clarifying concepts, improving the writing and suggesting alternate ways to reorganize the arguments and framing. The co-authors are listed at the start of each manuscript in an order that represents their level of contribution. Chapters 2 and 3 are currently under review for publication. Chapter 4 will be submitted for publication in the near future.

Identity, Intergroup Relationships, and Environmental Conflict

Chapter 1

Introduction

Environmental problems are often characterized by scientific uncertainty, significant levels of risk and social and ecological complexity that reaches across multiple spatial and governance scales (Balint et al. 2011, Norton 2015). People, holding a wide range of perspectives, attitudes, preferences, and values, are impacted by both the problems themselves and their solutions in myriad ways and thus hold conflicting views on how the problems should be resolved. For example, wolf reintroduction into the Yellowstone ecosystem in the early 1990s had the potential to address multiple environmental issues related to the ecological pressures caused by an overabundance of elk. In this case, both ecologists and many members of the general public advocated for the reintroduction because of the critical role wolves play in maintaining ecosystem health— and by extension the critical services provided (e.g. clean air, water, nutrient cycling, recreational and tourism opportunities) by a healthy ecosystem. Wildlife groups also supported wolf reintroduction, mainly motivated by the intrinsic value of the wildlife species itself. However, the reintroduction was vehemently opposed by ranchers, many of whom saw the wolves as a direct threat to their livelihoods (Norton 2015). None of these concerns are trivial, and the resulting controversies in such cases can lead to contentious litigation, stalemates, and hostilities that are difficult to navigate (Balint et al. 2011).

Attempts to resolve the most complex issues often become political as individuals or group representatives defend and advocate particular positions and compete for public support (Balint et al. 2011). In the United States, in particular, environmental policy has become politicized on a large scale. This has lead to widespread polarization of environmental attitudes and beliefs across political lines (Dunlap et al. 2016). Several studies have explored the link between political orientation and environmental attitudes,

beliefs and behaviors, finding that political conservatives tend to show more negative views toward the environment and environmental issues, such as climate change, than liberals (reviewed by Dunlap et al. 2001, Dunlap et al. 2016, McCright & Dunlap 2011).

Some scholars have begun to argue that this partisan divergence in environmental attitudes has become pervasive enough for environmentalism to have taken on its own social meaning. That is, the positions people take on environmental issues have become less about the issues themselves and more about expressing allegiance to a political group (Kahan 2013, 2017). Thus, rather than being determined by facts and thoughtful deliberation, support for a particular cause or environmental policy can be greatly influenced by political identity, even acting as a badge of group membership (Fielding and Hornsey 2016, Wolsko 2017). As a result of the interrelated factors of conflicting values and interests, politicization and polarizing social meanings, group-based divisions often become embedded in environmental conflict. And, conflicts can seem intractable when there is no apparent solution that will meet the needs of one group without violating the values or undermining the interests of another (Ross & Ward 1995). In this way, understanding and navigating intergroup relationships is a key component of environmental decision-making and conflict management.

Group-based divisions have deep psychological roots. Working across these divides presents enormous challenges for collaborative problem solving, particularly when the problems we wish to address are themselves characterized by their complexity and uncertainty. In this dissertation, I explore, integrate and experimentally test theoretically grounded strategies for reducing intergroup barriers to collaborative problem-solving in the environmental arena. The specific objectives of this dissertation are: 1) integrate two theories from social-psychology—self-affirmation theory and moral foundations theory— into the current knowledge about collaborative conservation (Chapter 2), 2) evaluate ways to tailor environmental communication, guided by moral foundations theory, to better reach socially and politically diverse audiences (Chapter 3), and 3) experimentally test the effectiveness of an approach based on self-affirmation theory to facilitate productive discussion of complex, value-laden issues in group settings. Before introducing my theoretical approach, I will delve a little deeper into the psychological literature to shed light on the cognitive barriers to working across the aisle.

Social Identity and the Psychology of Intergroup Conflict

Current psychological thinking supports the idea that the remarkable ability humans have to live in highly organized groups of cooperative and socially altruistic individuals has likely served an adaptive advantage. Specifically, it allowed cooperative groups to outcompete groups containing members who were individually selfish (Haidt 2012, Greene 2014). This group-level advantage has likely led to evolved traits to help people both thrive as loyal members of their own group, and also compete with people from other groups (Haidt 2007).

A group, in this sense, is defined as "a collection of individuals who perceive themselves to be members of the same social category, share some emotional involvement in this common definition of themselves, and achieve some degree of social consensus about the evaluation of their group and of their membership of it" (Tajfel and Turner 1979, p. 40). This type of social categorization not only allows individuals to classify and cognitively order their social world but also supplies the individual with a source for self-identification. Thus, the social groups people belong to help them define who they are and what role they play in society. In other words, they provide them with a social identity. When people adopt a particular social identity, they simultaneously assimilate to ingroup norms and amplify outgroup differences, thus widening the ingroup/outgroup gap (Fielding and Hornsey 2016).

There is robust evidence supporting the idea that group-level favoritism—selectively cooperating with ingroup members while competing with outgroup members—remains a strong influence on how we interact with others. For example, empirical work by social identity scholars has found evidence that people easily give preference to ingroup members and discriminate against outgroup members when distributing resources, even when the group membership is based on arbitrary criteria (Tajfel & Turner 1979). People also judge other ingroup members more favorably (e.g., more likable and trustworthy) (Fielding & Hornsey 2016). Further evidence suggests that people engage in this type of ingroup favoritism even when the interests of the group run counter to individual interests (Tajfel & Turner 1979). Given this understanding, two sets

of social-psychological phenomenon can help explain the challenges of intergroup cooperation. These include 1) biased information processing (to the advantage of one's own side), and 2) incompatible shared value systems (including localized moral communities).

Biased Information Processing

A large body of psychological research has documented the various ways people are prone to unknowingly interpret information in self-serving ways. As Ross and Ward (1995) argue: "Opposing partisans exposed to the same objective information are apt to interpret those facts differently… they fill in details of context and content, they infer linkages between events, and they adopt dynamic scripts or schemas to give events coherence and meaning" (p. 268). This discrepancy in how objective information is processed tends to lead each side to conclusions that reflect most favorably on their own interests. For example, people often interpret mixed or ambiguous evidence as support for their own side—accepting the evidence that supports their point of view with little scrutiny and dismissing or disregarding evidence that challenges their views (Cohen 2012). Further, people have self-serving assessments of fairness, judging the outcome or allocation of resources that would most benefit them as the fairest. This seems to happen mostly unconsciously and even when people are incentivized to form accurate judgments (Babcock et al. 1995, Greene 2014).

In one empirical study, participants holding different opinions about the death penalty debate were presented with mixed evidence on the efficacy of the death penalty as a deterrent to crime. People on each side of the debate interpreted the information as supportive of their own side—they identified flaws in the evidence supporting the other side and justified the rejection of the argument on those grounds, but failed to notice or give credence to similar flaws in the evidence that supported their own side (Ross & Lepper 1979). Thus, increased polarization can occur even when both sides are exposed to the exact same balanced evidence.

In another classic study, fans of two college football teams watched footage from a game. Although they watched the same footage, each side experienced and interpreted the game in very different ways. They each selectively perceived their own team

committing fewer violations than the opposing team ascribed to them. Critically, each side also considered their own interpretation of the game to be fair and objective (Hastorf & Cantril 1954).

A related line of research documents how the social affiliation or association of an object (e.g., a policy proposal, idea, article) can dramatically change how that object is evaluated. One study found that political partisans responded favorably toward a policy proposal when it was said to be endorsed by political leaders of their own party, but rejected the very same policy when it was endorsed by political leaders of the opposing party. This was true even when the content of the policy in question aligned closely with participants' ideological beliefs (Cohen 2003). Further, participants failed to recognize that the ingroup/outgroup information had influenced their judgments, and insisted that they based their decisions on the content of the proposal. In another study, demonstrating the phenomenon of reactive devaluation, Maoz et al. (2002) examined how Middle Eastern partisans responded to the same peace proposal (related to the Arab-Israeli conflict) when it appeared to be authored by the opposition in comparison to participants' own group. They found that partisan university students rated the same proposal as more favorable to the other side and less favorable to their own side when it appeared to be proposed by the opposition, and vice-versa. Maoz et al. (2002) argue: "the real challenge to peacemakers around the world lies not only in convincing the disputing sides to offer compromises but also in convincing them not to devalue the compromises offered by their adversaries" (p. 544).

While people are largely unaware of their own biases, they can easily identify them in others. People are likely to perceive the opinions and perspectives of the other side(s) in a dispute as biased, and attribute this bias to ignorance, irrationality, selfishness and/or ideology, unable to comprehend how others do not, in good faith, share their own interpretation of events (Ross & Ward 1995). Such unconscious psychological tendencies can exacerbate misunderstanding and mistrust between the parties whereby each side perceives "the other side's protestations and expressions of disappointment or frustration are insincere, whereas their own are genuine" (Ross & Ward 1995, p. 276).

Research on motivated reasoning suggests that people engage in this type of self-serving bias in part for ego-protective reasons, or in order to protect the identities they

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have related to important social roles and groups (Kahan 2013, Kahan 2017). Group memberships constitute important sources of identity-- providing people with meaning, purpose, and belonging. Forming and maintaining views consistent with the socially shared values of their group helps people express and reinforce these identities. Yielding to other points of view, therefore, can threaten their standing as good members of the group, possibly even opening them up to rejection from other members (Cohen et al. 2007, Binning et al. 2010). Thus, people interpret information in a way that allows them to maintain the coherence and legitimacy of their identity-defining beliefs, and by extension, their ability to fit in with the group.

In sum, biased information processing creates issues for intergroup relationships because facts can't always be used as an objective criterion in conflict resolution; people interpret facts in different ways, depending on their social identity, pre-existing beliefs, and group-based biases.

Incompatible Values and Local Moral Communities

A second set of social-psychological phenomenon related to intergroup conflict provides additional insight into often puzzling intransigence of issues. This is the tendency groups have to develop incompatible systems of values and morals that are highly important within the group but that do not translate across social lines (Greene 2014). Leach and colleagues (2015) argue that shared moral systems are at the core of ingroup identity—motivating action and guiding what issues and concerns are prioritized. These moral systems often dictate norms, customs, and rules of behavior that help groups function effectively, but that people outside of the group fail to recognize or fully understand.

These moral systems have implications for intergroup relationships because people use the perceived morality of others as a guide for how to interact with them (Leach et al. 2015). Thus, moral systems not only guide behavior and judgments of right and wrong within the group but also guide judgments of the morality of other groups. These moral judgments are then used to decide whether or how much to cooperate with outgroups (Leach et al. 2015). Incompatible moral codes between groups also lead to conflicting moral judgments on issues. This not only leads each group to stand behind

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different positions but also to perceive that their side is the morally correct side, while the other is morally lacking.

Many examples of these values inconsistencies can be seen across cultures and subcultures. For instance, people from some collectivist cultures (e.g., China) have different expectations of the sacrifices individuals should make for the benefit of the larger community than people from more individualist cultures (e.g., US). And, people from both cultures think of these expectations in moral terms. One study (described in Greene 2014, and Doris & Plakias 2008) looked at the responses of Chinese and American citizens to the acceptability of a government authority knowingly charging an innocent person of a crime in order to prevent violent riots that would likely harm and kill many other innocent people. Chinese respondents from the more collectivist culture were more likely to agree that charging one innocent person in order to prevent harm to many others was morally justifiable. American respondents, from the more individualistic culture, on the other hand, were more likely to assert that knowingly charging an innocent person of a crime could never be morally justified.

There are also examples of this phenomenon within subcultures of the United States. For example, studies have looked at how people from the South emphasize the role of honor to a higher degree than people from the North. This leads to conflicting responses between Southerners and Northerners to perceived infringements on honor (Cohen & Nisbett 1994). In addition, Haidt and colleagues (Haidt 2012, Graham et al. 2009) have found robust empirical evidence that members of different political groups in the United States (i.e., people who identify as liberal vs. conservative) emphasize core moral foundations (harm, fairness, purity, authority, and loyalty) to different degrees. This leads liberals and conservatives to have conflicting intuitive responses to various morally relevant stimuli (for example witnessing a person openly criticize an authority figure) and to form different moral judgments surrounding important political and social issues.

These systems of shared values and local morality become so deeply ingrained in the worldviews of group members that people become blind to the legitimacy and morality embedded in other ways of understanding the world (Haidt 2012). Failure to understand and recognize the shared morality of other groups creates issues for

intergroup relationships because it becomes easier to vilify and claim moral superiority over groups seen as immoral than to try to understand their perspective, thus further decreasing trust and cooperation.

The cognitive barriers to intergroup cooperation described above present complex challenges to environmental problem-solving. While innate psychological tendencies can make it easy for people to remain entrenched in their own groups, people can and do find ways of overcoming these barriers and working together. In this dissertation, I explore theoretically grounded strategies for more effectively managing intergroup relationships in the environmental arena. More specifically, I apply insights from two theories from social psychology to explore and test tools for overcoming cognitive barriers to intergroup cooperation in the context of environmental conflict.

Theoretical Perspectives

This work is grounded in insights from two social psychological theories: self-affirmation theory and moral foundations theory. Both of these theories suggest ways to alleviate cognitive barriers related to intergroup relationships. The following sections provide an overview of the premises of the theories as well as a summary of their background and development.

Self-affirmation theory

The core premise of self-affirmation theory is that people are fundamentally motivated to preserve a global sense of self-integrity. People face numerous threats to their self-integrity as they go about their daily lives, facing failures, disappointments, challenges and judgments from other people. In the face of these threats, they often respond defensively by engaging in motivated reasoning, self-serving judgments, self-enhancements and rationalizations in order to protect and restore their self-concept (Sherman & Hartson 2011). While the motivations behind these responses are self-protective, they are often mal-adaptive, creating barriers to learning, growth, and change (Cohen & Sherman 2014).

However, the self-system is flexible; people have many identities that make up the complete self-concept. These include identities related to social roles, groups, deeply held values, central beliefs, goals, and relationships (Sherman & Hartson, 2011). Rather than being focused on a single, narrow, aspect of the self in one of these domains, the self-system works to maintain integrity in a more global way (Steele 1988). In other words, when a person is challenged in a particular domain of life—such as a student who receives a bad grade—it may feel like a threat to her overall sense of adequacy. However, with a flexible self-system, it isn't necessary for her to re-establish her competence as a student in order to alleviate feelings of threat. Rather, she can restore her self-integrity through other means such as being a good friend or sister or demonstrating generosity or compassion.

Self-affirmation theory was proposed by Claude Steele in 1988. He proposed that simply re-affirming one's adequacy in an important domain of life can restore self-integrity and alleviate threat in another domain (Sherman & Cohen 2006). Self-affirmations, or any "act that demonstrates one's adequacy" (Cohen & Sherman 2014, p.337) serve to remind individuals that their global or overall self-integrity does not depend on the one life domain that is being threatened. When affirmed, people cling less rigidly to the identity associated with the threatened life domain (and the values and beliefs associated with that identity) and are more apt to approach, rather than avoid or deny, the threat. This new openness to the threat can increase their ability to deal with it effectively (Cohen & Sherman 2014).

Some scholars suggest that self-affirmations work by increasing the psychological resources the individual has available. These extra psychological resources can help to change how the threat is perceived. Specifically, once affirmed, an individual is able to view the threat at a broader or higher level of construal. This cognitive broadening allows the threat to become disentangled from the person's self-concept or identity, rendering it less powerful in the process (Sherman & Hartson 2011). Other scholars propose a related mechanism arguing that self-affirmations broaden one's *perspective of the self* (rather than one's construal of the threat), which "reminds people that the threatened domain is not all that defines the self and so it mitigates the evaluative implications that a threat to any single identity has on perceptions of the self as a whole. The threat becomes not

about the self but only about one narrowed aspect of the self" (Critcher & Dunning 2014, p. 4). From this perspective, the broadened or enhanced perspective of the self acts as a mediator between the self-affirmation effects and defensiveness (Critcher & Dunning 2014).

Given this understanding, self-affirmation can be employed as an intervention to help people respond more adaptively to threats. Since its inception, self-affirmation theory has been applied in many domains to reduce ego-defensive responses that prevent adaptive coping in areas of health, education and intergroup relationships (Cohen & Sherman 2014). In this dissertation, I will make an argument for its potential use as a tool to aid in collaborative conflict management. Specifically, self-affirmation can be introduced in collaborative processes as a facilitated intervention to alleviate ego-defensive responses and biased information processing among participants. These defensive responses lead people to cling to previously held beliefs and make it harder to think openly about new ideas and perspectives, thus contributing to stalemates and hostilities between stakeholder groups. If self-affirmation can decrease defensive identity-protective reasoning and increase open-minded consideration of new ideas and perspectives, it may be a valuable tool for helping people work across the aisle. I also begin to experimentally test specific self-affirmation techniques that can be incorporated into the collaborative process to shed light on the feasibility of this tool in practice (self-affirmation techniques will be discussed in detail later in the dissertation).

A caveat to this approach is that self-affirmations have only been shown to be effective at reducing defensive or biased information processing when a self-threat is present (Sherman & Cohen 2014). When a self-threat is not present, the self-affirmation intervention can increase the confidence of the individual, thus decreasing information processing and leading people to rely even more on their previous beliefs (Briñol et al. 2007). For example, Brinol et al. (2007) found that when self-affirmed participants were shown a non-threatening persuasive message they gave less thought to the message content and showed less attitude change compared to non-affirmed participants in the control group. In another example, van Prooijen et al. (2013) found that in the absence of "threatening" information (i.e. being presented with a counterattitudinal message to read in the experiment) the self-affirmation intervention increased the strength of existing

environmental beliefs. Specifically, if a person had negative beliefs about the environment, the intervention served to exacerbate those negative beliefs, but when the beliefs were positive, the intervention served to make existing beliefs even more positive. Thus, incorporating self-affirmation exercises into meeting or workshop settings is only likely to have the desired effect of increasing openness to alternate points of view when an identity threat is present.

Additionally, research employing self-affirmation interventions have found that they are most effective when the self is affirmed in a domain that is not related to the issue at hand. When affirmations occur in the same domain it may heighten the importance of that identity, increasing a person's urge to defend identity-relevant beliefs, values and behaviors (Sherman & Cohen 2006). This ties into the perspective that self-affirmations work because they broaden the self-concept, making the threat seem less relevant to one's global self-worth. From this view, affirming in the same domain as the threat would only enhance the perception that the threatened identity has implications for self-worth (Critcher & Dunning 2014). Finally, research suggests that self-affirmations work best when people are unaware of the desired effects of the affirmation (Sherman & Hartson 2011). Thus, it seems most promising to introduce the affirmation in a subtle or minimal, rather than obvious, way.

Moral foundations theory

Moral foundations theory is a theory about "how and why the moral domain varies across cultures" (Haidt & Graham 2006, p.373). Haidt (2012) proposed that there are at least six universal moral foundations embedded in the human brain that all people share to some degree. These foundations evolved to serve an adaptive function; to help people survive and thrive in their social world. While the foundations can be considered universal, as they are shared by all people, they develop differently in children depending on their cultural context and social learning. In this way, different social and cultural groups rely on different sets of moral foundations more strongly than others. By identifying patterns of which foundations or groups of foundations (i.e. moral matrices) are stressed in different social groups, moral foundations theory has become a useful

framework for understanding intergroup differences in socially shared systems of moral values.

The six moral foundations that have been proposed to date are (Haidt 2012):

1) Harm/care: concern with caring for others and preventing harm and suffering of people and animals.

2) Fairness/cheating: concern with justice and fair treatment of others and the prevention of cheating.

3) Loyalty/betrayal: concern with showing loyalty to one's in-group and condemning traitors.

4) Authority/subversion: concerns about respecting social hierarchy and performing one's duty.

5) Sanctity/degradation: concerns about protecting the purity of sacred objects, people, places, and principles.

6) Liberty/oppression: concerns about maintaining freedom from oppressive regimes and controlling bullies.

Moral foundations theory developed from what Haidt (2007) refers to as the "new synthesis" in moral psychology. For much of the 20th century, moral psychology was concentrated in the field of cognitive development. Specifically, Lawrence Kohlberg advanced an influential theory of moral development outlining several stages, or "organized systems of thought" (Kohlberg & Hersh 1977, p. 54), of moral maturity children pass through as they learn how to reason about rights and justice. Other contemporaries of Kohlberg's argued for the inclusion of the separate dimension of care in the conception of morality and moral development (Haidt & Kesbir 2010). The work surrounding this scholarly debate led to a two-dimensional morality (including ideas about both justice and care) dominating much of the late 20th-century scholarship.

The "new synthesis in moral psychology," on the other hand, combined new ways of thinking from several disciplines including social-psychology, neuroscience, and evolution to challenge this dominant way of thinking about morality as a primarily

rational undertaking (Haidt 2007). This synthesis culminated in three core principles: 1) intuitive primacy, 2) moral thinking is for social doing, and 3) morality binds and builds.

Intuitive primacy refers to the idea that humans automatically experience evaluative emotional responses to stimuli in the social world, such as the behavior or expressed opinions of another person (Haidt & Kesbir 2010). These "intuitions," which unconsciously and automatically tell us if something is good or bad (or, right or wrong), guide our moral judgments. We then use our moral reasoning to justify, post-hoc, the judgments we have already formed, coming up with plausible sounding reasons for why we should feel the way we do about the rightness or wrongness of something. In other words, moral reasoning is not used to *form* a decision, but rather to *justify* to ourselves and others the decision we already arrived at through intuition (Haidt 2001). This doesn't mean, however, that reasoning never matters. While intuitions come first, guiding moral judgments, those judgments can sometimes be overturned by careful reasoning. This seems to be especially so when reasoning takes place during a discussion with another person who challenges one's view. During these discussions, new intuitions can be triggered, prompting a person to consider the issue more carefully (Haidt & Kesebir 2010, Haidt 2001).

The second principle of moral psychology, moral thinking is for social doing, describes a functionalist view of morality. In other words, the moral intuitions that guide judgments and behaviors evolved in humans because they serve a specific function: to help people survive and thrive in social groups. In order to adequately conceptualize this view of morality, Haidt (2007) suggested a new definition of morality to capture the "function of moral systems" rather than the "content of moral issues." In this new definition, moral systems are "interlocking sets of values, virtues, practices, identities, institutions, technologies, and evolved psychological mechanisms that work together to suppress selfishness and make cooperative social life possible" (Haidt & Kesebir 2010, p. 7). Rather than a narrow focus on justice and care, this definition allows for many valid, albeit sometimes incompatible, moralities to develop across cultures and social groups, as different groups have developed different ways of managing selfish behavior and encouraging cooperative behavior.

The third principle, morality binds and builds (note: sometimes this principle is

termed "morality binds and blinds"), refers to the development of shared value systems within social groups and cultures. When people form moral communities with socially shared values, they are better able to cooperate with and trust individuals they don't know, aren't related to and are unlikely to see again, thus helping to create more cohesive and well-functioning groups. Haidt (2001) argues, "humans attain their extreme group solidarity by forming moral communities within which selfishness is punished and virtue rewarded" (p. 1001). This line of scholarship is heavily influenced by the 19th-century sociologist Emile Durkheim, who argued that social phenomena, such as religions played a large role in the formation of communities with strong norms of behavior. When people hold each other accountable for adhering to those norms, they serve to create community cohesiveness and harmony within the group.

The key contribution of moral foundations theory to this "new synthesis" of moral psychology was the broadening out of the moral domain from a narrow focus on justice and care to the multidimensional morality described above. This new conception of the moral domain challenged the view of morality as "quandaries about what people should do" (Haidt & Kesebir 2010, p. 3), centered around issues of harm and fairness. It, instead, included moral values, virtues, and practices that serve the primary purpose of strengthening communities (i.e., authority, purity, and loyalty) in addition to those that protect individuals (care and fairness). With a richer conception of morality, we can achieve a deeper understanding of the often highly valued role phenomena such as patriotism and tradition play in many societies. Rather than dismissing these ideas as social conventions, moral foundations theory proposes that they play a key role in morally based motives, intuitions, and judgments in many social groups (Haidt & Graham 2006). A failure to recognize these additional moral foundations, according to Haidt and colleagues, leads to an incomplete understanding of morality--and the forces that drive moral thinking and behavior-- across much of the world.

In this dissertation, I apply moral foundations theory by using it as a framework for tailoring environmental communications to resonate more with politically diverse audiences. Specifically, I embed language and arguments based on five of the six moral foundations described above (all except liberty) into a message about transitioning away from fossil fuels. When the moral foundations embedded in a message are compatible

with the socially shared values of a person's ingroup, the message should be less likely to trigger identity-defensive responses. I tested how people across the political spectrum respond to this message compared to one based only on the harm/care and fairness/cheating foundations. Both messages were tested in combination with a conservative, liberal and non-partisan message source.

Outline of the dissertation

The remainder of this dissertation is comprised of three stand-alone manuscripts and a final synthesis and conclusion chapter. The manuscripts include (1) a theoretical review, (2) the results of two online experiments, and (3) a in-lab experiment. I provide a brief introduction to each below.

Chapter 2 is a theoretical piece, which integrates self-affirmation theory and moral foundations theory into the collaborative conservation literature. Using a review of this literature, I argue that these theories offer a new perspective on managing intergroup conflict in collaborative processes by suggesting strategies for alleviating the cognitive barriers that prevent intergroup cooperation. Chapter 3 is an experimental application of moral foundations theory in environmental communication. Specifically, I test the potential for morally framed environmental messages to better resonate with a politically diverse audience than traditional environmental messaging. Chapter 4 is an application of self-affirmation theory. I explore ways of incorporating self-affirmation interventions into workshop or meeting settings to facilitate more open-minded exchanges of information surrounding controversial environmental issues. The fifth and final chapter provides a summary of the findings from this research and a discussion of their implications. Further, I outline the limitations of the research as well as discuss promising avenues for future research building on this work.

All of the research reported in this dissertation was led by me. Some of my committee members will serve as co-authors on the manuscripts submitted for publication. The names of all co-authors are included at the start of the relevant chapters. Co-authors assisted with the research and writing in a number of ways. These included

contributing ideas, clarifying concepts, improving the writing and suggesting alternate

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Chapter 2

Addressing identity-related barriers to collaboration for conservation through self-affirmation theory and moral foundations theory

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Abstract

The natural resource management literature documents many reasons for pursuing collaborative processes. However, bringing together diverse groups of people can lead to conflicts, hostilities, and stalemates. These conflicts are often exacerbated by identity threat—the perception that a person's self-worth is being called into question—leading to defensive, identity-protective responses that hinder collaboration. We explain how self-affirmation theory and moral foundations theory can help conservationists mitigate conflicts complicated by identity-protective reasoning. Self-affirmation theory suggests a practical intervention that could be used in collaborative processes to reduce defensiveness among participants. Moral foundations theory suggests an approach to reframing issues to help people appreciate opposing viewpoints. Taken together, these theories can contribute substantially to our understanding and practice of collaboration and conflict management for conservation.

Introduction

Finding solutions to complex environmental issues is an urgent and on-going challenge. Environmental issues are often referred to as "wicked problems" or "problems that have no definitive solution, often because they are not formulated in a way that is accepted by partisans of different positions" (Norton 2015, p. 300). Solutions are not confined to a single jurisdiction, government agency, or even area of expertise. Scientists and managers from different fields (e.g. ecologists, wildlife biologists, social scientists, and engineers) need to collaborate with each other, government agencies, private landowners, and other diverse interest groups to craft and implement solutions. There are many advantages of bringing a variety of voices to the table to address complex, controversial, and value-laden conservation issues, including diversifying the knowledge and information available for problem-solving, enhancing innovation, potentially assuaging conflicts, and building consensus, capacity, and momentum for future action (Beierle & Cayford 2002; Coleman & Stern 2015; Wondolleck & Yaffee 2000). However, bringing together diverse groups of people, each with their own goals, interests, priorities, and perspectives, can lead to conflicts, hostilities, and stalemates that are difficult to resolve (Lewicki et al. 2003).

The literature on collaborative processes in the environmental arena offers insights on how to manage conflict and facilitate productive deliberation in complex multi-stakeholder settings. Specific approaches include helping participants build relationships by providing opportunities for interaction and facilitating authentic dialogue (Innes & Booher 2004, Wondolleck & Yaffee 2000,). Further, perspective-taking is a common conflict management exercise that helps each party reflect on the others' concerns, motives and interpretations of the issue in order to gain appreciation of their point(s) of view (Gray 2003, 2004). Stronger personal relationships and a better understanding of where the other side is coming from has been shown to increase trust between individuals and groups, which is an important element for enhancing cooperation and problem-solving (Balint et al. 2011, Stern & Coleman 2015). Another conflict management strategy involves helping participants find common ground by focusing on the interests (i.e. needs, desires and goals) or values that underlie the

predetermined positions held by each party (Fisher, Ury & Patton 2011). A focus on interests can expose areas of commonality and enable creative solutions that will address the interests of both (all) sides.

These approaches may help people see adversaries in new ways and provide promising strategies to problem-solving. However, to be effective, they require the various parties to be willing to understand different points of view and consider innovative options. Such collaboration can be especially difficult in entrenched conflicts where stakeholders feel that their core self-defined identities are at stake (Gray 2003, Putnam & Wondolleck 2003). For example, when an environmental group advocates for increased government protection of a threatened wildlife species on private land, some of the landowners in question may perceive that their identities as the rightful autonomous and responsible stewards of the land are being called into question. Identity threats, such as this, can increase defensiveness and resistance to open deliberation or compromise (Cohen et al. 2007), thus creating powerful barriers to productive collaboration.

In this essay, we address challenges to collaboration presented by identity threat. We argue that self-affirmation theory and moral foundations theory provide insights for softening barriers to the open-minded exchange of ideas and information. The consideration of these theories is just beginning in relation to environmental communications, and their potential for influencing environmental attitudes and behaviors is becoming clear (e.g. Feinberg & Willer 2012, Sparks et al. 2010, Van Prooijen et al. 2013, Wolsko et al. 2016,). To date, however, studies applying these theories have generally focused on crafting messages for mass communication with many conducted in controlled laboratory environments, thus limiting their direct generalizability to real-world conflict settings. We focus on the potential of these theories to inform both research and practice in the context of collaboration and conflict management for conservation.

Identity Threat as a Barrier to Collaboration

An identity is a set of meanings that defines how a person sees oneself and expresses to others who they are in a particular domain of their life. A person's overall

self-concept is comprised of multiple identities related to their personal values and characteristics (e.g., an honest person), social roles (e.g., landowner, student) and group memberships (e.g., environmentalist, Conservative, American) (Stets and Serpe 2013). These identities are fluid and interrelated and can be more or less salient in any given moment depending on situational factors (Burke & Stets 2009). People are highly motivated to protect and maintain their identities, because they "provide individuals with purpose, meaning and a sense of worth" (Daniels & Walker 2001, p. 30). Identities, particularly those involving group memberships and roles, often reflect the degree to which an individual feels valued, supported and accepted by others (Leary 2005). These social identities are salient whenever diverse stakeholder groups come together in environmental conflict situations (Gray 2003). They help to define how people see themselves and their own role(s) in the conflict and have implications for "self-esteem, acknowledgment, achievement, reputation, and image or face" (Daniels & Walker 2001, p.30).

For example, when a person becomes aligned with an environmental cause, her membership in the group of others promoting that cause can become an important source of identity. In a conflict situation, when the position taken by the environmental group is challenged, she may feel that an important part of her identity is also at stake. In this way, identity becomes intertwined with the outcome of the dispute, making the issue personal and increasing defensiveness and resistance to compromise. In another example, a logger involved in a conflict over timber harvesting in a national forest may perceive that the integrity of his livelihood is being challenged through accusations that logging is destructive and harmful. Or, he may feel that the legitimacy of his identity is being undermined through arguments that forest wildlife is more important than the wellbeing of his family or community.

When people perceive that their identities are threatened in a conflict situation, that threat can trigger identity-protective reasoning. *Identity-protective reasoning* (sometimes called identity-protective cognition) refers to the propensity to automatically accept or reject information on the basis of how well it aligns with identity (Kahan 2017). It is associated with the basic psychological need of inclusion (being part of the group) and exclusion (distinguishing oneself from others). People tend to resist ideas that

conflict with their pre-existing values and beliefs, because their identities, and by extension, their self-integrity, are threatened by those ideas (Cohen et al. 2000). In other words, we resist ideas that question or threaten our identity (Hart 2014; Solomon et al, 1991). When someone critiques the values and/or beliefs associated with our identity-defining groups, we quickly construct identity-protecting defensive arguments. Rather than rationally considering the merits of arguments based on issues, policy, facts, or science, we may critique the person or group we see as a threat, defend our own group identity, and re-entrench in our own predetermined positions. Thus, taking a stance on an issue can be as much an expression of group identity as agreement or disagreement with the facts of the case (Kahan, 2017, Wolsko 2017). This phenomenon helps to explain why facts alone rarely win arguments in heated environmental conflict situations, and why group affiliations tend to predict positions on issues more powerfully than scientific knowledge or other factors (Kahan et al. 2012).

Without diffusing at least some of the feelings of threat that lead to this defensive response, it is difficult to facilitate honest and open exchanges, develop positive emotions, find common ground, or build trust (Dukes 2008, Fisher & Shapiro 2005, Innes & Booher 2004,). Self-affirmation theory and moral foundations theory offer theoretically grounded strategies to help alleviate the identity threat embedded in multi-stakeholder environmental conflicts and thus have the potential to facilitate more productive collaborative processes.

Self-Affirmation Theory and Moral Foundations Theory

Self-Affirmation Theory

Self-Affirmation Theory is based on the assumption that maintaining self-integrity is a fundamental human motivation (Steele 1988). Feelings of self-integrity involve seeing oneself as a good, competent, and worthy person (Cohen et al. 2007, Cohen & Sherman 2014). Research on self-affirmation has found that when the self-integrity of an individual is affirmed in a domain outside the debate that feels identity threatening, that individual is better able to cope with the threat. A self-affirmation

intervention serves as a buffer against identity threat, because it reminds people that their integrity as a person does not depend solely on the threatened identity or debates associated with that identity (Cohen et al. 2007). Thus, a self-affirmed person is less likely to respond defensively to counter-attitudinal information. Rather, he or she is instead able to think more carefully and with less bias about the merits of the arguments presented (Sherman & Cohen 2006).

Self-affirmation can be triggered by having a person reflect on and write about a personally cherished value or trait (McQueen & Klein 2006, Sherman & Cohen 2006). Other techniques have included providing positive feedback on a prized personal attribute (Cohen et al. 2000) or having participants read and reflect on a list of positive characteristics (Jessop et al. 2009). These interventions are usually quite simple, easy to administer, and take only a few minutes of time. Despite this simplicity, experimental work has found that self-affirmations can have a powerful influence on whether people process information in a defensive or open-minded way and can thus reduce barriers to change (Cohen & Sherman 2014).

Self-affirmation research has mostly taken place in the fields of health, education, and intergroup psychology (Cohen & Sherman 2014; Sherman et al. 2000). For example, self-affirmation interventions have been successful at improving educational outcomes for students whose self-integrity may be threatened through negative stereotypes (Cohen et al. 2006). Cohen et al. (2006) introduced a self-affirmation intervention in an educational setting where students were asked to write about a cherished value a few times over the course of the fall term. They found that minority students (who were more likely than White students to experience stereotype threat related to academic performance) in the self-affirmation conditions showed significant improvement in their grades compared to those in the no-affirmation condition. Two years later, the authors conducted a follow-up study and found continued superior academic performance among students in the original affirmation groups (Cohen et al. 2009). A few studies have also begun to look at the effects of self-affirmation interventions in the environmental realm (Van Prooijen et al. 2013, 2014). For example, Van Prooijen and colleagues (2014) found that a self-affirmation intervention reduced participants' denial of climate change risks, as

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well as their denial of individual efficacy, when they were originally resistant to climate change information.

Other studies have examined the role of self-affirmation in intergroup settings. For example, scholars have studied the influence of self-affirmations on the openness to counter-attitudinal political information (Cohen et al. 2000), reducing conformity by focusing on evidentiary information over normative information (Binning et al. 2015), and increasing the willingness to compromise in negotiation (Cohen et al. 2007, Ward et al. 2011). In one study, self-affirmed partisan participants were more likely than un-affirmed participants to change their previously held attitudes about the death penalty after reading a persuasive report. The authors concluded, "An affirmation of an alternative source of identity both attenuated resistance to persuasion and produced a more even-handed evaluation of the evidence. Shoring up global self-worth, it seems, takes the sting out of new ideas, making them less painful to accept as true" (Cohen et al. 2000, p. 1161).

In the context of negotiation, Cohen et al. (2007) found that self-affirmed participants were more trusting of their negotiating counterparts and more willing to make reasonable concessions than un-affirmed participants. The authors argued that a key reason people resist common sense compromise in negotiation is that to yield would "be costly to their sense of identity and self-integrity" (p.415). However, once affirmed, it appeared that people clung less rigidly to the identity relevant to the context of the negotiation and thus became more willing to compromise.

Based on this understanding of the literature, we argue that self-affirmation approaches could be applied to multi-stakeholder settings (e.g., workshops, meetings, negotiations) relevant to conservation issues and environmental conflicts in at least two ways: affirmations that take place publicly (i.e., in front of the group) or privately (i.e., as an individual exercise). Some activities that approximate public self-affirmations are already common in collaborative settings in the form of icebreakers. For example, before the start of the meeting, a facilitator might ask participants to share something in their recent life they are proud of with the larger group. Alternatively, participants might be asked to think about a value that is important to them— such as family or honesty— and share a story about a time they lived up to that value.

If successful, these types of activities should theoretically serve to remind the individual of their broader self-worth, rendering the issue at hand less self-threatening. However, previous research in this field has only employed private self-affirmation approaches, such as a personal reflection or a written activity. The explicit interpersonal component of the public affirmation— sharing with a group rather than writing or reflecting in private— could potentially change how people respond. If we consider the public affirmation as a type of self-disclosure (i.e. "the act of revealing personal information" (Collins & Miller 1994, p. 457)), we would expect some benefits, but also potential drawbacks. In terms of benefits, these affirmations can help to humanize adversaries to each other by exposing commonalities, such as love for family demonstrations of compassion, or other shared values (Collins & Miller 1994, Dumas et al. 2008). In addition to people being less defensive because they have reaffirmed their global self-integrity, they may feel more connected to (and trusting of) the other people in the room. On the other hand, public self-disclosures are not likely to achieve these benefits if they are not well received or understood by others, or if people negatively evaluate themselves in comparison to what other people share (Dumas et al. 2008, Fiske et al. 2104). In these situations, we suspect people will not feel self-affirmed and may even feel more self-conscious and defensive as a result. Furthermore, public self-affirmations run the risk of strategic behavior, in which people may not share openly enough to achieve the benefits of the self-affirmation.

While private self-affirmation exercises represent the typical form in the literature, they represent a more novel approach in collaborative processes. For example, similar to the public affirmation, a facilitator could ask participants to think about, or select from a list, a value they find particularly important. But, instead of sharing with the group, participants could write a short paragraph about a time they lived up to that value. Or, even more simply, a facilitator could ask participants to choose from a list of potential positive traits or characteristics they possess and write down the ones they are most proud of. They could then tuck the paper into their pockets. Compared to public affirmations, private affirmations expose participants to less risk. However, they would not directly contribute to the interpersonal recognition of shared values commonly

heralded in the collaboration literature (e.g., Dukes et al. 2008, Wondolleck & Yaffee 2000).

In either case, existing literature can offer guidance on when and how an affirmation intervention is most likely to make a difference. First, self-affirmations have only been found to make a difference in outcomes when an identity threat is clearly activated for an individual (Cohen et al. 2007). Because of this, self-affirmation techniques are particularly relevant in conflict situations where stakeholders feel their values and interests tied to important identities are at stake.

Moreover, self-affirmation techniques should focus on a domain *not* directly connected to the conflict at hand. When a person is affirmed in the same domain, they can become more confident in their pre-existing identity-related beliefs and thus more hard-headed and less willing to compromise (Brinol et al. 2007). For example, if a person self-affirms as an uncompromising leader of the environmental movement, she is likely to cling to that identity in subsequent interactions. In collaborative situations, this may be precisely the opposite of the desired effect. However, if she is able to affirm her own sense of compassion by reflecting on her interactions with her children, she is reminded that her self-worth is not entirely tied to this debate. This makes it easier for her to consider the merits of the arguments of others, rather than focus on only defending her predetermined position. Facilitators should thus, perhaps, be careful about initiating values-related discussions about controversial topics too early in the process. Instead, self-affirmation research suggests that self-affirmation in an alternate domain before the discussion of values or interests related to the conflict might be a more fruitful approach (Cohen et al. 2007).

Moral Foundations Theory

Moral systems are "interlocking sets of values, virtues, norms, practices, identities, institutions, technologies, and evolved psychological mechanisms that work together to suppress or regulate self-interest and make cooperative societies possible" (Haidt 2012, p. 314). From this view, morality is inherently social; it evolved to serve an adaptive function – increasing group survival by helping people control selfishness and enabling cooperation (Greene 2014, Haidt & Kesebir 2010, Leech et al. 2015,). The

shared values, virtues, beliefs and practices of a group (i.e. key aspects of moral systems) are thus also important sources of identity, helping people define and express to others who they are as group members (Cohen et al. 2000, Fiske 2014). Moral systems bind individuals together within a group. However, views about what constitutes a moral society differ between groups (Greene 2014, Haidt 2012). These differences lead to intergroup tensions as disagreements arise over deeply held moral convictions, and identity threats are triggered over challenges to these convictions.

The influential role morality plays in intergroup relationships is supported by a large body of research (Greene 2014). Perceptions of morality influence how people evaluate people outside the group and guide decisions people make about whether to cooperate or compete with each other (Leach et al. 2015). Research has found that people are highly motivated to see their own group— and thus, their own identity tied to that group— as both moral and trustworthy and consistently rate other groups as less so. Further, when the outgroup is seen as immoral, it frees people from the obligation to treat them with the same moral norms and standards they employ toward ingroup members. Thus, in the context of multi-stakeholder collaboration, where group identity is salient, challenges to working across the aisle are exacerbated because groups are already predisposed to view other groups as less moral than their own. This predisposition makes it easier for people to claim moral superiority and sets up barriers to experiencing empathy and finding common ground (Leach et al. 2015).

Moral foundations theory offers a guide to help facilitators and negotiators overcome barriers to collaboration associated with morally-based divisions between groups. Specifically, the theory provides insights for 1) framing issues using moral language that is less likely to trigger identity threat and 2) uncovering and communicating the morality embedded in the interests of each side. Moral foundations theory (Graham et al. 2009, Haidt 2012) posits that there are at least six types of moral concerns that all people instinctively care about to some extent (Table 1). Each moral foundation consists of two polar opposites – one depicting an idea that is generally good or right and the other depicting an idea that is generally perceived as bad or wrong (Table 1). Different people and social groups emphasize some foundations more than others. This creates variability in how people respond to moral issues. For example, in the United

States, people who subscribe to a politically liberal ideology more often emphasize the care/harm and fairness/cheating foundations over the loyalty/betrayal, authority/subversion, and sanctity/degradation foundations. Meanwhile, political conservatives endorse all six moral foundations more or less equally (Graham et al. 2009, Haidt 2012). The liberty/oppression foundation is especially strong—taking precedence over all other foundations— in those who subscribe to a libertarian political orientation (Haidt 2012).

Table 1: Moral Foundations (Haidt 2012) with examples of language associated with environmental arguments associated with each.

Moral Foundation	Definition	Example
Care/harm	Concern with caring for others and preventing harm and suffering of people and animals.	Toxic emissions are killing defenseless animals and harming our children's health.
Fairness/Cheating	Concern with justice and fair treatment of others and prevention of cheating.	Marginalized people/communities are disproportionately affected by pollution. Some get rich, while others pay the price.
Loyalty/Betrayal	Concern with showing loyalty to one's ingroup (family, team, country) and condemning traitors.	We should protect native wildlife, like the bald eagle, because they are proud symbols of what makes America great.
Authority/Subversion	Concerns about respecting social hierarchy and performing one's duty.	Our forefathers bestowed upon us the duty of protecting our shared natural heritage. We are obliged to uphold that responsibility.
Sanctity/Degradation	Concerns about protecting the purity and/or sacredness of valued objects, people, places and principles.	Coal mining is toxifying our homeplaces, upsetting the natural balance between people and nature, and making people sick.

Liberty/Oppression	Concerns about maintaining freedom from oppressive regimes and controlling bullies.	We all have a right to clean air and water. We can't let polluting corporations take away that right.

Moral foundations theory explains why arguments that are so compelling and persuasive to one group are ineffective and even irrelevant to another and why it is so easy for groups to talk past (and also vilify) each other (Stern 2018). If two sides are not speaking the same moral language, or responding intuitively to the same moral triggers, it can become all but impossible to find common ground on contentious issues (Mason 2018).

The literature on framing suggests that deeply entrenched beliefs are difficult to change by simply reframing the argument (Gray 2003, Stern 2018), but moral foundations theory suggests framing arguments with moral language has the potential to cross these divides (e.g. Feinberg & Willer 2013, Voelkel & Feinberg 2018). Language based in the moral foundations of a social group can be used to communicate more effectively with people in those groups. When there is a match between the moral foundations endorsed by the group and the moral language used, a message is more likely to intuitively feel compatible with the views of the group, reducing potential triggers of identity-protective reasoning (Kahan 2017, Wolsko et al. 2016). In this way, strategic use of moral arguments may alleviate the defensive urge to automatically reject information that challenges pre-existing views, increasing openness to new ideas.

For example, opposing stakeholder groups may be in conflict over the construction of a new mine near a residential area. The pro-mining group may argue that mining forms the base of the economy of the region and is a part of the local heritage. Opening a new mine would allow for a continuation of that heritage and provide high paying jobs for hundreds of local people close to home. The anti-mining group, on the other hand, may have grave concerns about the environmental impact of the mine, arguing that additional coal mining will cause far-reaching exposure to toxic emissions and harm wildlife by destroying habitat. Through a series of discussions, a skilled facilitator might notice that the pro-mining group is making arguments that primarily stress the loyalty/betrayal foundation (prioritizing benefits for local people over concerns

for wildlife) and the authority/subversion foundation (for a duty to protect heritage and traditions), and the anti-mining group is primarily stressing the care/harm foundation (harm to human health and wildlife). The groups are talking past each other, as they each believe they have the moral high ground (Stern 2018).

In this case, the facilitator could reframe the arguments of each side using the moral foundations stressed by the opposing group, enabling each side to examine the perspective of the other through a moral lens they find more intuitively compelling. For example, the pro-mining argument could be reframed using the care/harm foundation by focusing on the challenges of unemployed workers in the area whose suffering families would benefit from construction. The anti-mining argument could be reframed using the authority/subversion foundation by emphasizing the responsibility local people share to preserve the natural (rather than purely social) heritage of the region and drawing connections between this heritage and the local culture (loyalty/betrayal). The goal of reframing is not necessarily to persuade the other side to take a new position. Rather, addressing the moral foundations of counterparts can defuse identity-threatening rhetoric associated with traditional side-taking in such issues by using language that is compatible with the socially shared values of each group. This can enable concerned parties to acknowledge the valid points of the others' arguments and seek out more mutually beneficial means of addressing each other's concerns (Fisher & Ury, 1991).

Perhaps more importantly than its potential use in communicative framing, an understanding of moral foundations can foster empathy and appreciation of the perspectives of others. Moral foundations theory can serve as a guide to help shed light on the moral concerns that underlie the opposing argument. Once the morality of an argument is made explicit, it becomes easier to appreciate its importance to the other person, as we might be able to see the value in the moral perspective easier than the value of a specific argument or position. For example, many liberals can see the value of hierarchy and rule-of-law within a society as necessary to maintain a reasonable degree of order, even if the authority/subversion moral foundation is not one they stress themselves.

Furthermore, bringing the morality embedded in conflicting viewpoints to the surface can sometimes expose areas of moral common ground. In other words, opposing

stakeholder groups may be arguing for very different positions, in part, on the basis of the same moral foundation. To return to the mining example, the pro-mining group may have concerns that failing to move forward with the mine would deprive local people of good job opportunities without offering them viable economic alternatives. The anti-mining group, on the other hand, may feel that mining imposes extremely high costs of pollution and degradation on people and wildlife who do not directly benefit from, or have a say in, the mining activities. Facilitated dialogue can help groups uncover and articulate the common thread of fairness/cheating that runs through each of these arguments. Recognizing this commonality can enable opponents to find merit in one another's arguments, even when they disagree. Acknowledging merit or appreciation of the points of view of adversaries can again lessen identity threats and open possibilities for finding win-win solutions (Fisher & Shapiro 2005).

Conclusion

The importance of fostering positive relationships, finding common ground, and appreciating the perspectives of others are frequently cited approaches for managing conflict in multi-stakeholder settings (Fisher & Shapiro 2005, Fisher et al. 2011, Glucker et al. 2013). All of these suggestions emphasize the need for each party to come to the table with an open mind and willingness to understand different points of view. Self-affirmation theory and moral foundations theory each offer suggestions for how this collaborative and open mindset can be fostered.

Self-affirmation has the potential to alleviate identity threats by reminding people that their self-worth does not depend on the outcome of the debate. This allows stakeholders to focus more on the facts of the case, rather than the threat they feel from their counterparts. Moral foundations theory helps us recognize how the moral language embedded in our arguments might actually activate identity threats, inhibiting collaboration because people become defensive and focus on differences. Reframing arguments to appeal to a broader set of values has the potential to keep people engaged in conversations. When moral foundations are recognized as legitimate, recognizing shared

interests and uncovering common ground may become easier. Moral foundations theory can also help people recognize the moral reasoning underlying others' arguments. Making morality explicit in the discussion can legitimize the argument itself and, perhaps more importantly, increase empathy by humanizing its protagonist.

We advise practitioners to consider ways to reduce identity threats as early as possible in collaborative conservation efforts. Providing space for individuals at the start of a meeting or workshop to affirm their self-worth outside the domain of the argument, using self-affirmation principles, provides one clear and promising path. If people are reminded that their value as a human being is not contingent on the debate at hand, they may cling less tightly to pre-existing views, enabling a more reasoned debate (Cohen & Sherman 2014).

Reducing identity protective reasoning also calls for a careful reconsideration of the language we may be accustomed to using. For example, traditional liberal environmental messaging about harm to society's most vulnerable populations and ecosystems is unlikely to resonate with conservatives in the United States – not because they don't care, but because the message itself is associated with an adversarial outgroup. Its repetition and its politicization by counter-groups trigger identity protective reasoning. Framing messaging in a broader set of moral foundations that feel more compatible with shared ingroup values may reduce this phenomenon.

Furthermore, seeking *moral* commonality within heated arguments, especially early in interactions, rather than focusing our earliest efforts on attempting to identify common ground on *appropriate courses of action*, might also prove fruitful. If we can identify common moral foundations between groups with differing opinions, we can potentially shift arguments from a focus on people vs. people toward efforts to work together to come to a mutually agreeable path forward that addresses common moral concerns.

We urge practitioners and researchers alike to debate, create, and test the value of diverse self-affirmation interventions and explore the use of moral framing in face-to-face collaborative settings. Results from such studies, and lessons learned from practical experience can be used to advance our understanding of how moral foundations and self-affirmation might influence the outcomes of collaborative conservation efforts.

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Chapter 3

**Messaging for Environmental Action: The Role of Moral Framing and Message
Source**

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Abstract

Divisions between political Liberals and Conservatives on environmental issues seem to
be widening, with Liberals generally more pro-environmental than Conservatives. We
posit that common framing of environmental messages tends to perpetuate these gaps.
We designed two experiments to examine this assumption and explore the prospects of
narrowing these divisions using communication based on moral foundations theory.
Moral foundations theory posits that there are at least five universal moral concerns that
people intuitively use to form judgments. Research has found that political Liberals in the
United States tend to base their judgments and communication on only two of these
foundations, while Conservatives stress all five. We crafted two pro-environmental
messages, one framed using liberal moral language (based on the two liberal moral
foundations), the other using conservative moral language (based on all five moral
foundations). Through survey research using two separate samples, we compared how
political partisans responded to the messages when they were communicated from either
a liberal or conservative message source. We found that the conservatively framed
message resonated more with Conservatives than the liberally framed message, but only
when combined with a conservative message source. Further, the conservatively framed
message did not alienate liberal participants, even when combined with a conservative
source. Thus, conservative language and conservative message sources in environmental

messaging might be more fruitful than relying on traditional liberal messaging from liberal sources.

1. Introduction

Concern over the natural environment and support for environmental protection has become a highly polarized topic in the United States, with political Liberals generally holding more pro-environmental attitudes and Conservatives being more dismissive or skeptical of environmental concerns (McCright & Dunlap 2011, Dunlap, McCright & Yarosh 2016). For example, a recent nationally representative study found that 95% of liberal Democrats think global warming is occurring compared to 40% of conservative Republicans. The same study found that Democrats consistently held more pro-environmental attitudes toward a number of global warming and energy policies than Republicans (Leiserowitz, Maibach, Roser-Renouf, Rosenthal, Cutler and Kotcher 2017). This gap persists and even appears to be widening (Pew Research Center 2017) despite mounting evidence of the severity of global environmental challenges (e.g. Ceballos, Ehrlich, Dirzo 2017, IPCC 2014).

The persistence of this polarization can be partially understood through the concept of identity-protective reasoning, which refers to people's tendency to automatically reject information that is inconsistent with the pre-existing values and worldviews of their important social groups—regardless of its factual content. Certain social and political issues are more likely to trigger this type of defensive information processing because they have taken on polarizing social meaning. Social meaning is the perceived compatibility between an attitude object and socially shared values (Cohen 2003, p. 809). Thus, the position one holds on many contentious issues has "come to signify membership in and loyalty to identity-defining affinity groups" (Kahan 2017, p. 6). Issues related to environmental concerns—such as hydraulic fracturing (fracking) and climate change, for example—fall into this category (Kahan 2017, Kahan 2013). Based on this line of research, the positions partisans take on environmentalism have become as much as an expression of political identity—whereby holding pro-environmental stances affirms the identity of Liberals and runs contrary to the identity of Conservatives—as agreement or disagreement with actual issues (Wolsko 2017).

The association between environmentalism and liberal value systems is likely reaffirmed through the ways in which environmental messages are commonly framed.

This is because environmental issues are pervasively framed in a way that predominantly aligns with liberal values (Wolsko 2017, Wolsko, Ariceaga. Seiden 2016, Feinberg & Willer 2013). From a communications perspective, frames are defined as "interpretive storylines that set a specific train of thought in motion, communicating why an issue might be a problem, who or what is responsible for it, and what should be done" (Nisbet, Markowitz, & Kotcher 2012 p. 17). Nisbet et al. (2012) argue that environmental advocates have historically tended to focus their messages on narrow moral arguments, generally based on harm to animals and ecosystems—concerns that are particularly appealing to Liberals. An empirical study supporting this view was conducted by Feinberg & Willer (2013). They analyzed videos and newspaper editorials containing persuasive environmental messages and found that environmental discourse was primarily based on harm- and care-related arguments.

The present research experimentally tests a messaging approach aimed at redefining the social meaning embedded in environmental discourse to increase the fit between environmental concerns and a broader array of socially shared values. A better match between environmental messages and the social identity of people across the political spectrum should decrease the defensive urge people have to automatically reject information for identity protective purposes, thereby helping to diffuse the partisan divide on these issues.

2. Theoretical Framework

Moral foundations theory provides a framework for understanding how morality varies across the political spectrum. Extensive research by Jonathan Haidt and colleagues (Haidt 2012) suggests that the foundational principles that guide our decisions about right or wrong are based on at least five universal concerns, termed "moral foundations." Each foundation has evolved to serve an adaptive function. As such, the foundations can be characterized as a "first draft" of morality imprinted on the brain. Later drafts are refined through social learning. Consequently, the moral matrices people develop (i.e., the combinations of moral foundations that are emphasized by social groups) differ between

groups and individuals (Haidt 2012). Haidt and his colleagues (e.g. Haidt 2012, Haidt & Kesebir 2010) have argued that the socially shared moral matrices that develop in each group serve to bind people together into cohesive, cooperative and well-functioning social groups. But, these matrices become so deeply ingrained and feel so inherently "true" that we become blind to the morality embedded in the social and political attitudes of other people. This leads us to reject or feel threatened by other points of view, because they are contrary to our way of understanding the world.

The five foundations are: 1) care/harm, 2) fairness/cheating, 3) loyalty/betrayal, 4) authority/subversion, are 5) sanctity/degradation. The care/harm foundation refers to concerns with caring for others and preventing harm and suffering. The fairness/cheating foundation involves concerns about justice, reciprocity, fair treatment of others, and the prevention of cheating. The loyalty/betrayal foundation (also called *ingroup*) involves concerns about showing loyalty to one's ingroup (e.g., family, country, political party) and condemning traitors. The authority/subversion foundation is related to ideas about respecting traditions and social hierarchies, such as deferring to leaders and elders and performing one's duty. Finally, the sanctity/degradation foundation (also called *purity*) speaks to concerns about protecting the purity and/or sacredness of valued objects, people, places and principles (Haidt 2012). Through extensive empirical work, moral foundations theory has found robust support for the claim that Liberals and Conservatives in the United States tend to base their judgments and decisions on different moral foundations. Liberals rely primarily on care/harm and fairness/cheating, while Conservatives rely on all five foundations more equally (Graham, Haidt & Nosek 2009, Haidt 2012).

From this theoretical perspective, when communication is based solely on the harm and fairness foundations, it should trigger stronger moral responses in Liberals, who rely more heavily on these foundations than Conservatives. Perhaps more importantly, these messages may feel dismissive of the other moral foundations that are equally, or sometimes more, important to Conservatives (Haidt 2012). For example, ideas associated with the loyalty and authority foundations, such as supporting local economic growth and prosperity, protecting family and community values, and respecting tradition, may feel undermined in abstract messages about harming nature and animals. This may especially

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be the case when the implications of these messages are an endorsement of increased environmental regulations and oversight, which could be interpreted as prioritizing the environment at the expense of these other concerns. In this way, harm and fairness based messages can actually feel threatening to Conservatives' moral convictions, thereby reinforcing the perception that environmentalism is a liberal concern that is incompatible with conservative values.

Moral foundations theory provides a basis for tailoring moral arguments to resonate with people by affirming, rather than threatening, their moral convictions—making explicit the compatibility between environmental concerns and a broader moral matrix (Graham et al. 2009, Graham, Nosek, Haidt, Iyer, Koleva & Ditto 2011, Haidt & Graham 2006). Several recent studies have examined the potential of moral framing to influence political opinion (Day, Fiske, Downing & Trail 2014, Feinberg & Willer 2013, Voelkel and Feinberg 2017, Wolsko et al. 2016, Wolsko 2017, Kidwell, Farmer & Hardesty 2013). For example, Day et al. (2014) found that framing social and political issues in conservative moral language was effective at strengthening the opinions of conservative participants on typically conservative stances as well as changing their views on typically liberal stances. Although Liberals were not persuaded to adopt conservative stances through liberal moral framing (e.g. harm and fairness), their views on liberal stances were reified through moral framing using all five moral foundations. Further, Voelkel and Feinberg (2017) found that morally framed arguments were effective at influencing support for a political candidate in a presidential election.

A small number of studies have applied moral framing in the realm of environmental issues. For example, Feinberg and Willer (2013) found, similar to others (Wolsko et al. 2016, Kidwell et al. 2013), that framing environmental appeals using the purity, ingroup, and authority moral foundations can eliminate the statistically significant difference in environmental attitudes and beliefs between Liberals and Conservatives. That is, crafting environmental messages in terms of loyalty/betrayal, authority/subversion, or sanctity/degradation appeals to Conservatives enough to enhance their pro-environmental attitudes.

Along with framing, message source can have a powerful influence on how people respond to information. Members of the public commonly rely on mass media for

interpretations of science and policy related to environmental issues (Boykoff & Yulsman 2013). However, many information sources are either explicitly or implicitly associated with a social or political group. For example, a Gallup poll conducted in 2017 found that more than half of Americans were not able to name a single news source they considered to be neutral (Jones & Ritter 2018). Consequently, much of the environmental messaging people receive is intertwined with an ingroup or outgroup association. This matters in how information processed. Cohen (2003) argues that people look to members of their groups—especially those in leadership positions—to help them define the social meaning of issues and objects. Therefore, when information is issued through an ingroup source, not only is the source perceived as more credible and trustworthy (Fielding & Hornsey 2016), but the perceived compatibility between the information being communicated and socially shared values increases as well.

Several empirical studies have found that people are more likely to reject information or respond more negatively if the information comes from an outgroup source or is associated with the outgroup, regardless of its content (Hornsey, Oppes, and Svensson 2002, Cohen 2003, Esposo, Hornsey & Spoor 2013, Fielding & Hornsey 2016). For example, Esposo et al. (2013) found that people were more likely to reject the same argument when it came from an outgroup member, and were more receptive to it when it came from a member of their group. Other research has shown that being associated with certain groups can influence how information is perceived. Cohen (2003), for example, found that people opposed a policy proposal when it was said to be supported by the political outgroup, even when the objective content of the policy aligned with the usual stated values of their ingroup. Research applying dual-process models of persuasion has also identified the message source as a common peripheral cue, guiding acceptance or rejection of a message even in the absence of careful processing of the content (Chaiken 1980, Petty & Cacioppo 1981).

3. Current Research

Our studies build on previous research by examining how moral framing and message source influence political partisans' responses to environmental appeals. This message source/moral frame combination has yet to be empirically tested in the environmental realm. We crafted two pro-environmental messages. One was framed using liberal moral language, the other using conservative moral language. In two online experiments, we compared how people across the political spectrum responded to the messages when they were communicated from either a liberal, conservative or nonpartisan message source. Manipulating moral language and message source to "match" the social identity of participants should alleviate the defensive urge to dismiss the information for identity protective purposes.

4. Study 1

4.1 Aims and Hypotheses

The overarching objective of this research was to test whether any of the moral frame/message source combinations we created were more effective at reaching conservative audiences than the traditional liberal messaging. Because most environmental messaging in the United States comes from liberal sources and is framed with liberal moral language (Feinberg & Willer 2013, Nisbet et al. 2012, Wolsko et al. 2016, Wolsko 2017), we considered the liberal moral frame/liberal message source combination the critical "comparison" group to compare the other moral frame/message source combinations against. This research design rendered three treatment conditions and one comparison group. The treatment conditions were: 1) a conservatively framed message from a conservative source (C-frame, C-source), 2) a conservatively framed message from a liberal source (C-frame, L-source), and 3) a liberally framed message from a conservative source (L-frame, C-source). The comparison group was the liberally framed message from a liberal source (L-frame, L-source).

We expected conservative participants would respond most positively when the conservative moral frame and message source were combined (C-frame, C-source). The other moral frame/message source combinations contained both ingroup and outgroup cues for Conservatives, which could potentially counteract each other. Because of this, we didn't expect the effect of these other combinations to be strong enough to detect significant message effects compared to the L-frame, L-source group.

Given our primary interest in understanding the responses of conservative participants, the analysis and interpretation of results we present is focused on Conservatives. We did not expect our moral frame/message source combinations to have a strong influence on the responses of Moderates or Liberals. In the case of Liberals, because they generally hold pro-environmental attitudes (e.g., Leiserowitz et al. 2017), we expected them to already agree with the environmental message and respond relatively consistently across treatment conditions regardless of source or message framing. Because our messages were designed to trigger ingroup/outgroup responses from political partisans, we didn't expect moderate participants to prefer any particular combination of moral frame and message source over another. Despite our expectations, we included Liberals and Moderates in our sample to confirm (or invalidate) our assumptions.

A sub-goal of Study 1 was to use the previously validated Moral Foundations Questionnaire (MFQ) to verify that conservative and liberal participants would endorse the five moral foundations in the pattern predicted by the theory. Specifically, we expected Conservatives to endorse all five foundations relatively strongly (i.e. above neutral), but to endorse the ingroup, authority and purity foundations more strongly than Liberals. And, we expected Liberals to endorse the harm and fairness foundations significantly more strongly than Conservatives.

Based on the objectives described above, we propose the following two hypotheses for Study 1:

H1.1: liberal and conservative participants will endorse the five moral foundations in the pattern predicted by moral foundations theory.

H1.2: The environmental appeal will have a significant positive effect on the responses of conservative participants when compared to the comparison group (L-frame; L-source) only when a conservatively framed message is combined with a conservative source (C-frame; C-source).

4.2 Participants and Procedure

We recruited participants through an in-class announcement to two sections of an undergraduate introductory economics course at [removed for review]. Students who participated in the study were offered extra course credit in the form of a dropped homework grade as compensation. Following the class announcement, we sent students an electronic link to the pre-survey. Approximately six weeks later, we sent a second link to the experimental survey to the students who completed the pre-survey. We used the results from the pre-survey to select the environmental topic with the greatest variability in responses (fossil fuel use) and to sort participants into Liberals, Conservatives, and Moderates. In the experimental phase of the study, we randomly assigned members of each political orientation group to read one of the four moral frame/message source combinations. After reading their assigned appeal, participants were asked to respond to a short survey measuring the outcome variables.

4.3 Materials

4.3.1 Pre-survey. The pre-survey questionnaire included a measure of support for five polarizing environmental issues: 1) oil and gas development, 2) transitioning away from fossil fuel use, 3) global warming, 4) endangered species protection, and 5) environmental regulations. The pre-survey also included a single item measuring political orientation, the abbreviated (22 item) Moral Foundations Questionnaire (MFQ; Graham, Haidt and Nosek 2008), and basic demographic questions (age, sex, race).

The single-item political orientation measure asked respondents to rate on a scale of 1 (extremely conservative) to 9 (extremely liberal) where they would place themselves along the political spectrum. Conservatives were identified as having a score of three or

lower, Liberals were identified as having a score of seven or higher, and Moderates scored from four to six. A single item measure is often used in moral foundations studies (e.g. Feinberg & Willer 2013, Graham et al. 2009) and considered to have predictive validity for views on a number of social and political issues (Graham et al. 2009, Jost 2006).

The abbreviated 22 item Moral Foundations Questionnaire (MFQ) includes four items to measure each of the five moral foundations in addition to two validity checks (https://www.moralfoundations.org/questionnaires). The items that corresponded to each moral foundation were averaged to create a single measure for each foundation. Items were measured on a 6-point scale. In part 1 of the questionnaire (the first 11 items), the stem question asked respondents: "*When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking?*" Response options ranged from "not at all relevant" to "extremely relevant." For the second part of the questionnaire (the final 11 items) the stem questions asked respondents: "*Please read the following sentences and indicate your agreement or disagreement.*" Response options for this section ranged from "strongly disagree" to "strongly agree."

We computed a Cronbach's alpha for these separate scales to assess internal consistency and ensure that the measures had adequate reliability. The Cronbach's alpha for each scale was above .6, indicating adequate reliability for four-item scales. We dropped one item from the fairness scale to improve its reliability (from .588 to .614), but all other items were kept. The dropped item asked respondents to indicate their agreement or disagreement with the statement: "Justice is the most important requirement for a society."

4.3.2 Manipulated Variables.

4.3.2.1 Moral Frame. We wrote two parallel messages advocating for a transition away from fossil fuel use toward clean energy. The conservatively framed message contained language and arguments grounded in all five moral foundations (sanctity/degradation, authority/subversion, loyalty/betrayal, care/harm and fairness/cheating). The liberally framed message contained language and arguments grounded only the care/harm and

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fairness/cheating foundations (Graham et al. 2009). We wrote the two appeals to be the same length and as similar as possible. However, it was necessary to vary their specific content somewhat in order to develop coherent arguments for transitioning away from fossil fuels that were grounded in the relevant foundations (see Appendix A).

4.3.2.2 Message Source. We manipulated the message source by informing participants that the environmental appeal they were about to read was issued by either a liberal or conservative non-profit organization. In the survey, we further reinforced these identities by reminding participants of the source of each message as they responded to the questions.

4.3.3 Dependent Variables. We included two variables to measure participants' interest in learning more and taking action on transitioning away from fossil fuels after reading the environmental appeal. We measured interest in learning more by asking participants: "*Are you interested in learning more about this issue? If so, please provide your email below, and we will send you links to websites with more information.*" The response options were: 1) "Yes, send me links!" 2) "No, I am not interested," and 3) "I plan to study this on my own." We used this variable to gauge participants' openness to learning more about the issue, rather than as a direct measure of their behavior or behavioral intentions. We included the third response option as an alternative response for people who were open to learning more about the issue, but didn't want to share their email address. Those who requested links or reported plans for self-study were coded as 1; others were coded as 0.

We measured interest in taking action by asking: "*If you are interested in taking action, such as writing your government representative, signing a petition, or donating to an organization working in this area, please provide your email below. We will send you links to websites to help you.*" The response options for this question were: 1) "Yes, send me links!" and 2) "No thanks, I'm not interested."

4.4. Study 1 results

4.4.1. Pre-survey. We received 549 total responses to the pre-survey of which we removed 101 participants who either took less than three minutes to complete the survey (the minimum determined through pilot testing) or failed the MFQ validity checks (Graham et al. 2008). This resulted in a usable sample of 448, corresponding to a 50% response rate for all students in the two class sections. The majority of our participants were male (62.6%) and identified as White (77.7%). The remaining students in the sample identified as Asian (12.1%), Black (4.5%), Latino (5.1%), Middle Eastern (0.7%), Native American (0.7%), Indian (0.7%), or other (1.1%). The average age of participants was 19 years old. Participants were divided into a sample of 152 Conservatives, 177 Moderates, and 119 Liberals (based on their responses, as described in 4.3.1.).

4.4.1.1. Choice of Environmental Issue. The environmental issue with the least support and most variability was transitioning away from fossil fuels; 33% of respondents reported either being neutral or disagreeing that the United States should transition away from fossil fuels as soon as possible. The other issues received more consistent support. A one-way ANOVA showed significant differences between Conservative, Moderate and Liberal respondents in their support for transitioning away from fossil fuels ($F=50.790$, $df= 2,445$, $p < .001$). Tukey's post-hoc tests showed that Conservatives were less likely to support the transition than both Moderates (mean difference = -0.70, $p < .001$) and Liberals (mean difference = -1.04, $p < .001$).

4.4.1.2. MFQ and Political Orientation. We ran five separate ANOVAs to test for differences in mean MFQ scores between Conservatives, Moderates and Liberals. We followed with Tukey's post-hoc tests to test H1 (i.e. significant differences between Liberals and Conservatives). All ANOVAs were significant (all p-values <.001) with Conservatives and Liberals differing significantly from each other in the hypothesized directions (Table 1).

Table 1. ANOVAs comparing the mean score of Liberals, Moderates and Conservatives for each foundation and effect sizes for the comparison of Liberals vs. Conservatives. *(Note: based on the results of Levene's Tests for Equality of Variances, Welch's tests are reported for the fairness and authority foundations).*

Foundation	Political Orientation	Mean	SD	T-stat	DF	P-value	Cohen's d
Harm	Conservatives	4.0	.975	-5.73	267.2	<.001*	.687
	Liberals	4.6	.701				
Fairness	Conservatives	4.26	.879	-4.97	269	<.001*	.613
	Liberals	4.76	.768				
In-group	Conservatives	4.54	.760	9.38	269	<.001*	1.14
	Liberals	3.6	.892				
Authority	Conservatives	4.46	.699	10.03	226.5	<.001*	1.24
	Liberals	3.49	.850				
Purity	Conservatives	4.1	.877	3.18	269	.002*	.39
	Liberals	3.74	.912				

4.4.2. Experimental Survey. We received 329 total responses in the second phase. We removed 132 that were completed under the pre-tested threshold of two minutes and fifty seconds. This threshold was determined, through pilot testing, to be the minimum amount of time necessary to read the entire survey. Removals resulted in 197 usable responses. Fifty-two participants read the conservative message from the conservative source, 46 read the conservative message from the liberal source, 47 read the liberal message from a conservative source, and 52 read the liberal message from the liberal source. This sample had a similar demographic make-up to the pre-survey. Moreover, the pre-survey and experimental survey samples did not differ on their mean score of political orientation or endorsements of moral foundations (p > 0.05).

4.4.2.1. Interest in Learning More: We conducted a chi-square analysis to test for significant differences in how participants responded to the appeals across the four treatment conditions, broken down by political orientation (see table 2). The omnibus chi-square for Conservatives was significant (χ^2=8.70, df=3, p=0.033). Conservative

participants responded to the environmental appeal most positively when they read the conservatively framed message combined with a conservative source and most negatively to the environmental appeal when they read the liberally framed message from the liberal source. A chi-square test showed significant differences between these two treatment conditions (χ^2=8.16, df=1, p=0.004), lending support to H1.2 (Table 2).

Table 2. Results of chi-square tests and percentage of Conservative, Liberal, and Moderate participants in each treatment condition reporting being open to learning more about the issue. *Sample sizes for each treatment included in parentheses.*

	Conservative Frame		Liberal Frame		
	Conservative Source	Liberal Source	Conservative Source	Liberal Source (control)	Chi-Square
Conservative Participants	87% Yes* 12.5% No (8)	50% Yes 50% No (10)	54.5% Yes 45.5% No (22)	31% Yes 69% No (29)	χ^2= 8.70, df=3, p=.033
Liberal Participants	62.5% Yes 37.5% No (24)	90.9% Yes 9.1% No (11)	80% Yes 20% No (10)	63.6% Yes 36.4% No (11)	χ^2=3.67, df=3, p=.229
Moderate Participants	65% Yes 35% No (20)	68% Yes 32% No (25)	73.3% Yes 26.7% No (15)	66.7% Yes 33.3% No (12)	χ^2=.289, df=3, p=.962

*p<.05 (compared to the control group (liberal frame/liberal source)

4.4.2.2. Interest in Taking Action. No Conservatives requested information on how to take action on this issue in any of the treatment combinations. Among Liberals, 27.3% requested information in the comparison group (L-frame, L-source) compared to 20% of those who read the conservatively framed message from the conservative source, 45.5% who read the conservatively framed message from the liberal source and 0% who read the liberally framed message from the conservative source. The only Moderates who requested information on how to take action read the conservatively framed message from the conservative source (11.1%). No Moderates in any other treatment combination requested information.

4.5. Summary of Study 1

In support of H1.1, our sample followed the patterns predicted by moral foundations theory. These results also offer limited support for H1.2; our messages were most effective for conservative participants when they read an appeal framed using conservative moral language and from a conservative source. This hypothesis was supported by the "interest in learning more" variable, but not by the "interest in taking action" variable. These results suggest that altering the moral frame and source of a message could be effective in alleviating the identity protective responses associated with environmental information for conservative participants. However, reading a single message may not be a strong enough manipulation to actually induce Conservatives to take action on the same issue.

We observed no significant differences in how Liberals or Moderates responded across treatment conditions, suggesting that people in these political groups were not alienated by any of moral frame/message source combinations. However, because of the relatively small sample size and unbalanced design, these results should only be considered preliminary. In the next experiment, we refined our study design, added additional dependent variables, and ensured a larger, more balanced, sample.

5. Study 2

5.1. Aims and Hypotheses

We made a few key changes to our research design in Study 2. Instead of using a two-phase experimental design, we conducted the experiment in a single phase using self-identified liberal and conservative participants, whom we recruited through an online survey research platform (Prolific). Liberal and conservative participants self identified by responding to a single pre-screening question (*"Where would you place yourself along the political spectrum?"*) with five response options (conservative, moderate, liberal, other, NA). We did not include moderate participants in this study. The MFQ, which we included in the pre-survey in Study 1, was moved to the end of the experimental survey to remove the added step of having participants take a pre-survey in addition to the experimental survey. The Cronbach's alphas for each of the five foundations were acceptable (above .6), so we combined the four items to create a single measure for each foundation. Consistent with Study 1, we expected the predictions of moral foundations theory to be supported in our sample.

We added a non-partisan message source condition to better understand and isolate the effects of the moral framing, independent of source. This created a total of six moral frame/message source conditions: the conservative frame from a conservative source (C-frame, C-source), the conservative frame from a non-partisan source (C-frame, N-source), the conservative frame from a liberal source (C-frame, L-Source), the liberal frame from a conservative source (L-frame, C-source), the liberal frame from a non-partisan source (L-frame, N-source), and the liberal frame from a liberal source (L-frame, L-source, (comparison group)). To more fully explore partisans' responses to the environmental appeals, we also included two additional measures of support for transitioning away from fossil fuels (described below).

For conservative participants, we expected to see the strongest effect of our manipulations (in terms of positive responses to the environmental appeal) when the conservative message and conservative source were combined (the C-frame, C-source condition). In addition, previous research on moral framing in the environmental realm has found significant effects of the conservative moral frame, even without an explicit source manipulation (e.g. Wolsko et al. 2016). We, therefore, expected to see similar

positive responses from Conservatives when they read the conservatively framed message from the neutral source (C-frame, N-source).

As in Study 1, we expected the environmental appeal to be congruent with pre-existing attitudes for Liberals and for our message not to have an effect on how they respond. Thus, we expected no treatment effects for liberal participants and only included them to ensure our messages would not alienate liberal audiences.

These expectations are stated in the following hypotheses:

H2.1: Liberal and conservative participants will endorse the five moral foundations in the pattern predicted by moral foundations theory.

H2.2: The environmental appeal will have a significant positive effect on the responses of conservative participants (compared with the L-frame; L-source group) when the conservatively framed message is combined with a conservative source.

H2.3: The environmental appeal will have a significant effect on the responses of conservative participants (compared with the L-frame; L-source group) when the conservatively framed message is combined with a non-partisan source.

5.2. Materials

The appeals and two dependent variables from Study 1 remained the same. We included two additional dependent variables to measure support for transitioning away from fossil fuels. First, we asked participants to indicate their support for transitioning away from fossil fuels on a 7-point scale. Second, we included a dichotomous (yes/no) item asking participants if they were more likely to support the transition away from fossil fuels after reading our appeal. Specifically, we asked: *"Think back to how you felt before reading this message. Are you more likely to support the transition away from fossil fuel use now than you were before?"*

5.3. Participants and Procedure

We recruited 640 participants from the online survey platform Prolific (Prolific.ac). Participants were pre-screened for political orientation before being invited, through the Prolific interface, to participate in one of six surveys on the topic of "Improving Civil Discourse" (one survey corresponding to each of the six moral frame/message source combinations). We paid participants $2.00 for completing the survey. We deleted eight responses from participants who completed the survey in less than 2.5 minutes, the time cut-off determined through pilot testing. One additional response was deleted for complete lack of variability. Our total usable sample was, therefore, 631 (see Table 3). The average age of respondents was 36.6 years old. Our youngest respondent was 19 and our oldest was 77. There were 359 (57%) male respondents and 272 (43%) female respondents. The majority of our sample identified as White/European (78.8%). The remaining respondents identified as Asian (6.7%), Black/African (4%), Latino (3.8%), or Native American (1.4%), Middle Eastern (0.2%), or more than one race (4.6%).

5.4. Study 2 Results

5.4.1. MFQ and Political Orientation. We did a series of t-tests to detect differences in how Liberals and Conservatives scored on each of the five foundations. Our results strongly support the hypothesis that Liberals and Conservatives emphasize moral concerns in the predicted pattern. All t-tests were significant (p-values < .001 for each) with moderate to high effect sizes (Cohen's d between .48 and 1.46). These results are presented in Table 3.

Table 3. T-tests and effect sizes comparing the mean score of Liberals vs. Conservatives for each foundation. *(Note: based on the results of Levene's Tests for Equality of Variances, Welch's t-tests are reported for all foundations except for "in-group").*

Foundation	Political Orientation	Mean	SD	T-stat	DF	P-value	Cohen's d
Harm	Conservatives	4.37	1.02	-6.6	614.6	<.001	.53

		Mean	SD	t	df	p	d
	Liberals	4.86	.829				
Fairness	Conservatives	4.5	.850	-6.0	621.8	<.001	.48
	Liberals	4.9	.718				
In-group	Conservatives	4.0	.971	12.9	629	<.001	1.02
	Liberals	2.98	1.05				
Authority	Conservatives	4.3	.847	18.3	576.4	<.001	1.46
	Liberals	2.87	1.08				
Purity	Conservatives	4.2	1.15	12.5	606.6	<.001	1.00
	Liberals	2.97	1.31				

For the remainder of the analyses, we separated conservative participants to test our two hypotheses specific to those participants.[1]

5.4.2. Conservative Participants.

5.4.2.1. Support for transitioning away from fossil fuels. We conducted a one-way ANOVA to test the effects of the moral frame/message source combination on conservative participants' support for transitioning away from fossil fuels. The ANOVA was significant (F=2.535, df=5, 318 p=.029), indicating that at least one of the treatment conditions differed from one other. We followed the ANOVA with planned contrasts to compare the mean of each moral frame/message source combination to the L-frame/L-Source group. The planned contrasts supported H2.2 for this measure. We detected a significant difference in support between Conservatives in the C-frame/C-source condition compared to people in the L-frame/L-source group (t=2.801, df=318, p=.005). However, H2.3 was not supported. No difference was detected between participants in the C-frame/N-source condition and the L-frame/L-source group (t=1.387, df=318, p=.166). No other differences were detected between the L-frame, L-source group and any other group (Table 4).

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[1] This approach of isolating conservative participants offers a more direct test of our hypotheses and is in line with our research objective of focusing on responses of conservative participants, independent of Liberals.

Table 4: Means, standard deviations and planned contrasts for fossil fuel attitudes.

The top portion of the table shows the means and standard deviations of Conservatives' support for transitioning away from fossil fuels for each group. The bottom portion of the table shows the statistical results of the planned contrasts comparing the support of each group to the L-frame, L-source group.

Treatment	Conservative Message /Conservative Source	Conservative Message /Neutral Source	Conservative Message /Liberal Source	Liberal Message /Conservative Source	Liberal Message /Neutral Source	Liberal Message /Liberal Source
Mean	5.25	4.80	4.38	4.82	4.35	4.35
SD	1.52	1.48	1.75	1.71	1.90	1.80
Contrasts						
t-statistic	2.801	1.387	.119	1.491	-.002	Control Group
df	318	318	318	318	318	
p-value	.005**	.166	.905	.137	.998	

**p<.01 (compared to control)

5.4.2.2. Retrospective measure of change in support. We conducted a series of chi-square analyses to further test H2.2 and H2.3 regarding self-reported changes in support. In support of H2.2, Conservatives exposed to a conservative message from a conservative source were statistically more likely than Conservatives in the L-frame/L-source group to report being more likely to support the transition away from fossil fuels than before (χ^2=4.71, df=1, p=0.03). H2.3 was not supported for this measure: there was no statistically significant difference in responses for people who read the conservatively framed message from a nonpartisan source, compared to the L-frame/L-source group (χ^2=2.270, df= 1, p=0.132). As expected, no other treatment condition differed significantly from the L-frame/L-source group (see Table 5).

Table 5. Percentage of Conservatives in each treatment condition who responded "yes" and "no" to the question: "are you more likely to support the transition away from fossil fuels now than you were before?"

Treatment	Conservative Frame /Conservative Source	Conservative Frame /Neutral Source	Conservative Frame /Liberal Source	Liberal Frame /Conservative Source	Liberal Frame /Neutral Source	Liberal Frame /Liberal Source (comparison)
Response						
Yes	49%*	43%	28.8%	39.7%	42.3%	29%
No	51%*	57%	71.2%	60.3%	57.7%	71%

*p<.05 (compared to the comparison group (liberal frame/liberal source))

5.4.2.3. Taking action and interest in learning more. Neither H2.2 nor H2.3 was supported for the final two dependent variables (i.e., "interest in learning more" or "interest in taking action"). Chi-square analyses revealed no differences in how conservative participants responded on either measure between any of the treatment conditions and the comparison group.

5.4.3. Liberal Participants. A one-way ANOVA showed no statistically significant differences between treatment conditions in support for transitioning away from fossil fuels (F=.965, df=5, 300, p=.440). Further, chi-square analyses testing for differences between the treatment conditions and the comparison group on the three remaining dependent variables were all insignificant.

6. Discussion

While, overall, our results were mixed and should be considered preliminary, our overarching finding is that conservative moral framing is more effective at influencing responses of conservative participants than liberal framing, but only when combined with an ingroup source. This finding is somewhat inconsistent with previous research on moral framing of environmental issues (i.e. Feinberg & Willer 2013, Wolsko et al. 2016), which has found a significant effect of moral framing *alone* (i.e., without the additional influence of message source). Our results suggest that simply reframing an argument and issuing it through the same channels of communication, or using the same spokesperson may not be effective in all cases. Similarly, a typical liberally framed environmental message is unlikely to resonate with Conservatives even if it comes from a conservative source. Rather—at least in the context of impersonal written communication—both elements together may be necessary to be persuasive with a conservative audience.

The finding that the conservatively framed message is most effective when combined with a conservative source is consistent with the expansive literature showing the powerful influence of an ingroup message source in shaping how people respond to information (Kahan 2013, Hornsey et al. 2002, Cohen 2003, Esposo et al. 2013, Fielding & Hornsey 2016). Message source may have been particularly salient in our studies because of how we exposed participants to the source variable. In addition to the initial source manipulation where we told participants they were going to read a message from a conservative (or liberal, non-partisan) non-profit organization, we reminded them of the source of the message several times throughout the course of the survey. This repetition of our manipulation may have strengthened the effect of the source relative to the message frame.

More broadly, the political affiliation of the message source may be especially relevant for impersonal written communications, where the recipients of the message are not interacting personally with the communicator. Our findings thus may not extend to face-to-face interactions, which are influenced by other social factors. Face-to-face interactions generally provide more opportunities to find commonalities and shared experiences through two-way conversation. Research has shown that our neurological

responses to observing other people increase feelings of empathy and enable us to better understand their intentions (Iacoboni, Molnar-Szakacs, Gallese, Buccino, Mazziotta & Rizzolatti 2005, Fisher, Ury & Patton 2011). Face-to-face communication also facilitates reading and responding to nonverbal cues, allowing us to interpret the emotions and motivations of others (Nadler & Shestowsky 2006). Thus, we suspect the tendency to automatically reject information associated with an outgroup member might be somewhat alleviated when the communication takes place in person, particularly in moderated or facilitated dialogues (Coleman & Stern 2018). Reframing arguments in a way that aligns with the moral concerns of the message recipient may thus be an effective approach in this situation, even when the political orientation of the messenger and message recipient do not align. We urge further research to explore the effectiveness of moral framing in face-to-face interactions to reduce identity protective reasoning.

Though it influenced participants' responses in these studies, source alone was not strong enough to show an effect *regardless of message content*, as has been shown in previous studies (e.g. Cohen 2003, Mackie, Worth & Asuncion 1990). We believe this discrepancy from previous research can partially be explained by the moral framing of the message content. In contrast to messages containing purely factual or objective content, the moral framing of the message should itself serve as a type of ingroup/outgroup cue. The moral language embedded in the appeal should make the message as a whole feel intuitively more compatible (or incompatible) with the socially shared values of one's ingroup (Wolsko et al. 2016). In this way, we suspect that the frame served to confirm and strengthen the source effect when frame and source matched (i.e., both conservative or both liberal) and slightly reduced the source effect when the framing and source conflicted (e.g., liberal frame, conservative source).

Another potential explanation for why our findings were different from previous research in this regard could be related to our use of an unnamed (i.e., generic) non-profit organization as the source manipulation. This differs from some studies that named a more *specific* outgroup source, such as the name of a rival university (e.g. Mackie et al. 1990), or others that used an ingroup/outgroup source generally regarded by the public to be untrustworthy, such as politicians (Cohen 2003, Weingart & Guenther 2016). Naming a specific rival as the information source may conjure up stronger feelings or a stronger

urge to compete than a vague outgroup reference. Similarly, naming a specific known ingroup source could evoke stronger feelings of loyalty and trust. In terms of trust, public trust in the non-profit sector is higher than public trust in either government or media (2018 Edelman Trust Barometer). In one recent survey, scientific and educational organizations (which are generally non-profits), were rated as the most trusted sources of nature related information (Wilkins, Miller, Tilak & Schuster 2018). We can't say for sure how this influenced our findings, but together, these two features of our source manipulation (i.e., generic, but generally trusted) may have rendered the non-profit source overall less polarizing than other potential sources we could have used.

In terms of message frame, our finding that moral framing alone (independent of message source) was not effective at influencing the attitudes of conservative participants could partly be due to how we designed our messages. Our messages differed from those used in previous research (e.g. Feinberg & Willer 2013, Wolsko et al. 2016, Wolsko 2017, Kidwell et at. 2013) in at least two ways. First, we wrote the conservatively framed message with language intended to trigger all five moral foundations, rather than just a subset of the primary conservative foundations (ingroup, authority, and purity). Second, our message employed carefully tailored arguments geared toward a particular environmental issue (fossil fuels) rather than being an abstract announcement about environmental destruction or protection in general.

We propose that the first of these differences may partially account for the discrepancy in our findings. The five-foundation approach makes theoretical sense, as Conservatives stress all five foundations somewhat strongly (Graham et al. 2009, Haidt 2012). This facet of the theory was supported in both of our samples. However, it is possible that the references to harm and fairness we included in the conservative message were too reminiscent of the familiar liberal messaging associated with liberal values and politics. This subtle outgroup (i.e., liberal) association may have weakened the overall appeal such that it was only effective when combined with the extra ingroup reassurance of a conservative message source.

On the other hand, embedding all five foundations in the conservative message may have prevented the conservative moral language from alienating liberal participants. A few prior studies have found an alienating effect of moral framing, where some

measures of environmental attitudes and behaviors of liberal participants were significantly lower when they read a conservatively framed message than when they read the liberally framed message (e.g. Wolsko et al. 2016, Wolsko 2017). However, the conservative messages in these studies only used moral language related to the authority, ingroup and purity foundations, rather than all five of the foundations, as we did. While not the main focus of the message, the harm and fairness language should have still triggered the moral intuitions of Liberals — thereby influencing their response to the message — even if the references to authority, ingroup and purity did not feel morally relevant.

Liberal attitudes and behaviors may not have shifted in any case because of their initial strong agreement with the content of the message. These types of deeply ingrained attitudes are likely more stable regardless of the presence of identity-confirming or disconfirming cues embedded in communications. In either case, the fact that the conservatively framed message didn't *alienate* liberal participants in either study is a critical point. The finding of some previous studies that Liberals respond more negatively to conservative framing raises the question of whether conservative framing is an appropriate tool for bridging the partisan divide in environmental attitudes. If the goal of reframing communication is to alleviate the identity threat embedded in environmental messaging, appealing to one group at the expense of alienating another is not likely to be adequate long-term. However, our results suggest that a message that triggers each of the five foundations has the potential to speak to people across the political spectrum.

While the pattern of results was consistent across studies (i.e. the conservative moral frame/message source *combination* was key to speaking to conservative participants), we failed to replicate these results on a specific dependent variable. In the first study, our appeals had a significant effect on the "interest in learning more" variable. In the second study, the appeals had a significant effect on two different "support" variables. This discrepancy may in part be due to the age differences between our two samples. In general, research has found that younger people tend to hold more pro-environmental attitudes and beliefs and engage in pro-environmental behavior more than the general population (e.g. Dunlap et al. 2000, Casey and Scott 2006). The participants in our first study (i.e. university students) were, on average, 17 years younger than those

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in our second sample (approximately 19 years old vs. 37 years old). As a result, the university student sample may have been somewhat predisposed to be more open to learning about the issue than people in our older sample, and thus, easier to influence through an appeal. While this lack of replicability renders our findings somewhat inconclusive, we think that they provide general support for our hypotheses. Future research addressing these measurement issues will increase the confidence of our findings. We urge similar work using a wider variety of dependent variables.

7. Conclusion

Our messages were designed to explore ways of redefining the social meaning embedded in environmental discourse to increase the perceived compatibility between environmental concerns and a broader array of socially shared values. The finding that the conservatively framed message from the conservative source increased support for transitioning away from fossil fuels for conservative participants when compared to a traditional liberal message, suggests this approach was at least partially able to alleviate the automatic, defensive urge to reject pro-environmental information for identity protective purposes. From a practical perspective, we suggest that crafting environmental messages using language that triggers all five moral foundations and is issued through a trusted conservative communicator may be most effective for crossing the current partisan divide in the United States. Consistent tailoring of environmental communications in this way could gradually change the widespread perception that supporting an environmental cause betrays the ingroup values of Conservatives, or runs counter to the expression of their conservative identity. Future research can continue to explore the specific conditions under which this messaging approach has the most potential to effectively reach a politically diverse audience.

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Appendix A

Fossil Fuel Appeals

Conservative Appeal

Our energy system in the United States is unhealthy. Emissions from burning fossil fuels, like oil and coal, pollute our air and contaminate our water. This makes people sick and degrades our natural resources. While some of this energy is produced here in the United States, we still depend heavily on foreign imports from countries linked to extremist terrorism. Dependence on these corrupt regimes threatens our values and puts our national security at risk. We can create a safer and more independent America by beginning the transition to renewable energy sources, like wind and solar power. Many patriotic U.S. companies are developing ways of making renewable energy more efficient and affordable. They are creating thousands of jobs in the process. Unfortunately, foreign countries are beginning to outcompete us in these new markets. We can maintain our competitive advantage by encouraging our leaders to create policies that support these safer and healthier technologies.

America is built on the pillars of freedom and innovation. Working together, we can move away from our unhealthy dependence on fossil fuels. We can cut ties with terrorist nations and reclaim our rightful status as the proud and independent economic leader of the world. We can uphold our sacred duty of stewarding the earth and protect our children's health. Our country deserves affordable clean energy and the jobs that come with it. Continued reliance on fossil fuels weakens our economy, damages our health and, disrespects our natural heritage. The transition may take some time, but refusing to start is a betrayal to our country.

To start this transition, we should dedicate ourselves to helping our brothers and sisters in fossil fuel industries find better paying and safer jobs in green technology.

Liberal Appeal

Our energy system in the United States is a threat to both present and future generations. Fossil fuel emissions from oil and coal pollute our air and water, exposing all living things to harmful toxins and disrupting the balance of nature. While more sustainable alternatives, like solar and wind power, are both available and affordable unscrupulous policies are slowing the transition to these renewable energies. Corporations have been clinging to fossil fuels, because they have been able to profit by unfairly exploiting our environment. They exclusively reap the rewards while the rest of us suffer the consequences. Jobs in the fossil fuel industry are also dangerous and typically don't pay well. Transitioning to a green energy economy promises to create thousands of safer jobs with fair wages and will make us more competitive in the global market.

Working together, we can make the compassionate and equitable choice to transition away from our harmful dependence on fossil fuels. We can care for our natural environment and still secure the energy supply we need to thrive economically. We can innovate and create high quality, high-paying jobs to benefit more people and protect the most vulnerable among us who suffer most. Everyone deserves to live in a healthy community, and renewable energy is a clear path toward achieving this goal.

People who have always worked in the fossil fuel industry are worried about losing their livelihoods and way of life. We can protect their wellbeing by helping them transition to better paying and safer jobs in green technology.

Chapter 4

Understanding the Effects of Public vs. Private Self-Affirmations in Group Settings

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Abstract

In this paper, we experimentally test the effectiveness of two self-affirmation interventions that can be incorporated into collaborative meetings or workshops. We suggest that these interventions have the potential to alleviate identity threat and, as a result, help facilitate open-minded and productive debate of complex, value-laden issues. We crafted a one-page factual research digest about the importance of transitioning away from fossil fuels to present to political conservatives who had earlier expressed opposition to this transition. We tested how participants in small group settings responded to the message after a public or private self-affirmation intervention compared to a control group. We found no differences between treatment conditions on measures of openness to the issue of fossil fuels, or on attitudes and behaviors related to the issue. However, we did find some evidence suggesting that the public affirmation may decrease participants' receptiveness to engaging in a group discussion, compared to the private affirmation. We discuss potential explanations for this pattern of findings. These include the possibility that our message failed to trigger an identity threat in our college student sample and limitations in the design of our intervention.

1. Introduction

Due to the inherent complexity of environmentally related issues (Norton 2015), solutions to these problems are often controversial, value-laden and involve trade-offs that may seem to advantage some people over others. Multi-stakeholder collaboration—which brings together groups of people with different backgrounds, values, interests, concerns, and goals to solve problems— is frequently touted as the most promising way to address complex environmental issues (Innes & Booher 2004). Collaboration uses tools such as negotiation, discussion, and consensus-building. Collaboration aims for win-win solutions rather than resolutions that have clear winners and losers (Koontz & Johnson 2004). The potential advantages of collaboration include improving decisions by incorporating diverse sources of knowledge, identifying innovative, win-win solutions, increasing social learning and capacity among collaborative members, building networks, meeting democratic ideals by allowing people to have a say in decisions that affect them, and managing seemingly intractable conflicts (Beierle & Cayford 2002; Coleman & Stern 2018; Wondolleck & Yaffee 2000). Despite these advantages, a collaborative process involving multiple stakeholder groups, often with conflicting values, perspectives and priorities, can be plagued by entrenched animosity and gridlock that is difficult to overcome (Lewicki, Gray and Elliott 2003).

Several strategies for multi-stakeholder conflict management and productive problem solving are described in the natural resources collaboration literature. One common set of strategies involves building trust and cooperation through facilitated dialogue and perspective-taking, as well as simply providing opportunities for people to form relationships through continued contact (Wondolleck & Yaffee 2000, Innes & Booher 2004, Stern & Coleman 2015, Ross & Ward 2015, Gray 2003, 2004). In addition, reframing the discussion to focus on participants' underlying interests (i.e. needs, desires, and goals) rather than predetermined positions can help people find common ground and identify innovative solutions (Fisher, Ury & Patton 2011).

While these strategies are often effective, in most cases they can only work if the members of the collaborative group are willing to approach the process with an open

mind and willingness to let their guard down in order to listen to the perspective of the other side. This can be particularly challenging in entrenched conflicts when a stakeholder feels that their identity, or an important part of their self-concept, is threatened in the course of the dispute (Gray 2003, Putnam & Wondolleck 2003). When people identify with a group, such as a political party or environmental organization, they often adhere to the shared beliefs, values and behaviors of the group (Cohen and Aronson & Steele 2000). Beliefs and attitudes about environmental issues (such as those related to fossil fuel use), have been found to be particularly embedded with identity-relevant meanings, such that the position one holds on environmental issue can often be seen as an expression of political identity (with liberals generally holding pro-environmental positions and conservatives less supportive of those positions) (Kahan 2013, 2017).

When an aspect of a person's identity-defining beliefs is called into question in the course of a dispute, it creates an internal conflict for the individual. A typical response is to reject any new information that conflicts with their pre-existing beliefs in part to protect their relevant identity. This type of threat response is referred to as identity-protective reasoning (IPR). IPR is a form of biased information processing that allows individuals to selectively credit and dismiss information on the basis of how well it fits with their preconceived notions (Kahan 2017). This type of biased information processing creates barriers to considering different ideas and options, thus inhibiting opportunities for collaborative problem-solving. In this paper, we experimentally test the effectiveness of a tool— grounded in self-affirmation theory— that can be incorporated into collaborative processes to alleviate identity threat and, as a result, help facilitate open-minded and productive debate of complex, value-laden issues.

2. Theoretical Framework

The overarching assumption of self-affirmation theory is that people are strongly motivated to maintain self-integrity. In other words, people want to maintain the sense that, overall, they are worthy, competent and good-enough people (Cohen et al. 2000). Self-affirmation theory posits that when a person affirms their self-integrity in a domain of life separate from a challenged identity (e.g., they are reminded of their identity as a

mother during a dispute about endangered species protection), they are reminded that their self-worth doesn't depend solely on the outcome of the dispute, and they are less apt to respond defensively. In other words, self-affirmation bolsters self-assurance enough to allow people to think more openly about ideas they would have typically found threatening and, similarly, to think more critically about ideas they would have typically defended (Cohen 2012). Cohen (2012) argues, "by allaying self-protective needs, affirmation permits other motives-- such as motives for accuracy, objectivity, and self-improvement to predominate" (p. 394).

Self-affirmation works by reminding people of their broader values, such as care for family and friends, which helps to put the concern at hand into perspective, thus diminishing its importance in the big picture of things (Cohen 2012). Generally, self-affirmation interventions take the form of a written exercise. People are asked to write about a time they lived up to an important value unrelated to the issue at hand (Cohen & Sherman 2014) or to write about a recent success they are proud of (Cehajic-Clancy et al. 2011). At other times, people are simply given a list of positive characteristics and asked to mark the ones that describe them (Jessop et al. 2009), or, they are given positive feedback on a valued attribute (Cohen et al. 2000). All of these simple exercises can help people affirm their self-integrity in valued domain of life, thus reassuring them that their self-worth isn't hinged on a singular social identity that might feel threatened in a given situation (Cohen & Sherman 2014). In contrast, if a person self-affirms in the domain directly relevant to the threat, it can magnify the importance of that identity in the person's mind—narrowing rather than broadening their sources of self-integrity— thus leading them to feel more threatened and defensive as a result (Sherman & Cohen 2006). In other words for self-affirmations to be successful at decreasing ego-defensive responses, they should trigger thoughts about a domain unrelated to the issue at hand.

While much of the research on self-affirmation has taken place in the realm of education (Cohen et al. 2006, 2009) and health (e.g. Harris et al. 2007, Jessop et al. 2009, Sherman et al. 2000), there is also a small body of work applying the theory to issues of intergroup relationships and conflict (Cohen & Sherman 2014). Previous research has shown that, in a conflict situation, people who are self-affirmed are more open-minded toward information that conflicts with their predetermined positions (Cohen et al. 2000),

more flexible in negotiations with the other side (Cohen et al. 2007), more willing to admit to fault, and less rigidly partisan (Cohen & Sherman 2014, Cohen 2012).

For example, in one study (Cehajic-Clancy et al. 2011), the authors found that self-affirmed research participants were more likely than non-affirmed participants to acknowledge the wrongdoing of their group in the context of past moral transgressions committed against another group. Further, self-affirmed participants reported greater feelings of guilt for the role their group played in victimizing another group and were more supportive of taking action to repair some of the damage caused. Reaffirming self-integrity apparently decreased participants' need to engage in denial, justification or other identity-protective tactics, thus reducing the barriers to reconciliation. In negotiation, self-affirmation interventions have been found to increase participants' trust in negotiating partners and willingness to make concessions (Cohen et al. 2007). In another study, on the issue of partisan intransigence, self-affirmed political partisans exhibited more openness to differing viewpoints (evaluated by a "Closed-Mindedness" scale) and were less partisan in their support of the presidential candidates during the 2008 presidential election (Binning et al. 2010). Self-affirmation has also been shown to decrease instances of escalating commitment— or allocating more and more resources to a failed goal rather than considering different options— in decision-making contexts (Sivanathan et al. 2008).

These examples speak to the potential for self-affirmation to decrease defensive information processing and increase openness to differing points of view in intergroup conflict situations. Self-affirmations remind participants that much of their self-worth lies outside the domain of the argument, helping them cope more adaptively with perceived identity threats. In this study, we explore an expanded potential for the use of self-affirmation in intergroup settings, particularly in multi-stakeholder collaborative efforts to address environmental problems.

3. Current Research

We examined the effects of self-affirmation interventions on how people responded to a counter-attitudinal environmental message in group settings. Because the

position one holds on environmental issues often has implications for social identity (Kahan 2013, 2017), a message countering the accepted position of one's ingroup can be interpreted as a threat to that identity. We crafted a one-page factual research digest about the importance of transitioning away from fossil fuels to present to political conservatives who had earlier expressed opposition to this transition. We also embedded an identity cue into the message (i.e., we reminded participants that conservatives generally oppose the transition away from fossil fuels while liberals generally support it) to ensure that the identity-relevant implications of the message were salient. We tested whether people who initially opposed the transition away from fossil fuels would respond more openly to the message after one of two self-affirmation interventions compared to those who did not self-affirm.

Traditional approaches to self-affirmation generally involve having a person rank a list of values and write an essay about why their top value is important to them, or about a time in which they lived up to that value (McQueen & Klein 2006). While this approach has often been found to be effective, it can be time-consuming and may feel tedious for people who don't understand why it is an efficient use of meeting time. We created a short intervention that would emulate an introductory or icebreaker activity often done at the start of meetings. These activities are typically used to help people get to know each other better and create a more cohesive group (Chlup & Collins 2010). We were interested in understanding if, when designed appropriately, these types of activities can be self-affirming. If so, they should serve to not only increase group cohesiveness but also decrease defensive information processing among group members. We tested a private and a public version of this intervention. We wanted to know 1) how both public and private self-affirmations would influence openness to a counter-attitudinal message among participants in small group settings and, 2) if public affirmations would be as effective as private affirmations in terms of increasing participants' openness to the message.

3.1 Public vs. Private Affirmations:

As described above, the self-affirmation literature argues that self-affirming is effective in large part because it serves to remind the individual that their worth as a

person does not depend on the identity implicated in the issue at hand but is rather much broader. Once remembered, the issue-relevant information becomes less threatening to the person's sense of self-integrity, and they are able to respond more openly (Sherman & Cohen 2006). This aspect of self-affirmation should remain the same whether it is done privately, or publicly. In each case, the participant is reaffirming their self-worth in a way that is unrelated to why they are present at the meeting. However, self-affirmation research has focused primarily on the *intrapersonal* effects of a private affirmation. Affirming in public adds an explicit *interpersonal* element that could potentially change whether the affirmation serves to bolster a sense of self-worth.

The literature on self-disclosure and social comparison can help us understand what we should expect to see from a public self-affirmation. A self-disclosure is defined as "the act of revealing personal information about oneself" (Collins & Miller 1994, p. 457). Using this definition, public affirmations could be considered a type of disclosure: a person is exposing something personal that would otherwise be kept private. The literature reveals both and drawbacks to this type of personal disclosure. The benefits include improving relationships by increasing levels of trust, liking, and cohesion between people and groups (Collins & Miller 1994, Dumas et al. 2008). This observation is in line with the collaboration and negotiation literature, where many authors suggest that exposing underlying values and certain types of disclosure can help people relate to each other and build trust (e.g. Dukes et al. 2008, Fisher & Shapiro 2005, Fisher et al. 2011). In this respect, we would expect an added benefit from a public affirmation. Not only might people be less defensive because their own self-worth has been affirmed, but they also might feel more connected to the people in the room and potentially more willing to let their guard down.

On the negative side, self-disclosures can fail to increase feelings of cohesiveness if they are poorly received or misunderstood by the listeners (Dumas et al. 2008). If the individual perceives that other people in the group respond judgmentally or ambivalently to their personal story, it is not likely to be self-affirming. This type of response could even increase defensiveness if the person feels more self-conscious as a result. In a similar vein, social comparison theory suggests that people have a tendency to compare themselves to others and use this information in self-evaluative ways (Fisk 2014). Thus,

if people negatively evaluate themselves in comparison to the self-affirming words other people share, we hypothesize that they are not likely to feel self-affirmed. Further, there is evidence that disclosing in more public settings (such as in front of a camera) can lead to heightened self-awareness. This can lead people to become more concerned about how they are being perceived by others (Collins & Miller 1994). In this situation, there is the potential for people to use the opportunity for strategic behavior instead of an honest reflection on their important values. This could render the affirmation less effective, particularly if they try to portray themselves in a way that they think will put them at an advantage in a debate.

3.2 Hypotheses

Given this understanding, we proposed the following hypotheses:

H1: Both private and public affirmation manipulations will increase openness to the counter-attitudinal message compared to the control group.

H2: The public affirmations will have a similar effect to the private affirmations, but, only when participants perceive that the group has responded positively to what they shared.

4. Methods

4.1 Participants and Procedure

We invited opponents of transitioning away from fossil fuels to participate in this study. We pre-screened potential participants, students at XX University (removed for review), with a single item measuring the degree to which they agree or disagree with the following statement: The United States should transition away from fossil fuel use as soon as possible (1 =strongly disagree, 4 = neutral and 7 = strongly agree). People who scored below the neutral point on this measure (3 or below) were invited to participate in this study. While we didn't specifically recruit based on student's political orientation, we expected the majority of the people we recruited to lean conservative, with a few

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moderates. A prior study with a similar population (Hurst & Stern, in review) found that the vast majority (83%) of those disagreeing with the statement leaned conservative (with 8% leaning liberal). All participants received extra credit as compensation for participating. They were also entered into a drawing to win up to $50 in the form of an Amazon gift card (5% chance of winning) and were given $2 in cash, which they could choose to keep or donate to a non-profit organization.

Pre-screened participants who signed up to take part in our study were randomly assigned to one of three conditions, each facilitated by the lead author in a conference room on campus. The facilitator introduced the study as a research project about how people engage in discussions of controversial issues and told participants that it would involve reading and having a short group discussion about the issue of fossil fuels and renewable energy. After all participants read and signed the consent form, the facilitator asked them to introduce themselves by saying their name and then led them through the affirmation intervention (in the two treatment conditions). In general, we expected that most participants would not know each other as we were sampling from various departments and classes across the university (but, we included a question on the survey to ensure this was the case). Participants in all groups were then told that in order to prepare for the discussion they would read a one-page research digest about fossil fuels and then complete a short survey responding to what they read. The facilitator then handed out the surveys, which included a one-page facts-based message about fossil fuels followed by the survey instrument. No discussion actually took place. After reading the message and completing the survey, participants were verbally debriefed and provided with a more detailed debriefing letter. Participants who chose to keep their $2 payment were given their money along with the debriefing letter. Group sizes ranged from 3 to 8 participants.

4.2 Experimental Conditions

4.2.1 Private Affirmation. After participants said their name, the facilitator asked them to take a few minutes to think about how their family or close friends would describe them. They were asked to choose three words that they thought these people would use to

describe them that made them feel the best about themselves. They were asked to write those words down on a notecard that was provided for them. Participants were told that the words would be collected at the end, but that they wouldn't share them with the group. After all participants were finished writing their words, the facilitator handed out the surveys and proceeded with the experiment.

4.2.2 Public Affirmation. The public affirmation condition followed the same format as the private affirmation condition except that students were asked to share their words with the group after writing them down on their notecard. Once all participants shared their words, the facilitator handed out the surveys and proceeded with the experiment.

4.2.3 Control Condition. After introducing themselves (as described above), the facilitator handed out the surveys and proceeded with the experiment. No self-affirmation exercise took place.

4.3 Measured Variables

4.3.1 Dependent Variables. We included several dependent variables to measure attitudes, behavior, openness to the message, and openness to engaging in group discussion. Specifically, our dependent measures included: 1) Support for fossil fuel use (Support). This variable was measured with a single item on a 7-point scale: To what extent do you agree or disagree with the following statement? The United States should transition away from fossil fuels as soon as possible. 2) Interest in learning more (Learn). This variable was measured by asking participants if they would like to be provided with website links to learn more about the issue of fossil fuel use and the transition to clean energy. The response options were: 1) "Yes, send me links!" 2) "No, I am not interested," and 3) "I plan to study this on my own." Those who requested links or reported plans for self-study were coded as 1; others were coded as 0. 3) Taking action (Action). Participants were asked to choose between keeping the $2 for themselves or donating it to the environmental organization. This item was measured by participants' decision to donate their $2 payment to the Environmental and Energy Study Institute, an

organization dedicated to supporting and facilitating the clean energy transition. 4) Retrospective measure of change (Change). We asked participants: "How much, if at all, did the message affect your attitudes toward fossil fuel use?" The 7-point scale had three anchors: 1 (I am now much more opposed to fossil fuel use), 4 (no change), and 7 (I am now much more in favor of fossil fuel use) (adapted from Cohen et al. 2000). 5) Openness to the message (Open). This is a five-item scale that includes measures of how *reasonable*, *informed*, *biased*, *objective*, and *intelligent* they perceived the author of the message to be on 7-point scales. Items were averaged to create a single index (with the bias-related item reverse coded) (Cronbach's alpha = .722) (Cohen et al. 2000). Two measures were included to assess participants' responses to the message itself. These included: 6) threat ("the digest felt threatening to me") (threat) and, 7) the extent to which the digest helped the participants consider new ideas (consider). The final three items were related to the upcoming discussion participants were expecting to engage in. Specifically, we asked participants to indicate their agreement with the statements: 8) "I think I will benefit from hearing the perspectives of other students in this group" (benefit), 9) "I am not interested in hearing the perspectives of other students in this group" (non-interested), and 10) I am open to modifying my views on fossil fuels and renewable energy" (modify).

4.3.2 Other Measured Variables: 1) Political orientation. On a 9-point scale, we asked participants where they would place themselves along the political spectrum (from 1=extremely conservative to 9=extremely liberal). 2) Prior knowledge. This is a self-identified measure of a respondent's degree of prior knowledge about fossil fuels and clean energy on 7-point scale. 3) Salience of the issue, measured on a 7-point scale: "Prior to coming here, how much did you think about the issues of fossil fuels and renewable energy?"(1= not at all, 7=a great deal) 4) Self-affirmation manipulation check. To assess whether or not the self-affirmation served to bolster feelings of self-worth, we included one item to measure overall self-feelings. Specifically, we asked the extent to which people agreed with the statement: "I feel relatively good about myself right now." Further, we hypothesized that the public self-affirmation would only be effective if participants perceived that the words they shared were well-received by the group. Thus,

in the public affirmation group, we asked participants the extent to which they agreed that other members of the group responded well to the words they shared. Both of these items were measured on 7-point scales.

5. Results

5.1 Sample

We recruited a total of 88 undergraduate students to participate in this research. All participants were recruited either from an introductory economics course or from the research participation systems through the departments of Psychology and Communications. Because it was important to the study design that the message be counter-attitudinal, we removed 3 respondents who scored very high (a 6 or 7) on the scale measuring support for transitioning away from fossil fuels but indicated that their attitudes about fossil fuels had not changed. Further, because we embedded what we presumed to be an outgroup cue into the messages (described in section 3), we also removed seven participants who self-identified as liberal (i.e., scoring a 7 or above on the 9-point political orientation scale). Rather than increasing identity threat, the partisan cue in the messages was likely to be identity-affirming for liberals, and we would expect them to respond positively to it across all conditions. This left us with a total of 78 participants across the three groups (24 people in the public affirmation condition, 27 in the private affirmation condition, and 27 in the control condition). Our sample was 56% male, and 83% self- identified as White.

5.2 Manipulation Checks

We asked participants to rate how good they were feeling about themselves on a scale of 1 to 7. If the manipulations were effective at increasing feelings of global self-worth, we would expect the score on this scale to be higher in the two self-affirmation conditions than in the control group. Students responded positively to this measure across

all experimental groups (m= 5.82, sd=.849). A one-way ANOVA showed no group differences (F=2.012, df=2,75, p=.141). This suggests either that our simplified versions of self-affirmations interventions did not work, or that our one item measure was not sensitive enough to detect any meaningful differences between groups. This could particularly be the case because of the relatively low sample size.

We hypothesized that people in the public affirmation condition would only feel self-affirmed if they perceived that others in the group responded well to what they shared. To measure this, we asked respondents in the public affirmation group if they felt that people responded well to the words they shared with the group. The mean for this measure was 5.0 (on a 7-point scale). This measure was intended as a follow-up to our manipulation check in the case that the public-affirmation intervention was either more or less effective than the private affirmation.

5.3 Measures of Knowledge and Salience

On average, the issue of fossil fuel use was of moderately low salience for the students in our sample (m=3.65 on a 7-point scale). Similarly, students reported being on average only moderately knowledgeable about the issue (m=4.18). No differences were detected between treatment conditions on either measures of knowledge (F=1.228, df= 2, 75, p= .299) or salience (F=.805, df= 2, 75, p= .451).

5.4 Dependent Variables

We used one-way ANOVAs to compare dependent variables measured on seven-point scales across the three conditions. The results are presented in Table 1. The only two variables that showed either significant or marginally differences between groups were the two variables measuring interest in engaging in the discussion with other members of the group (Benefit: F= 3.630, df= 2,75, p= .031, Not Interested: F= 2.696, df= 2, 75, p= .074). Tukey's post-hoc tests revealed that these differences were due to participants responding significantly more positively on both measures in the private affirmation condition than in the public affirmation condition (p=.024 and .072 for Benefit and Not interested, respectively). The Cohen's D effect size measures comparing

the public and private affirmation conditions on these variables were .77 for Benefit and .58 for Not Interested, indicating moderate to large effects.

Table 1: *The means and standard deviations of each treatment condition and the F-statistic, degrees of freedom and p-values of one-way ANOVAS (testing for significant differences in the means across the three treatments for each variable).*

Variable Name	Grand Mean (SD)	Mean (SD) Private	Mean (SD) Public	Mean (SD) Control	F	DF	P-value
Support	4.21 (1.51)	4.04 (1.65)	3.96 (1.30)	4.59 (1.50)	1.398	2, 75	.254
Change	3.64 (1.08)	3.41 (1.05)	3.63 (.875)	3.89 (1.25)	1.356	2, 75	.264
Open	5.22 (.835)	5.30 (.948)	5.18 (.715)	5.17 (.837)	.202	2, 75	.817
Consider	4.21 (1.54)	4.11 (1.58)	4.33 (1.60)	4.19 (1.49)	.133	2, 75	.876
Threat	2.15 (1.51)	1.93 (1.27)	2.38 (1.53)	2.19 (1.73)	.562	2, 75	.572
Benefit	5.50 (1.16)	5.89 (1.05)	5.04 (1.16)	5.25 (1.16)	3.630	2, 75	.031
Not Interested	1.97 (1.29)	1.67 (.961)	2.46 (1.67)	1.85 (1.01)	2.696	2, 75	.074
Modify	5.38 (1.13)	5.33 (1.04)	5.29 (1.12)	5.52 (1.25)	.293	2, 75	.747

We conducted chi-square analyses to test for significant differences between groups on the two categorical dependent variables (Interest and Action). No statistically significant differences were found for either variable. These results are presented in Tables 2 and 3.

Table 2: *Results of Chi-square test comparing the number of people who reported being open to learning more about the issue across groups along with the number of responses and percentages in each category.*
Variable: Learn

	Private	Public	Control	χ^2	df	p-value
Yes	16	12	13	3.291	2	.193
	70%	50%	48%			
No	7	12	14			
	30%	50%	52%			

Table 3: *Results of Chi-square test comparing the number of people who donated to the non-profit organization across groups along with the number of responses and percentages in each category.*
Variable: Donate

	Private	Public	Control	χ^2	df	p-value
Yes	16	29	18	1.02	2	.600
	70.4%	79.2%	66.7%			
No	7	5	9			
	29.6%	20.8%	33.3%			

6. Discussion

Across all groups, the students responded somewhat positively to the counter-attitudinal message about fossil fuels, with an overall increase in support for transitioning away from fossil fuels on average when compared to pre-experiment survey scores. Further, the grand mean of "openness" was 5.3 on a 7-point scale and the mean of "threat" was low (2.15 on a 7-point scale), suggesting that most students did not feel threatened by the counter-attitudinal message and were not automatically dismissing the information as wrong or biased. We found no evidence that either the public or private affirmation increased openness to the message in small group settings compared to the control group. We suggest two plausible explanations for these findings. The first is that, despite our efforts to only recruit participants who were opposed to the transition away from fossil fuels (thus ensuring that the message is counter-attitudinal), the issue was simply not salient enough to the lives of the students for it to have real implications for their identity. Thus, reading about the benefits and importance of transitioning away from fossil fuels may not have triggered an identity threat, even with the ingroup/outgroup cue embedded in the message. Second, it is possible that our attempt to simplify the affirmation intervention to fit more easily into a multi-stakeholder setting was too open-ended to be consistently effective. We discuss each of these possibilities below.

Our findings suggest that it may not be appropriate to assume that simply because an environmental issue is counter-attitudinal, it must also have implications for identity.

In our sample, in particular, the issue of fossil fuels and renewable energy was not a highly salient issue for participants (the mean salience score was only 3.66 on a 7-point scale). It seems plausible, therefore, that the counter-attitudinal fossil fuels message failed to trigger defensive responses in students. If an identity threat wasn't present, we wouldn't expect the self-affirmation interventions to increase openness to the message compared to the control group (Sherman & Cohen 2014). Instead, we would expect to see no difference in openness to the message across conditions (as we observed), or in some cases even increased resistance to openness in the affirmation conditions due to greater confidence in pre-existing views (Brinol 2007).

The second reason our interventions were not effective may relate to the manipulations themselves. A self-affirmation has been defined broadly as any "act that demonstrates one's adequacy" (Cohen & Sherman 2014, p.337). Given this definition, we would expect there to be numerous and diverse ways for a person to self-affirm. And, overall, the literature supports this idea (Cohen & Sherman 2014, McQueen & Klein 2006). Caveats in the literature mainly revolve around the importance of self-affirming in a domain separate from the issue at hand, and in domains that do not focus a person's attention on self-centered values, such as power or on "conditional" values that rely on standards external to the self, such as approval of others (Cohen & Sherman 2014). Rather than providing individuals with a list of predetermined characteristics to choose from (e.g., Jessop et al., 2009), we allowed participants to come up with their own self-affirming words. We were thus unable to control whether students self-affirmed in a domain that fell under one of the caveats described above, or in another domain that may otherwise not have the desired self-affirming effects in this context. In retrospect, providing students with a list of values known to be effective domains for affirmation (e.g., compassion or family), could have provided a much cleaner manipulation.

The public affirmation treatment was a novel application of the theory. We found evidence that sharing valued personal characteristics with a group of strangers may actually be counterproductive in group discussion setting. Specifically, the people in the public affirmation condition were less receptive to engaging in a discussion about fossil fuels than people in the private affirmation condition. This relationship was statistically significant with a relatively large effect size (p=.024 and, Cohen's D= .77) for one of the

two variables measuring receptiveness to engaging with the group (Benefit), and marginally significant with a moderate effect size (p=.072, and Cohen's D=.58) for the other (Not Interested). The literature on self-disclosure suggests that self-disclosures generally help to strengthen relationships (e.g., increasing liking, trust, and cohesiveness) except in situations where the disclosure was received poorly by others, when people engage in downward comparisons, or when people self-disclose in states of heightened self-awareness (Dumas 2008, Collins & Miller 1994).

Overall, people responded positively when asked if they felt people responded well to the words they shared (m=5 on a 7-point scale). However, this item had several missing responses, suggesting that students didn't understand the question and rendering the responses difficult to interpret. No one in the public affirmation group received negative feedback from other members of the group. However, none received self-affirming feedback. This lack of clear feedback may have heightened feelings of uncertainty and self-consciousness, thus decreasing the likelihood that the exercise increased feelings of global self-worth.[2] Further, disclosing personal characteristics in front of a group of strangers may have elicited "heightened self-awareness." Some research has pointed to a relationship between self-disclosing under situations of heightened self-awareness (e.g., while being recorded) and negative self-feelings (Collins & Miller 1994). Because of our small sample size and the marginal significance of one of the two variables, the findings are inconclusive. However, they suggest interesting avenues for future research. Future attempts at studying public affirmations can compare interventions such as the one used in this study with other public affirmation techniques that build in opportunities for participants to receive affirming feedback from the group in response to their self-disclosure.

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[2] Students went around the room and shared their words without receiving any feedback at all from the other members of the group, other than presumably subtle non-verbal communication in some cases (although this was not systematically observed or measured).

7. Conclusion

We examined the effects of a simplified private and public self-affirmation intervention on how people responded to a counter-attitudinal environmental message in a group setting. We did not find any evidence that either affirmation was more effective at increasing openness to the message than the control group in a college student sample. We found limited evidence that the public affirmation may have led people to be less willing to engage in a group discussion on the issue. However, these results are inconclusive. And, due to our small sample size, we were perhaps limited in our ability to detect clearer patterns in the data. We suggest that our interventions may not have been effective because the issue was generally not salient enough in the lives of students for it to have implications for their identity. Further, our simplified manipulations may have been too open-ended to be consistently self-affirming. Future research testing these ideas would ideally take place in a field setting, such as an actual collaborative process or facilitated workshop. Field-based settings represent more realistic group environments, where people arrive ready to engage on a particular topic (in contrast to contrived laboratory groups, where students may have only showed up to receive extra credit). In field settings, participants will be more likely to be deeply invested in the issue at hand. Thus, identity-protective reasoning is more likely to be standing in the way of open engagement with the issue.

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Chapter 5

Conclusion

Summary

Throughout this dissertation, I explored strategies for alleviating identity-related barriers to intergroup cooperation based on self-affirmation theory and moral foundations theory. In chapter 1, I outlined two sets of social-psychological phenomena that create barriers to intergroup cooperation across many issues, including environmental conflict: biased information processing and incompatible value systems. These phenomena are intertwined with one's identity and standing as a member of a group and are often triggered in service of protecting those identities. I then introduced two theoretical lenses, each offering insights for how these biases can be alleviated: self-affirmation theory and moral foundations theory.

In Chapter 2, I (and my coauthors) articulated how strategies based on these theories can be applied in conservation and natural resource practice to alleviate cognitive barriers to intergroup problem-solving. Specifically, we argued that incorporating self-affirmation exercises into collaborative meetings or workshops can potentially alleviate identity threats and associated defensive information processing. Giving people a chance to self-affirm prior to discussing a contested issue allows them to decouple their self-worth from the issue at hand, thus increasing their openness to alternate points of view. Further, moral foundations theory provides a guide to help us reframe our arguments in a way that is less likely to trigger identity threats in others. We also argued that facilitated dialogue guided by moral foundations theory can be used to both articulate the morality embedded in the arguments of the other side and expose areas of moral common ground.

Chapter 3 explored the potential for morally framed environmental messages to better resonate with a politically diverse audience than traditional environmental messaging. We wrote two messages, one framed using language and arguments that are compatible with the shared moral systems of conservatives and the other using language

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and arguments that are compatible with liberal moral systems. In two experiments, we asked political partisans to read one of the messages from a conservative, neutral or liberal message source. We found evidence that conservative participants responded most positively to a message that combined conservative moral framing with a conservative source. Further, we found no evidence that this moral frame message and source combination alienated liberal participants, suggesting that this approach to tailoring messages could help to reduce the intergroup polarization surrounding environmental issues.

Finally, Chapter 4 was an initial empirical test of self-affirmation theory in group settings. We tested a private and public version of a simplified self-affirmation intervention. We compared how people responded to a counter-attitudinal message about transitioning away from fossil fuels when they received one of the interventions to a control group. Our results did not reveal statistically significant differences in how people responded across groups. However, we did find some initial evidence that people in the public affirmation condition were less receptive to engaging in a discussion with the group. We discussed possible explanations for this pattern of results.

Implications and Avenues for Future Research

Taken together, this research presents a number of theoretical and practical implications and suggests several promising avenues for future research. In chapter 3, our findings generally support the hypothesis that moral framing can be used to communicate more effectively with politically diverse audiences. We are not the first researchers to propose or test this hypothesis (e.g., Feinberg & Willer 2013, Wolsko et al. 2016, Wolsko 2017). However, to our knowledge, we are the first to test the effectiveness of moral framing in combination with an explicit message source manipulation. Combining moral framing with message source offers new insight for both theory and practice in terms of how the two elements of communication work together to influence message response.

Understanding how moral framing works in combination with message source is important for two reasons. First, taken outside of the laboratory or controlled environment, it becomes quite unlikely that messages, particularly those related to social or political issues, will be received by the public unattached to any real or perceived

source. Second, because of the robust body of research showing how powerful message source can be in shaping how people respond to information, oftentimes regardless of the content of the message (e.g., Hornsey et al. 2002, Cohen 2003, Esposo et al. 2013, Fielding & Hornsey 2016), it becomes critical to determine whether message source completely overrides, or works in conjunction with, the effects of moral framing. We found that, contrary to the research that found source effects regardless of message content, the framing and source worked together to influence the responses of conservative participants.

These initial experimental results are intriguing, but far from robust. Strengthening our conclusions calls for both more controlled experimental studies as well as studies that test the lab results in real-world settings. The first step of this extended research agenda is already underway. Specifically, we are conducting a third follow-up experiment to try to replicate the findings of studies 1 and 2 on a new sample of conservative participants. We have refined and strengthened the study design and measures in a number of ways with the hope of identifying a consistent pattern, across three experiments, in how conservative participants respond to the moral frame/message source combinations. First, to allow us to focus solely on participants of greatest interest (i.e., conservatives) and the treatment combinations that seem most promising, we removed all liberals from the study and the two neutral source treatment conditions. In addition, we refined our dependent variables with the goal of creating variables that are more sensitive to capturing variability in how conservatives respond to the message. These include measures of concern, behavioral intentions, a retrospective measure of change, measures of openness, and perceptions of ingroup source (e.g., the author of the message was someone like me).

In terms of testing the messages outside of a controlled setting, there are a number of reasons why we would suspect inconsistencies in how people respond to message in "real life." Kahan and Carpenter (2017) have argued that the focus of scientific experiments on the topic of science communications has largely taken place in laboratory settings, which could be a key reason the knowledge from this body of research has largely failed to produce meaningful change when applied outside the lab. There is a need for the insights gained from these studies to be tested in field settings to understand

which the techniques that were effective in the lab will be effective in the real world under various conditions.

Factors unique to the local setting and other complexities that are controlled in the lab will influence how people perceive and respond to messages in the field. For example, and as we discussed in Chapter 3, outside of the lab, the "source" is likely to be a specific media source or organization that is connected to the message, rather than a generic or unnamed outgroup source. When a message comes from a particular named organization, the credibility of the organization and the trust people have in it are tied to its unique history, reputation, transparency, and involvement with specific issues (National Academies of Sciences, 2017). Thus, certain non-profit organizations in the real world will necessarily be more polarizing than others, regardless of which political group it is affiliated with. In addition, in the context of face-to-face communication, factors such as personal relationships and interpersonal approach may trigger identity threats despite attempts at reframing the message.

Further, in a lab setting, participants are incentivized to read and respond, at least somewhat thoughtfully, to the tailored messages provided. However, outside of the lab, it becomes far less likely that any message, however framed or sourced, will be attended to at all. Issues related to exposure in a saturated information environment, and combating a range of misinformation campaigns among other issues, create complexity in how the message will be received, understood and responded to by individuals and groups (National Academy of Sciences 2017, Kahan & Carpenter 2017). On the other hand, issue salience, which is difficult to manipulate in the lab, may be inherent to some field settings (e.g., workshops and meetings focused on the issue), thus simplifying some aspects of experimenting with communicative framing. Testing the messages in field settings—in collaboration with communications professionals—would allow for a more complete picture of the efficacy of this approach to environmental communications, given the various considerations and complications described above.

In terms of self-affirmation theory, we found a small amount of initial evidence for the idea that public-affirmations (which emulate common icebreaker activities) can sometimes reduce participants' receptiveness to engaging in a discussion with the group. While much more research is required to determine the extent to which this is a robust

finding (and under what conditions), it does raise interesting questions about the assumptions underlying the practice of these types of activities. For example, icebreaker activities, in general, are assumed to benefit group cohesiveness by reducing inhibitions and building trust and openness among the group (Chlup & Collins 2010). Our initial results suggest that this may not always be the case. In some situations, it may be more effective to allow people to reflect on something self-affirming in private, rather than compelling them to disclose anything to the group before they feel comfortable.

Finally, the results from Chapter 4 allow us to pose and begin to explore several questions related to the integration of self-affirmation and moral foundations theory. When given an unrestricted self-affirmation prompt, in which moral domains do people self-affirm and what difference does it make on subsequent openness to counter-attitudinal information? Are there other specific patterns in how people self-affirm (e.g., communitarian vs. individualistic), and if so, are these patterns related to openness in any meaningful way?

While the initial analysis looking into these questions is still underway (using data collected in the study described in Chapter 4), preliminary observations show a common pattern of students self-affirming in the care/harm domain. Specifically, when asked to think about the personal characteristics that make them feel the best about themselves, 43% of students chose at least one word grounded in this domain. The next step in this analysis will be to see if there is a relationship between affirming in this moral domain and openness to the message. There is a small amount of self-affirmation literature that suggests that affirming in a domain related to moral issues can actually lead people to act *less* morally in that domain. This is presumably because morally-affirmed people feel more secure in their own morality and, thus, feel less of a need to prove themselves through their moral actions (Sherman & Cohen 2006). To my knowledge, there is no clear guidance in the literature on how affirming in a specific moral domain relates to openness to new and/or counterattitudinal points of view. The exploratory analysis of the self-affirming words used by students in Chapter 4, combined with future research, can identify and test a set of values (potentially grounded in moral foundations) that both seem to be broadly appealing to people (i.e., people spontaneously choose these domains in unrestricted exercises like the ones we tested) and are likely most effective in the

context of multi-stakeholder collaborations. In addition, research can test the efficacy of such guided approaches, in which participants self-affirm in one of a few domains selected by the facilitator, compared to the more open-ended approaches like we used in Chapter 4.

Both self-affirmation and moral foundations theory offer techniques, supported by growing bodies of empirical evidence, for reducing or avoiding identity-defensive responses in a variety of contexts. Throughout this dissertation, I have empirically tested approaches grounded in each of these theories separately. The previous paragraphs are an attempt to understand how insights from the two theories can be integrated into a more comprehensive approach to reducing cognitive barriers to intergroup problem-solving. More broadly, this work has suggested many intriguing questions and opened up many promising avenues for future work building on these ideas.

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Appendix B

IRB Approval Letters
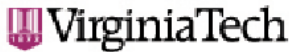
VirginiaTech

MEMORANDUM

DATE: October 2, 2017

TO: Marc J Stern, Kristin Frances Hurst

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)

PROTOCOL TITLE: Applying a Social Identity Perspective to Improve the Effectiveness of Environmental Communication

IRB NUMBER: 17-861

Effective October 2, 2017, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

http://www.irb.vt.edu/pages/responsibilities.htm

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As: **Expedited, under 45 CFR 46.110 category(ies) 5,7**
Protocol Approval Date: **October 2, 2017**
Protocol Expiration Date: **October 1, 2018**
Continuing Review Due Date*: **September 17, 2018**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Invent the Future

MEMORANDUM

DATE: March 8, 2018

TO: Marc J Stern, Kristin Frances Hurst

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)

PROTOCOL TITLE: Applying a Social Identity Perspective to Improve the Effectiveness of Environmental Communication

IRB NUMBER: 17-861

Effective March 8, 2018, the Virginia Tech Institution Review Board (IRB) approved the Amendment request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

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The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Invent the Future

Investigator Name: John C. Tedesco, PhD	**Board Action Date:** 06/27/2018
Investigator Address: 115 Shanks Hall (0311), 181 Turner St. NW Blacksburgh, VA 24060, United States	**Approval Expires:** 06/27/2019 **Continuing Review Frequency:** Annually
Sponsor: Virginia Tech	**Sponsor Protocol Number:** 18-334
Institution Tracking Number:	**Amended Sponsor Protocol Number:**
Study Number: 1186405	**IRB Tracking Number:** 20181265
Work Order Number: 1-1087001-1	**Panel:** 1
Protocol Title: Message Appeals and Media	

THE FOLLOWING ITEMS ARE APPROVED:
Investigator
Advertisement - Recruitment Announcement - The purpose of this study #17799017.0 - As Submitted
Advertisement - Website - Transportation 2050 - More EVs, but #17841569.0 - As Submitted
Pre-Test and Post-Test Questions #17799019.0 - As Submitted
Protocol
Survey Packet - Improving Public Discussion of Controversial Issues - Debating Fossil Fuels and Clean Energy
#17799014.0 - As Submitted
Consent Form - Condition 1 - Control Group [IN0]
Consent Form - Condition 1 - Self-Affirmation Group [IN0]
Debriefing Statement #17799016.0 - As Submitted
Pre-Screening - Message Appeals and Media #17865680.0 - As Submitted

Please note the following information:
The Board found that this research meets the requirements for a waiver of documentation of consent under 45 CFR
46.117(c)(2)

THE IRB HAS APPROVED THE FOLLOWING LOCATIONS TO BE USED IN THE RESEARCH:
Virginia Tech, 181 Turner Street NW, Blacksburg, Virginia 24060

ALL IRB APPROVED INVESTIGATORS MUST COMPLY WITH THE FOLLOWING:
As a requirement of IRB approval, the investigators conducting this research will:
- Comply with all requirements and determinations of the IRB.
- Protect the rights, safety, and welfare of subjects involved in the research.
- Personally conduct or supervise the research.
- Conduct the research in accordance with the relevant current protocol approved by the IRB.
- Ensure that there are adequate resources to carry out the research safely.
- Ensure that research staff are qualified to perform procedures and duties assigned to them during the research.
- Submit proposed modifications to the IRB prior to their implementation.
  - Not make modifications to the research without prior IRB review and approval unless necessary to eliminate apparent immediate hazards to subjects.
- Submit continuing review reports when requested by the IRB.
- Submit a closure form to close research (end the IRB's oversight) when:
  - The protocol is permanently closed to enrollment
  - All subjects have completed all protocol related interventions and interactions

This is to certify that the information contained herein is true and correct as reflected in the records of this IRB. WE CERTIFY THAT
THIS IRB IS IN FULL COMPLIANCE WITH GOOD CLINICAL PRACTICES AS DEFINED UNDER THE U.S. FOOD AND DRUG
ADMINISTRATION (FDA) REGULATIONS, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) REGULATIONS,
AND THE INTERNATIONAL CONFERENCE ON HARMONISATION (ICH) GUIDELINES.

*Full
Accreditation*

Board Action: 06/27/2018

Consent Statements and Debriefing Statements

Chapter 3, Study 1

This research is being conducted by Marc Stern and Kristin Hurst in the Department of Forest Resources and Environmental Conservation at Virginia Tech. The purpose of this study is to understand how to improve civil discourse. Your participation is voluntary, and your identity will be kept confidential. The results of this study will be published in summary form. Your responses will never be presented in a way that you can be identified. Deciding not to participate in this study will not affect your grade in the course or your relationship with Virginia Tech. There are no known risks associated with this research.

This is the second survey of two in our study. You should only be completing this survey if you also completed the first survey. This survey should take you less than 10 minutes. In order to receive extra credit, you must complete both surveys thoughtfully. You have the right to discontinue participation at any time and for any reason.

For questions about this research, please contact Kristin Hurst at kfhurst@vt.edu or (979) 229-9553. Should you have any questions or concerns about this study's conduct or your rights as a research subject, you may contact the Virginia Tech Institutional Review Board at irb@vt.edu or (540) 231-3732.

Chapter 3, Study 2

This research is being conducted by Marc Stern and Kristin Hurst in the Department of Forest Resources and Environmental Conservation at Virginia Tech. The purpose of this study is to understand how to improve public discussion about controversial topics. The results of this research will be presented at conferences and published in scientific journals. Your participation is voluntary and personal identifying information will not be collected.

This survey should take you around 10 minutes to complete. If you complete the survey you will receive $2 for your participation. You have the right to discontinue participation

at any time and for any reason. Choosing not to participate in this study will not affect your relationship with Prolific. There are no known risks associated with this research.

For questions about this research, please contact Kristin Hurst at kfhurst@vt.edu. For any questions about compensation, please contact Prolific directly. Should you have any questions or concerns about this study's conduct or your rights as a research subject, you may contact the Virginia Tech Institutional Review Board at irb@vt.edu.

Chapter 4, Consent Form

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Research Subject Information Sheet
in Research Projects Involving Human Subjects

Improving Public Discussion of Controversial Issues: Debating Fossil Fuels and Clean Energy

Title: Message Appeals and Media

Protocol No.:   18-334
                                WIRB® Protocol #20181265

Sponsor: Virginia Tech

Investigator: John C. Tedesco, PhD
                                115 Shanks Hall (0311)
                                181 Turner St. NW
                                Blacksburgh, Virginia 24060
                                United States

Sub-Investigator(s):   Marc Stern   mjstern@vt.edu, 540-231-7418
                                Kristin Hurst   kfhurst@vt.edu, 979-229-9553

I. Purpose of this Research Project

The purpose of this study is to understand public discussion of controversial topics. The results of this research will be presented at conferences and published in scientific journals. There are a total of 200 Virginia Tech undergraduate students participating in the research.

II. Procedures

Participants in this study must be 18 years of age or older. Should you agree to participate in this research, you will be asked to read a one-page informative article and respond to a series of questions related to the message. Finally, you will engage in a short group discussion of the issue. The whole experiment should take no longer than 35 minutes to complete.

III. Risks

This research presents no more than minimal risk. The probability and magnitude of harm or discomfort anticipated from this research is no more than ordinarily encountered in daily activities.

IV. Benefits

This study will help us understand how to facilitate the discussion of controversial topics in a productive, rather than counter-productive way. No promise or guarantee of benefits has been made to encourage you to participate.

V. Extent of Anonymity and Confidentiality

No identifying information will be obtained other than your signature on the bottom of this form and your email address. Your email address will be deleted from our records as soon as data collection is complete. The information you provide will be kept strictly confidential and your responses will only be identified by a code that is assigned to you.

Only the principal investigator co-investigators will have access to the data. At no time will the researchers release identifiable results of the study to anyone other than individuals working on the project without your written consent. The Virginia Tech (VT) Institutional Review Board (IRB) may view the study's data for auditing purposes. The IRB is responsible for the oversight of the protection of human subjects involved in research. The study staff will share the records generated from this research with the sponsor, regulatory agencies such as the US Food and Drug Administration and the Western Institutional Review Board (WIRB).

VI. Compensation

Should you choose to participate in this research, you will receive either 1 hour of credit from the Communications SONA system or 1.5 SONA credits from the Psychology SONA system. If you decide not to take part in this study, there are other opportunities for you to earn the same credit through your classes or to participate in other research studies this semester.

You will also receive $2 which you can choose to keep or donate to your choice of one of two non-profit organizations.

You will also be entered into a prize drawing where you could win up to $50 in the form of an Amazon gift card. You have a 1 in 20 (5%) chance of winning.

VII. Freedom to Withdraw

It is important for you to know that you are free to withdraw from this study at any time without penalty. You are also free to refuse to answer any questions without penalty.

Please note that there may be circumstances under which the investigator may determine that a subject should not continue as a subject.

Should you withdraw or otherwise discontinue participation, you will be still be entered into the prize drawings, but will not receive the $2.

VIII. Questions or Concerns

Should you have any questions about this study, you may contact one of the research investigators whose contact information is included at the beginning of this document.

Should you have any questions or concerns about the study's conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact the Western Institutional Review Board at help@wirb.com or (800) 562-4789.

WIRB is a group of people who perform independent review of research.

This permission will not end unless you cancel it. You may cancel it by sending written notice to the study doctor. Any information collected before you withdraw may still be used.

IX. Subject's Consent

I have read the Consent Form and conditions of this project. **I acknowledge that I am 18 years of age or older.** I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

You will not be penalized or lose benefits if you decide not to participate or if you decide to stop participating.

_____ Date_____
Subject signature

_____

Subject printed name

Chapter 4, Debriefing Statement

Thank you for participating in this study. We appreciate your time and apologize for the need to use deception. This study is a test of a theory from Social Psychology called Self-Affirmation Theory. Self-Affirmation Theory predicts that when a person reminds him or herself of their worth as a person they will respond more openly to controversial information. We wanted to see if the personal values and characteristics exercise you did at the start of this session would influence how you responded to the message about fossil fuels. It was especially important for us to capture your responses while you were in the frame of mind that you would shortly have to express your views on the topic to the group. That is why we told you that we would be having a group discussion after the survey. This research will help us understand the effects of self-affirmation in group settings such as collaborative meetings and workshops. Our hypothesis is that the people who participated in the self-affirmation exercise will respond more openly to the message than the people in the control group (people who did not do a values exercise). We couldn't tell you the true hypothesis of the study because the theory suggests that when people are aware of the intended effects of the self-affirmation exercise, it doesn't work as well.

Please be assured that your responses will be kept confidential and no identifying information will be associated with your responses in any report or publication of this data. If, for any reason, you no longer want your responses to be included in the data analysis, please let us know and we will remove them. If you would like to have a copy of the results of this study, please contact us and we will send them to you when our report is complete. If you have any questions about the study's hypotheses or procedures, please contact us. We will be happy to discuss the study with you further. For any of these issues please contact Kristin Hurst at: kfhurst@vt.edu. Should you have any questions or concerns about this study's conduct or your rights as a research subject, you may contact the Virginia Tech Institutional Review Board at irb@vt.edu.

Thanks again for your participation!

Appendix D

Recruitment Plans and Announcements

Chapter 3, Study 1 Recruitment Announcement

The co-investigator will attend class to introduce the survey. Here is a rough sketch of how it will be introduced.

"Hello. My name is Kristin Hurst and I'm a doctoral student in the Department of Forest Resources and Environmental Conservation. My advisor and I are conducting an online study on environmental communication. I'm here to invite you to participate. This is a research study and the results will be used for my dissertation and may be included in scientific publications.

There are two surveys included in this study. The first one you can do any time before this coming Friday at 5pm, and I will come back here in about one month to let you know when we are ready for you to complete the second one. We expect this first survey to take about 5-10 minutes to complete and should be completed outside of class time. In this survey, we'll first ask you for your opinion about a few environmental issues. Then, we'll ask some questions about factors that might influence how you make decisions and form opinions. Finally, we will ask you some basic demographic questions.

Your participation in this study is voluntary and your answers will be completely confidential. Your decision not to participate will not have an effect on your grade in the class or relationship with Virginia Tech.

We will ask you to provide your student ID number. That will ensure that you get credit for your participation. If you complete both surveys, [your professor] has agreed to drop your lowest three homework grades (instead of just 2). He will NOT be able to see your survey responses. [Your professor] will provide other options for receiving extra credit if you choose not to participate in this study.

If you have any questions about the survey, my email contact is provided with the survey. We'll also provide contact information for the Virginia Tech Institutional Review Board if you have any questions about your rights as a research participant.

I've posted the URL on the screen (using LCD) and you will also receive an email with the link. You'll have until 5pm on Friday to complete the survey.

Thanks for considering participating."

Chapter 3, Study 2 Recruitment Plan

We are using the online service Prolific (https://www.prolific.ac/) to recruit a panel of participants for this research. The people who are a part of this panel have signed up to take surveys in exchange for payment. Prolific is responsible for making their participant pool aware of our survey through their interface. Potential participants will see the following description of our study before deciding if they are interested in participating: This research is about improving civil discourse. If you take this survey you will be asked to read a short message and respond to a series of questions related to the message. You will also be asked to complete a scale intended to measure moral foundations and to provide some basic demographic information. The whole survey should take you around 10 minutes to complete. If you complete the survey you will receive $2 for your participation.

Chapter 4, Recruitment Announcement

My name is Kristin Hurst and I am a PhD student in the Department of Forest Resources and Environmental Conservation. I would like to invite you to participate in a study I am working on about civilizing public discussion of controversial issues.

If you are interested in participating, you will complete a short prescreen survey (pasted below) to see if you meet the criteria for the study. Your professor has agreed to let you participate in the study in exchange for a dropped homework grade. Those of you who don't meet the criteria, or don't want to participate, will be given an alternative way to receive the same benefit.

If you meet the criteria and agree to participate, I will email you to set up a time for you complete the study in person. For the study itself, we will ask you to do a short written or verbal activity related to your values and personal characteristics. This activity will take no more than 10 minutes. You will then be asked to read a one-page informative article and respond to a series of questions related to the article. Finally, you will engage in a short group discussion of the issue. The whole study should take no longer than 30 minutes to complete.

Here is the link to the prescreen survey if you are interested in participating: https://virginiatech.qualtrics.com/jfe/form/SV_8v6MxmTqRIUI43b

Your participation in this study is voluntary and your answers will be completely confidential. That is, your name will never be associated with your responses. There is no penalty for deciding not to participate. Finally, you must be at least 18 years old to participate in this study.

Thank you for your consideration. Please contact me with any questions (kfhurst@vt.edu).

Appendix E

Research Instruments

Chapter 3, Study 1 Survey

In the space below, please list three words that best describe how you felt while reading the message about fossil fuels.

[   ]

How much attention did you pay to the specific arguments made in the message you read about fossil fuels?

○ A great deal
○ A lot
○ A moderate amount
○ A little
○ None at all

To what extent do you agree or disagree with the following statement?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly Agree
The United States should transition away from fossil fuels as soon as possible.	○	○	○	○	○	○	○

To what extent do you agree or disagree with the following statements about the message you just read from the liberal non-profit organization?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The liberal non-profit organization is likely a trustworthy source of information.	○	○	○	○	○	○	○

The message I just read gave reasons for reducing fossil fuel use that are convincing.	○	○	○	○	○	○	○
The liberal non-profit organization likely shares my values.	○	○	○	○	○	○	○
The message I just read was believable.	○	○	○	○	○	○	○

Cognitive Processing

Are you interested in supporting the transition away from fossil fuel use?

○ No, I am not interested in supporting the transition away from fossil fuels.

○ Yes, I'm interested supporting the transition away from fossil fuels.

Attitudes and Behavior

Are you interested in learning more about this issue? If so, please provide your email below, and we will send you links to websites with more information. We will only email you once, then delete your address from our files.

○ [_____] Yes, send me links! Enter your email

○ No, I am not interested.

○ I plan to study this on my own.

If you are interested in taking action, such as writing your government representative, signing a petition, or donating to an organization working in this area, please provide your email below. We will send you links to websites to help you. We will only email you once, then delete your address from our files.

○ Yes, send me links! Enter your email if you did not provide your e-mail in the previous [_____] question.

○ No thanks, I'm not interested

If you are not interested in taking action, please tell us why.

☐ I already do my part to help the environment in other ways.

☐ I don't find these arguments to be believable.

☐ I don't think it would make a difference.

☐ This entire issue is nothing but politically motivated propaganda.

☐ [_____] Other, please specify.

Chapter 3, Study 2 Survey

On the next page you will be asked to read a message from a **LIBERAL** non-profit organization that regularly supports Liberal issues. Following the message, you will be asked some questions about what you read.

(Insert message- see Appendix A)

To what extent do you agree or disagree with the following statement?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly Agree
The United States should transition away from fossil fuels as soon as possible.	○	○	○	○	○	○	○

Think back to how you felt prior to reading this message. Do you find yourself more likely to support the transition away from fossil fuel use now than you did before?

○ Yes, I am more likely to support the transition away from fossil fuels.
○ I feel the same as I did before.

Are you interested in supporting the transition away from fossil fuel use?

○ No, I am not interested in supporting the transition away from fossil fuels.
○ Yes, I'm interested supporting the transition away from fossil fuels.

Are you interested in **learning more** about this issue? If so, we will provide you with links to informative websites at the end of this survey.

○ Yes, please provide me with links!
○ No, I am not interested.
○ I plan to study this on my own.

Are you interested in **taking action,** such as writing your
government representative, signing a petition, or donating to
an organization working in this area? If so, we will provide you
with web links to help you at the end of this survey.

○ Yes, please provide me with links!
○ No thanks, I'm not interested

If you are not interested in taking action, please tell us why.

○ I already do my part to help the environment in other ways.
○ I don't find these arguments to be believable.
○ I don't think it would make a difference.
○ This entire issue is nothing but politically motivated propaganda.
○ [   ] Other, please specify.

How much attention did you pay to the specific arguments
made in the message you read about fossil fuels?

○ A great deal
○ A lot
○ A moderate amount
○ A little
○ None at all

To what extent do you agree or disagree with the following
statements about the message you just read from the liberal
non-profit organization?

Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

The message was believable.	○	○	○	○	○	○	○
The liberal non-profit organization likely shares my values.	○	○	○	○	○	○	○
The message gave reasons for reducing fossil fuel use that are convincing.	○	○	○	○	○	○	○
The liberal non-profit organization is likely a trustworthy source of information.	○	○	○	○	○	○	○

On a scale of 1 to 9, where would you place the **non-profit organization** that issued this message along the political spectrum with 1 being extremely conservative and 9 being extremely liberal?

Extremely Conservative	Conservative	Moderately Conservative	Slightly Conservative	Neither Conservative or Liberal	Slightly Liberal	Moderate Liberal
○	○	○	○	○	○	○

How frequently do you receive communications (e.g. emails, phone calls or letters) from organizations promoting a **political** viewpoint or agenda?

○ Never

○ Rarely (less than once a month).

○ Sometimes (at least once a month, but less than once a week).

○ Often (at least once a week, but not every day).

○ Always (at least once a day).

Which type of political organization(s) do you receive communications from? Please check all that apply.

☐ Conservative organizations

☐ Liberal organizations

☐ Nonpartisan organizations

☐ [   ] Other, please specify

How frequently do you receive communications (e.g. emails, phone calls or letters) from organizations promoting an **environmental** viewpoint or agenda?

○ Never

○ Rarely (less than once a month).

○ Sometimes (at least once a month, but less than once a week).

○ Often (at least once a week, but not every day).

○ Always (at least once a day).

Which type of environmental organization(s) do you receive communications from? Please check all that apply.

☐ Conservative Organizations

☐ Liberal Organizations

☐ Nonpartisan Organizations

☐ [   ] Other, please specify

The next two questions ask you more broadly about how you determine what is right and wrong. The items come from a pre-established scale designed to measure moral foundations. Please share your general pre-dispositions regarding each item.

When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking?

	Not at all relevant	Not very relevant	Slightly relevant	Somewhat relevant	Very relevant	Extremely relevant
Whether or not someone suffered emotionally	○	○	○	○	○	○
Whether or not some people were treated differently than others	○	○	○	○	○	○
Whether or not someone's action showed love for his or her country	○	○	○	○	○	○
Whether or not someone showed a lack of respect for authority	○	○	○	○	○	○
Whether or not someone violated standards of purity and decency	○	○	○	○	○	○
Whether or not someone was good at math	○	○	○	○	○	○
Whether or not someone cared for someone weak or vulnerable	○	○	○	○	○	○
Whether or not someone acted unfairly	○	○	○	○	○	○

Whether or not someone did something to betray his or her group	○	○	○	○	○	○
Whether or not someone conformed to the traditions of society	○	○	○	○	○	○
Whether or not someone did something disgusting	○	○	○	○	○	○

Please read the following sentences and indicate your agreement or disagreement.

	Strongly Disagree	Moderately Disagree	Slightly disagree	Slightly agree	Moderately Agree	Strongly agree
Compassion for those who are suffering is the most crucial virtue.	○	○	○	○	○	○
When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.	○	○	○	○	○	○
I am proud of my country's history.	○	○	○	○	○	○
Respect for authority is something all children need to learn.	○	○	○	○	○	○
People should not do things that are disgusting, even if no one is harmed.	○	○	○	○	○	○
It is better to do good than to do bad.	○	○	○	○	○	○

One of the worst things a person could do is hurt a defenseless animal.	○	○	○	○	○	○
Justice is the most important requirement for a society.	○	○	○	○	○	○
People should be loyal to their family members, even when they have done something wrong.	○	○	○	○	○	○
Men and women each have different roles to play in society.	○	○	○	○	○	○
I would call some acts wrong on the grounds that they are unnatural.	○	○	○	○	○	○

Which political party do you most identity with?

○ Democrat
○ Republican
○ Independent
○ Libertarian
○ Green Party
○ No Preference
○ [＿＿＿＿＿＿＿] Other (Please Specify)

Are you male or female?

○ Male
○ Female

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In what year were you born?

How would you describe your race or ethnicity? Please check all that apply.

☐ Black/African
☐ Asian
☐ White/European
☐ Latino
☐ Middle Eastern
☐ Native American
☐ [_____] Other (please specify)
☐ Would rather not say

Chapter 4 Survey

VIRGINIA TECH.

A Discussion of Fossil Fuels and Renewable Energy

The purpose of this research is to better understand public discussion of controversial issues. Today, we will be focusing on the issue of fossil fuel use and renewable energy.

INSTRUCTIONS:

- On the next page you will find a research digest written by an expert who has worked in the field of energy for the last 30 years. Please take your time to read the research digest and complete the short survey that follows.

- On the last page you will find a Completion Form. Please complete the form and have it ready to give to the researcher after you are done with the survey.

RESEARCH DIGEST: FOSSIL FUELS, THEIR IMPACTS, AND RENEWABLE ENERGY

Despite the great advances fossil fuels have brought to our society, they have also come with high costs. These include water pollution, air pollution, and damaged ecosystems. Transitioning away from fossil fuels and adopting renewable energy sources can help mitigate some of these environmental impacts. However, public support for this transition is currently politically divided.[7] Specifically, conservatives tend to support the sustained or increased use of fossil fuels in the near term, fearing that moving away from them too quickly could have a detrimental impact on our economy and lifestyles. Liberals, on the other hand, strongly support an accelerated transition away from fossil fuels. This division creates political gridlock and prevents forward progress.

Impacts of Fossil Fuels

Perhaps the most concerning environmental impact of fossil fuels is the amount of heat-trapping greenhouse gases they release into the atmosphere, including carbon dioxide and methane. These greenhouse gases are causing global temperatures to rise. Studies have found that the rapid increase in burning fossil fuels since the industrial revolution has resulted in an increase of nearly 70% in the amount of carbon in the atmosphere.[1] The graph at the end of this summary illustrates this dramatic shift. Research suggests this increase in atmospheric carbon has already led to a 1.7°F increase in global temperatures and a 7.5-inch rise in sea-levels since 1880.[2, 10]

A growing body of research has enabled scientists to better predict the impacts of these changes. Models show that if we continue on the same trajectory, we can expect to see an increase in severe storms, heat waves, and more frequent and longer droughts.[11]

The impacts of climate change are already being felt. Regular flooding is now occurring in many coastal areas during normal rain events.[12] And, the frequency and severity of natural disasters such as hurricanes is increasing, costing billions of dollars in damages.[14, 13]

Current energy sources

Fossil fuels continue to account for most of our power supply. In 2016, fossil fuels generated over 65% of the electrical power in the United States. Only 14% came from renewable energy sources, such as wind, solar, and hydropower.[6] Some of the most reliable estimates suggest that to avoid the worst climate change impacts we need to double our proportion of renewable energy use by 2030.[4]

Future energy directions

Changes to our energy system are already underway, with 67% growth in renewable energy sources since the year 2000.[5] Because of this growth, the renewable energy job sector is expanding quickly.[6] In 2016, there were more jobs in renewable energy production than in fossil fuels.[8] A 2017 analysis demonstrated that technological advances have driven the cost of wind and solar energy below the cost of energy from coal and oil. These alternative energy costs will likely continue to fall as technology improves.[9]

Mounting evidence points to the urgent need for a renewable energy future and

technological advances are making this transition more realistic and affordable. The transition will likely require large investments and broad public backing. However, as long as we remain politically divided, it will be difficult to move forward.

Social scientists suggest that finding new ways to engage in even-handed discussions about our energy future is vital to our collective wellbeing.[15]
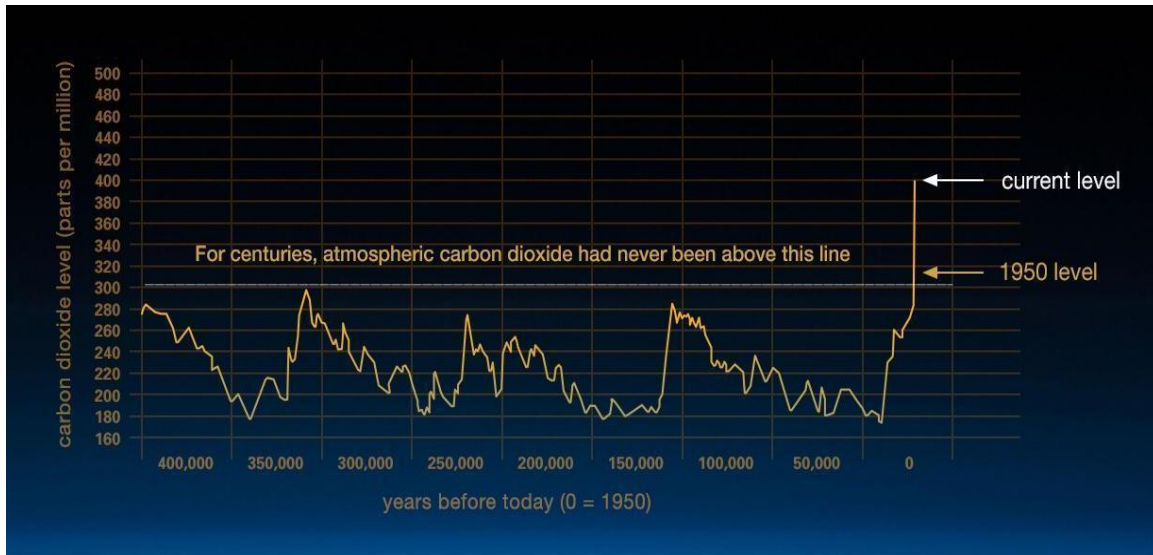
This graph shows the rapid increase in CO₂ levels in modern times (https://climate.nasa.gov/evidence/).

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Please respond to the following questions related to the research digest you just read. Your participation is voluntary and your answers will be kept confidential.

1. To what extent do you agree or disagree with the following statement? The United States should transition away from fossil fuels as soon as possible. *Circle a number.*

Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

2. Think back to how you felt before reading the research digest. How much, if at all, did the research digest you just read affect your attitudes toward fossil fuel use? *Circle a number.*

I am now much more opposed to fossil fuel use			No Change		I am now much more in favor of fossil fuel use	
1	2	3	4	5	6	7

3. How would you rate your impressions of the author of the research digest on each of the following characteristics? *Circle a number for each.*

The author of the message seems:	Not at all			Somewhat			Extremely
Reasonable	1	2	3	4	5	6	7
Biased	1	2	3	4	5	6	7
Informed	1	2	3	4	5	6	7
Objective	1	2	3	4	5	6	7
Intelligent	1	2	3	4	5	6	7

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4. To what extent do you agree or disagree with the following statements about the research digest you read? *Circle a number for each.*

	Strongly Disagree			Neutral			Strongly Agree
The digest made me consider things I hadn't thought about before.	1	2	3	4	5	6	7
The digest felt threatening to me.	1	2	3	4	5	6	7
The digest was believable.	1	2	3	4	5	6	7
The digest gave reasons for reducing fossil fuel use that are convincing.	1	2	3	4	5	6	7

5. To what extent do you agree or disagree with the following statements about the upcoming discussion on fossil fuels and renewable energy? *Circle a number for each.*

	Strongly Disagree			Neutral			Strongly Agree
I think I will benefit from hearing the perspectives of other students in this group.	1	2	3	4	5	6	7
I am not interested in hearing the perspectives of other students in this group.	1	2	3	4	5	6	7
I am open to modifying my views on fossil fuels and renewable energy.	1	2	3	4	5	6	7

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6. Prior to coming here today, how much did you think about the issues of fossil fuels and renewable energy? *Circle a number.*

Not at all			Some			A great deal
1	2	3	4	5	6	7

7. Prior to reading this research digest, how knowledgeable were you about fossil fuels and renewable energy? *Circle a number.*

Not at all Knowledgeable			Somewhat			Extremely Knowledgeable
1	2	3	4	5	6	7

8. Are you interested in learning more about this issue? If so, please provide your email below, and we will send you links to websites with more information. We will only email you once, then delete your address from our files. *Please check one box.*

☐ Yes, send me links! Please provide your email address_____

☐ No thanks, I'm not interested.

☐ I plan to study this on my own.

9. How many people in this group did you know well before coming here today? _____

10. How many were you acquainted with (but didn't know well) before coming here today? _____

11. To what extent do you agree or disagree with the following statements? *Circle a number for each.*

	Strongly Disagree			Neutral			Strongly Agree
I feel relatively good about myself right now.	1	2	3	4	5	6	7
I felt that people responded positively to me when I shared the words I chose with the group.	1	2	3	4	5	6	7

12. On a scale of 1 to 9, where would you place yourself along the political spectrum with 1 being extremely conservative and 9 being extremely liberal? *Circle a number.*

Extremely Conservative				Moderate				Extremely Liberal
1	2	3	4	5	6	7	8	9

13. What is your gender? *Please check one.*

☐ Female   ☐ Male   ☐ Transgender   ☐ Other   ☐ Prefer not to say

14. Which political party do you most identify with? *(check one)*

☐ Democrat   ☐ Green Party   ☐ Independent

☐ Republican   ☐ Libertarian   ☐ Other_____

15. How would you describe your race or ethnicity? *Check all that apply.*

☐ White/European   ☐ Latino/a   ☐ Mixed (two or more races)   ☐ American Indian or Alaskan Native

☐ Black/African   ☐ Asian   ☐ Native Hawaiian or other Pacific Islander   ☐ Middle Eastern

☐ Other (please specify)   ☐ Would rather not say.

Thank you for taking this survey!

Please complete the Completion Form on the back of this page.

VIRGINIA TECH

COMPLETION FORM

This form has important information about your compensation for participating in this research. Please read and complete this form and give it to the researcher as you leave.

You will receive $2 for your participation today. You may keep the money or we can donate it on your behalf to the Environmental and Energy Study Institute. Please check one box below to indicate your preference. If you choose to keep your $2, we will give it to you at the end of this session. No one else in the room will know your choice.

I would like to:

☐ Keep my $2

☐ Donate my $2 to the **Environmental and Energy Study Institute**, an organization dedicated to supporting and facilitating the renewable energy transition.