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SECONDHAND COMMUNICATION OF RISK-RELATED INFORMATION:  
HOW IDEOLOGY AND RELATIONAL MOTIVES AFFECT INTERPERSONAL  
RISK COMMUNICATION

A Thesis Presented

by

DANIEL AARON CHAPMAN

Submitted to the Graduate School of the  
University of Massachusetts Amherst in partial fulfillment  
of the requirements for the degree of

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Psychological and Brain Sciences

SECONDHAND COMMUNICATION OF RISK-RELATED INFORMATION:  
HOW IDEOLOGY AND RELATIONAL MOTIVES AFFECT INTERPERSONAL  
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Approved as to style and content by:

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Brian Lickel, Chair

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Ronnie Janoff-Bulman, Member

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Ezra Markowitz, Member

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Harold Grotevant, Department Head  
Department of Psychological and Brain  
Sciences

## **ABSTRACT**

SECONDHAND COMMUNICATION OF RISK-RELATED INFORMATION:  
HOW IDEOLOGY AND RELATIONAL MOTIVES AFFECT INTERPERSONAL  
RISK COMMUNICATION

MAY 2016

DANIEL AARON CHAPMAN, B.A., MILLERSVILLE UNIVERSITY

M.S., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Brian Lickel

This research provides the first experimental investigation of the ways in which ideological and relational motives influence interpersonal risk communication. Drawing on the literatures in social and cognitive psychology, risk communication, and environmental decision making, this research examined whether individuals expressing concerns about tradeoffs between climate change adaptation and prevention were less likely to share climate change information with others if the information discussed adaptation policies. Participants were presented with an article about climate change framed as either relating to adaptation or prevention. Their willingness to share the article with others was measured, as well as their appraisals of how they thought others would respond to the message (e.g., increase or decrease their environmental behavior) and how others would evaluate oneself for sharing the message. Concerns about tradeoffs and sensitivity to social rejection were measured prior to the experimental procedure. Results yielded partial support for the hypotheses, with concern about tradeoffs negatively influencing attitudes toward sharing of the adaptation-related article. Hypothesized interaction effects with concerns about social rejection were not supported. Exploratory

analyses revealed that the perception that others in one's social network holds similar or dissimilar views to oneself about climate change emerged as an important moderator of the effects of concern about tradeoffs on sharing intentions. Limitations and future directions for research on interpersonal risk communication are discussed.

Keywords: risk communication, climate change, risk perceptions, ideology, interpersonal communication, science communication

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# CHAPTER 1

## INTRODUCTION

For decades, researchers in risk and disaster communication, social psychology, public health, and other fields have sought to better understand how to communicate to the public about individual or social risks in ways that will motivate adaptive action. It has become increasingly clear that a wide array of factors affect individuals' interpretations of risk-related information, ranging from likeability and trustworthiness of the communicator, to personal ideologies that either increase or decrease their concern about specific risks. In the area of climate change risk communications, it has been alarmingly difficult to develop messages that can overcome the widespread ideological divide and motivate action to reduce greenhouse gas emissions. While progress has certainly been made in these domains, there is still much to be learned about how to utilize media to promote risk awareness and adaptive action. In the research presented here, I take a first step toward addressing one important gap in this literature by examining a set of dynamics pertaining to how risk-related information (in this case, preventative and adaptive policies to combat climate change) is interpreted and communicated between individuals in society. This "secondhand communication" has yet to receive widespread attention in the literature, but may be increasingly important in promoting public understanding and adaptation to risks such as those posed by climate change.

The majority of the past literature on risk-related decision making has focused on how individuals' ideological beliefs and the framing of risks in the media influence reactions to risks, while less research has explored how to formulate messages that will

be effectively communicated and shared between individuals. In an increasingly interconnected world that is simultaneously facing specific localized risks that may be exacerbated as a result of climate change (e.g., wildfire risk, drought susceptibility, disease outbreak), it seems vital to know how to create messages that will be effectively shared between individuals, communities, and within social networks in areas facing these risks. Therefore, in this research I examined ideological and social psychological factors that influence individuals' willingness to share different forms of information about risks with others. This phenomenon was studied in the context of an ongoing discussion in environmental communications and research over whether emphasizing the need to prepare and adapt to future climate change impacts will demotivate public support for traditional forms of climate change mitigation/prevention (hereafter referred to as prevention) such as reducing greenhouse gas emissions.

An experiment was conducted to test whether individuals are more or less willing to communicate an informative message about climate change secondhand (e.g., posting on social media, sharing with friends and family of similar or different ideological beliefs) depending on whether climate change adaptation or prevention was emphasized in the message. In designing and conducting this research, I drew on the literatures in risk communication, climate change attitudes and decision making, as well as social and cognitive psychology to examine how risk framing, ideological beliefs and relational motives (e.g., concern about rejection by others) influence the types of messages that are most (or least) likely to be communicated secondhand.

## **1.1. Risk Communication and the Social Amplification of Risk Framework**

A wealth of research on the relationship between public communication strategies, risk perceptions and decision making has examined how the framing of issues in the media affect ordinary citizens' understanding of science and public policy topics, concern about these issues, and willingness to take individual action or support large-scale societal change. Perhaps the most prevalent outline of the dimensions of risk communication in this literature is the social amplification of risk framework (SARF; Burns, Slovic, & Kasperson, 1993; Kasperson & Kasperson, 1996; Kasperson et al., 1988). The social amplification of risk framework proposes that a variety of informational, social, and institutional factors operate simultaneously in shaping how individuals experience risk and make ensuing decisions. This framework is useful in that it emphasizes the importance of social processes in the construction of individual risk perceptions and acknowledges that risk perceptions are derived from a variety of information sources and cultural mechanisms rather than simply through exposure to information from experts. The SARF proposes that a variety of sectors of society, such as the media, elites, scientific experts, and social networks all function as "information hubs" that either amplify or attenuate an individual's risk perceptions depending on what sources they are exposed to. Importantly, this perspective can help account for the often-observed divide between the issues elites and experts perceive as most concerning and hazardous and what the public perceives as prominent risks. The SARF has been examined in a variety of contexts ranging from perceptions of genetically modified organisms (Frewer, Miles, & Marsh, 2002), widely publicized public health concerns such as mad cow disease (Lewis, & Tyshenko, 2009), environmental hazards and disaster

risks (e.g., Bakir, 2005; Binder, Scheufele, Brossard, & Gunther, 2011), and perceptions of climate change (Renn, 2011).

The emphasis in the SARF and other related models of risk communication on the importance of media as a hub in formulating and modulating individuals' construal of risks has also generated a wealth of communications research on media framing effects. Recently, this literature has examined how biased news sources and "opinion news" influence the polarization of concerns about risks such as climate change. Feldman, Myers, Hmielowski, & Leiserowitz (2014), for example, find that attitudes toward climate change are continuously shaped by immediate, and later selective, exposure to different types of media. Exposure to conservative (compared with non-conservative) media was associated with less certainty and concern about the issue. The effects on certainty and concern caused by these initial exposures to different news media later resulted in greater selective exposure to similar media longitudinally, which ultimately resulted in the further strengthening of beliefs of uncertainty and undermining concern about climate change. Similarly, research also finds that the framing of climate change-related issues by conservative media sources can result in decreased trust in scientists, which is associated with lower certainty that climate change is occurring (Hmielowski, Feldman, Myers, Leiserowitz, & Maibach, 2014).

In spite of its benefits, recently researchers have called attention to the fact that research using the SARF and other communications paradigms has almost exclusively focused on "top-down" communication channels, such as the effects of media and politicians' portrayals on how risk information is interpreted and acted upon (Brenkert-Smith, Dickinson, Champ, & Flores, 2013). This focus has left other important modes of

communication, such as interpersonal discussion and social networking, almost entirely unexplored. In fact, the SARF highlights that interpersonal dynamics are important hubs in the shaping of risk perceptions, yet little to no research has examined these components of the framework with any detail. In practice there is little known about how interpersonal communication and relationships shape risk information processing, sharing, and its influence on attitude formation and decision-making. Therefore, in the research presented here I specifically focused on factors which influence the types of risk-related information individuals are willing to share with others. Based on a growing body of literature, it was predicted that one vitally important component of this secondhand communication process would be the pre-existing beliefs, values, and risk perceptions of the individual messenger.

## **1.2. The Influence of Ideology and Worldviews on Risk Perceptions**

In recent years, there has been strong interest in how individuals' deeply held values and beliefs, such as their political ideology and attitudes toward certain types of scientific advances (e.g., nanotechnology, nuclear energy) affect their assessments of risk and subsequent decision making (Corner, Markowitz, & Pidgeon, 2014; de Groot, Steg, & Poortinga, 2013; Kahan, 2013; Kahan, Braman, Slovic, Gastil, & Cohen, 2009). One prominent domain in which this research has been conducted is on attitudes toward climate change. Across nearly every study conducted on the topic, conservatives report less belief and concern about climate change than their liberal counterparts (e.g., McCright & Dunlap, 2011). This, in turn, has led to a stark ideological divide on support for climate change prevention policy at the individual and governmental level that is readily observed in the debates around climate change policy.

One potential explanation for the relatively low concern about climate change and the ideological divide over the topic is that individuals have not been sufficiently exposed to accurate scientific information about climate change. This “science literacy” approach to risk communication follows from the perspective that low levels of risk perceptions are due to knowledge and awareness deficits, and that these can be rectified through increased education and science communication. However, recent research suggests that individuals’ values and beliefs shape how they assimilate new information about risks, and that this has a significant impact on their risk perceptions (e.g., Kahan, Jenkins-Smith, & Braman, 2011; Uhlmann, Pizarro, Tannenbaum, & Ditto, 2009). This motivated reasoning account (Kunda, 1990), postulates that individuals are motivated to self-select information that supports the positions they already hold on an issue. Research has found that motivated reasoning is a potent force in shaping how individuals react to scientific information about climate change and environmental risks (e.g., Hart, & Nisbet, 2012; Kahan et al., 2012; Roh, McComas, Rickard, & Decker, 2015). Research on cultural cognition, for example, has shown that individuals’ beliefs about equality, government intervention, and related topics influences their perceptions of scientific consensus about climate change and how credible they view scientists expressing concern about this issue (e.g., Kahan et al., 2011). Within this framework increased knowledge is associated with greater rather than less political polarization over climate change policy (Kahan et al., 2012).

In a recent study, Hart, Nisbet, and Myers (2015) examined motivated reasoning and science literacy accounts in conjunction with media exposure effects. They found that for conservatives greater exposure to science-related media was associated with

increases in perceived harm and knowledge about climate change, whereas for liberals this type of media increased knowledge but not perceptions of harm. However, increases in knowledge also had differential effects of on support for climate change policy depending on participants' ideology: greater knowledge increased support by liberals and decreased support by conservatives. These results further indicate the complex relationship between ideology and the interpretation of risk-related information.

It is evident that individuals' values and ideologies can have a dramatic impact on how they interpret information about risks, especially those that have become politicized. It is surprising then that no systematic research has examined whether these same motivated processes also affect the type or quality of information about a risk that individuals share with others in interpersonal communication, their communities, and through social media.

### **1.3. Secondhand Communication's Influence on Risk Perceptions**

The rise of social media as a pervasive force in public dialogue increases the likelihood that individuals, particularly those with little knowledge, interest, or concern about a topic, may primarily be exposed to news about these issues through the lens of what close others discuss and/or what is shared through social media (i.e., information communicated secondhand). Given that climate change is generally met with low levels of concern and ranked low on lists of policy priorities in the United States, secondhand forms of communication may be one of the dominant ways in which average Americans form impressions and opinions about this issue (Leiserowitz, Maibach, Roser-Renouf, & Feinberg, 2013). Polling data from the Climate Change in the American Mind project has found that while overall sharing of climate change information via social media is



relatively low, individuals rate family and friends (particularly significant others, children, and close friends) as those most likely to convince them to act on climate change (Leiserowitz et al., 2013). This finding suggests that understanding the dynamics of interpersonal communication about climate change and other risk-related topics may be fundamental for producing shifts in concern and action related to these issues at the interpersonal level.

Relatedly, other bodies of research highlight the importance of social ties and interpersonal dynamics in shaping concern about issues such as climate change and motivating concrete changes in behavior. Tindall and Piggot (2015) have found that having connections with members of environmental organizations substantially predicts awareness and preparedness to respond to climate change. Videras, Owen, Conover, and Wu (2012) also find that social ties and “green family profiles” affect economic choices and community-based environmental actions such as recycling. In a meta-analysis of studies on social influence, Abrahamse and Steg (2013) find that social influence approaches, such as providing households with information about their energy savings relative to their neighbors, are effective at promoting conservation behavior, and are also somewhat more effective than other conservation interventions. This research provides a strong suggestion that understanding the dynamics of secondhand communication and how information is passed through communities facing climate change and other disaster risks may be vital for promoting effective action.

Recently, several researchers have called attention to this gap in our understanding of how interpersonal communication could affect risk perceptions (e.g., Binder, Scheufele, Brossard, & Gunther, 2011; Brenkert-Smith, Dickinson, Champ, &

Flores, 2013; Moussaïd, Brighton, & Gaissmaier, 2015). Moussaïd et al. (2015) in particular highlight the absence of empirical literature on how communication between individuals and through networks might affect the quantity and quality of information about risk-related topics that is shared. Using agent-based simulations and a study with multiple 10-person communication chains, Moussaïd et al. (2015) find that information about a drug possessing potential health risks loses its accuracy and becomes increasingly different between the chains as it is propagated. Importantly, Moussaïd et al. (2015) also find preliminary evidence that the nature of the information shared is affected by the communicators' perceptions of risks about the drug, which ultimately affected the receivers' perceptions of the drug's risks. These latter findings provide preliminary empirical evidence that pre-existing beliefs and worldviews may affect how information is transmitted secondhand. These findings also highlight the need for more research in order to comprehensively understand the presence and strength of these effects in actual communication behavior, particularly around risks as politicized as climate change.

Interpersonal communication and its interaction with ideological beliefs could theoretically influence the transmission of risk-related information in a variety of ways. One possibility is that if a message does not align with one's worldviews, it will not be shared at all. Another possibility is that individuals will share aspects of the original message, but will do so in a biased way by omitting facts, emphasizing certain information at the exclusion of other important details, or seeking to delegitimize the message. As suggested by Moussaïd et al. (2015), this process also likely operates cyclically, where the pre-existing biases of a communicator may shape the information they share and then the biases of the recipient may influence how they assimilate this

information. These possibilities could result in drastically altered information about risks and hazards being communicated between individuals. In addition to the influence of ideology on secondhand communication, it also was predicted that social and relational motives, such as the concern about how others will view oneself if they talk about politicized topics or share certain media, also play an important role in the decision to communicate risk-related messages secondhand.

#### **1.4. Interpersonal Dynamics in Secondhand Communication**

The influence of social concerns and interpersonal dynamics on information sharing and decision making has been studied in several domains. Outside of the environmental and risk communication area, several researchers have examined the influence of various motivations in shaping how individuals discuss information in groups and make group-level decisions. De Dreu, Nijstad, and van Knippenberg (2008) propose a motivated information processing model for how groups discuss information and arrive at decisions. In their research, they emphasize that various social motivations (e.g., self-advancement or group-advancement), and epistemic motivations have a substantial impact on information seeking and processing in groups, which ultimately affects group decisions. Yang, Kahlor, & Griffin (2014) utilized a similar framework to examine American and Chinese students' motivations to share information about climate change. Using correlational methods, they found that American participants' self-reported frequency of sharing climate change information with others was associated with a variety of factors including social motivations (in this case, greater perceived subjective norms about sharing climate change information), epistemic motivations (desire to know more about climate change), information seeking from prominent media

sources, and negative affect related to climate change. For the Chinese sample, social motivations and information seeking were also associated with greater frequency of sharing, but none of the other factors. While illuminating, these findings cannot speak to how information sharing motivations are affected by different types of content, or the extent to which ideological biases affect the nature of the content shared. Additionally, the aforementioned research has not explored how other important social considerations, such as the desire to be liked by others or the motivation to persuade others of one's own position, influences information sharing.

Complementary to this work, there is also body of literature in social and cognitive psychology which has examined characteristics of information sharing in social settings. Primarily, this research has examined information sharing related to person perception (for a review see Smith & Collins, 2009) and how relational motives such as the desire to be seen positively affect sharing (audience-tuning; Echterhoff, Higgins, & Levin, 2009). This research has found that the motivation to be liked or get along with an audience shapes the type of information about a target individuals are willing to share (e.g., Higgins, 1992; Pieruci, Klein, & Carnaghi, 2013). Therefore, it is likely that the decision to share information about a politicized issue such as climate change, or what type of information about the issue is shared, will be affected by these relational motives as well as ideological factors. To date however, this proposition has not been tested.

Interestingly, past research on audience-tuning effects also finds that the desire to be liked or persuasive not only influences how individuals share information with audiences, but also influences the information the sharer is later able to recall about the original message (e.g., Echterhoff, Kopietz, & Higgins, 2013). That is, their recall of the

details often tends to conform to their shared version of the message rather than the original message they were given. In a related line of research, researchers have found that memory processes such as retrieval-induced forgetting also are affected by social processes (Hirst, Coman & Coman, 2013). Socially shared retrieval-induced forgetting studies have found that that the type of information about a traumatic event (e.g., terrorist attacks in the United States on September 11<sup>th</sup>, 2001) that is shared by one person can influence another person's memory for their own experiences of that event (Coman, Manier, & Hirst, 2009). These effects have been uncovered in networks of communicators, indicating that even slight changes in information can alter recall of details for everyone else in a social network (Coman & Hirst, 2011).

While the focus in this research was not directly on the memory and cognitive processes at play, the results from this literature suggest that better understanding secondhand communication in the context of risk communications and climate change may have particular implications for information transmission and memory of vital risk-related information. What is clear from the reviewed research is that relational motivations and other social factors can influence how individuals share information with others while also affecting their own recall of the information in the messages. Therefore, in this research I tested whether, in addition to ideological biases, relational motives such as the desire to be liked/persuasive influenced what type of information about climate change prevention or adaptation individuals were willing to communicate secondhand. In this research, secondhand communication processes were tested in the context of the climate change prevention and adaptation debate. I will now turn to a brief overview of the past research on adaptation-prevention tradeoffs and propose the ways in which

considering a secondhand communication of risk perspective provides a significant contribution to this literature.

### **1.5. Prevention-Adaptation Tradeoffs and the Influence of Secondhand Communication**

As efforts aimed at substantially limiting anthropogenic contributions to climate change (i.e., prevention) have been largely disappointing, some researchers and practitioners have been calling for a substantial increase in research and investment into preparation (i.e., adaptation) for climate change impacts (e.g., Glick, Chumara, & Stein, 2011; Pielke, 1998). However, similar to climate change prevention, there are many difficulties and barriers to adaptation from an economic, political, and psychological perspective (e.g., Moser, 2012; Moser & Ekstrom, 2010). Aside from the more logistical and financial concerns about adaptation, there has also been a lingering concern on behalf of some researchers, politicians, and climate change advocates that extensively bringing adaptation into the policy debate will demotivate or underemphasize the continued need for efforts aimed reducing greenhouse gas emissions. For many years, this concern about adaptation-prevention tradeoffs resulted in close to no discussion by advocates with the public about adaptation (Viktor, Kennell, & Ramanathan, 2012). For example, Al Gore was outspoken in the past about his belief that the public discussion of climate change should not include adaptation (e.g., Gore, 1992).

In spite of a growing recognition that the study of and investment into adaptation planning is needed (indeed, even Gore has changed his own position; *The Economist*, 2008), there is still a prevalent concern that adaptation policies could pose issues for prevention efforts. There have been frequent debates in the literature about the extent to

which it is feasible to simultaneously work on both prevention and adaptation, given limited resources and other potential tradeoffs between the two (Moser, 2012). Given the prevalence of this discussion, a number of researchers have begun attempting to address whether these tradeoffs operate at a psychological and (individual) behavioral level. Carrico, Truelove, Vandebergh, & Dana (2015) examined whether framing an irrigation policy as either reducing emissions (prevention) or drought vulnerability (adaptation) affected levels of support for the policy. In one of their studies they found evidence that discussing adaptation increased support for the policy, but only for political moderates. However, in their second study this effect was not replicated. The authors conclude that there was no support for the claim that a climate change adaptation frame negatively affects prevention-related behavior. In a separate study, Evans, Milfont, and Lawrence (2014) performed an experiment using a mail out survey in New Zealand to examine whether including information about local flood risks and potential adaptations to these risks increased or decreased support for climate change prevention policy. In this study, the authors found that discussing local risks and adaptation measures prior to discussing prevention enhanced individuals' support for preventative policy. Therefore, there is both limited and mixed evidence in the literature for whether adaptation affects preventative behavior, with much research still needed to clarify the dimensions of these tradeoffs politically, economically, and behaviorally.

In the present research, I adopt a novel perspective on how concern about tradeoffs may affect action on climate change, proposing that understanding secondhand communication dynamics may help shed light how adaptation concerns may indirectly affect prevention-related behavior. In particular, I propose that—regardless of whether

behavioral tradeoffs between prevention and adaptation indeed exist at the individual level—the mere presence of this concern may influence what type of information about these issues that climate change advocates are willing to share with others. That is, if one believes that discussing adaptation is going to reduce individuals’ or politicians’ efforts to engage in prevention behaviors, it seems likely that they will be unmotivated to share adaptation-related information and instead either focus on prevention, or not discuss the issue at all. For example, a climate change advocacy organization may withhold information about the need for adaptation if they are concerned that this will demotivate preventative actions and donations for efforts that they have been advocating for years. Therefore, even if the findings from Carrico et al. (2015) and Evans et al. (2014) suggest that the tradeoffs concern is unfounded (at least at the individual behavioral level), the mere presence of this concern may reduce the extent to which climate change communicators, elites, and others in the public highly concerned about climate change will distribute these messages to their audiences or the public at large.

In a survey of 278 undergraduate students, Chapman, Lickel and Markowitz (unpublished data) found that participants reported moderate levels of concern that introducing adaptation into the policy discussion would affect others’ or politicians’ actions to prevent climate change. Additionally, this survey also contained several items about another form of tradeoff: the concern that alternative climate change management strategies such as geoengineering of the climate would reduce a focus on other climate change policy such as reducing greenhouse gas emissions. Importantly, while participants were relatively unwilling to report that knowing about geoengineering would reduce their own pro-environmental behavior, relative to this measure they were significantly more



likely to believe it would negatively affect the actions of other people and politicians. These results provide preliminary evidence that there are at least moderate concerns about tradeoff-related issues, and that, at least for the case of geoengineering, individuals are significantly more concerned about the effects it will have on others (especially politicians) than on their own behaviors.

The case of concern for tradeoffs between climate change prevention and adaptation policy presents an interesting opportunity to test the propositions about secondhand communication. On the one hand, one might expect that those highly concerned about climate change will equally share a message emphasizing the need for a focus on climate change prevention or adaptation in the hopes that it will promote engagement of others with the issue. However, the concern about potential tradeoffs between adaptation and prevention is largely a debate within the community of individuals already concerned about climate change. Indeed, concern about tradeoffs was significantly positively correlated with belief in climate change (Chapman, Lickel & Markowitz, unpublished data). Therefore, in addition to the likely possibility that climate change skeptics would simply opt to not share information about climate change, those concerned about climate change may selectively share different messages depending on whether the messages are framed to emphasize the need for adaptation or prevention.

## **1.6. Overview of Research**

In the research presented here, I sought to extend past work by examining whether pre-existing concerns about tradeoffs between adaptation and prevention influence individuals' willingness to share climate change-related information with others, while simultaneously unpacking underlying affective and cognitive dimensions of this decision.

Specifically, in the experiment reported here I tested whether individuals were more willing to share different types of information about the risk of climate change and the appropriate course of action (i.e., preventative action or adaptive action) depending on a) their pre-existing beliefs about adaptation-prevention tradeoffs, b) whether they think others (e.g., friends and family, those holding similar or different climate change beliefs) will be positively impacted by the information and c) whether they think others will view them negatively if they were to share information about prevention or adaptation.

## CHAPTER 2

### STUDY

Given the dearth of research on how individuals differentially evaluate and respond to messages about climate change adaptation and prevention, I conducted an experiment to better understand individuals' perceptions of information about climate change when it is framed as either related to adaptation or to prevention. Participants were randomly assigned to view a news article discussing climate change adaptation or prevention, and then were asked to evaluate the article on important message-related characteristics (e.g., believability, likability, accuracy), their beliefs about how others would respond to seeing the message, and how willing they would be to share the specific article or discuss contents of the article with others. I also examined whether the adaptation or prevention articles were more likely to invoke concerns in participants that others would view them negatively for sharing an article about climate change. Key ideological variables (e.g., pre-existing concerns about tradeoffs, climate change beliefs) and a measure of relational motives (e.g., rejection sensitivity) were included as key predictors.

It was also expected that the decision to share information about climate change may be influenced by the extent to which one believes that the majority of others in one's social network/social circle hold similar or dissimilar views to oneself regarding climate change. The decision to share different types of information may be influenced by the perceptions of the social network/social circle that may view the information (e.g., a network of people holding dissimilar versus a network holding similar views to oneself). Thus a measure of perceived network similarity was also included as an exploratory

measure, though no specific hypotheses were formulated as to its differential influence on adaptation or prevention related articles.

There were several hypotheses in the present research. It was predicted that participants' pre-existing concerns about tradeoffs would influence their reactions to the adaptation and the prevention article: greater concern about tradeoffs between prevention and adaptation was predicted to result in greater willingness to share the prevention-related message and less willingness to share the adaptation-related message. Concern about tradeoffs was also predicted to affect participants' beliefs about how others will react to the message such that greater concern about tradeoffs was predicted to result in the belief that individuals will be less motivated to take action on climate change if they see the adaptation message compared with the prevention message. Given the novelty of this research, we included separate measures of participants' beliefs about how people who are concerned and how people who are not concerned about climate change would react. No specific hypotheses were formulated as to whether concern about tradeoffs would wield greater influence on beliefs about how those concerned or those not concerned would react to the messages. Concern about tradeoffs was also hypothesized to influence perceptions of each message in terms of key message characteristics such as likeability, trustworthiness, and accuracy, with the message aligning with their beliefs about tradeoffs being rated more positively on these characteristics (e.g., greater concern about tradeoffs will result in less likeability of the adaptation measure).

Several hypotheses were also made regarding the influence of relational motives, particularly on concerns about how others would view oneself for sharing the articles. Relational motives was operationalized in this research using a measure of rejection

sensitivity. By itself, rejection sensitivity was predicted to be positively correlated with greater concerns about how others would view oneself for sharing articles about climate change, regardless of whether it was an adaptation or prevention article. It was also expected that there would be a three way interaction between article condition, concern about tradeoffs and rejection sensitivity on the outcomes (willingness to share, beliefs about others' reactions to the message, beliefs about how others will view oneself for sharing the message). In particular, rejection sensitivity was expected to moderate with interaction between article condition and concern about tradeoffs such that those participants high in rejection sensitivity who were also concerned about tradeoffs were expected to be the least likely to share the adaptation-related message or evaluate the message positively. Those low in concern about tradeoffs and low in rejection sensitivity were predicted to be the most likely to share the adaptation message. No other specific predictions were made about the role of rejection sensitivity in sharing decisions.

## **2.1. Method**

### **2.1.1. Participants**

Participants ( $N = 217$ ) were recruited for this study online using Amazon's Mechanical Turk (MTurk). While no specific exclusion/inclusion criteria for the study were specified, in the recruitment materials it was noted that the researchers were particularly interested in the opinions of those concerned and engaged in environmental issues. Prior to hypothesis testing, several pre-determined data cleaning procedures were applied. This included removing data from participants completing less than half the survey, responses from duplicate internet provider (IP) addresses, as well as those spending less than 5 minutes on the full study and/or less than 10 seconds on the stimulus

materials. Additionally, data from two participants were removed for spending more than 10 minutes on the stimulus materials alone. Data from the remaining 190 participants ( $M_{\text{age}} = 35.73$ ,  $SD_{\text{age}} = 10.948$ ) were used for all hypothesis testing.

Roughly equivalent numbers of males ( $n = 90$ ) and females ( $n = 99$ ) participated in the study (one did not disclose their gender identity). Income levels were relatively evenly distributed across brackets, with the majority of participants reporting annual income levels in brackets between from 20,000 and 100,000 per year. Participants were slightly more on the liberal on the political spectrum ( $M = 3.39$ ,  $SD = 1.523$ ; 1 = *Far Left/Liberal*, 4 = *middle of the road*, 7 = *Far Right/Conservative*), with more identifying as Democrats ( $n = 85$ ) than as Independents ( $n = 62$ ) or Republicans ( $n = 35$ ). Two participants identified with the green party (six reported “other”).

Several demographic items were measured to characterize our participants’ social media use and past discussion of climate change. Majorities of participants reported receiving their news primarily from CNN ( $n = 52$ ), Reddit ( $n = 33$ ), Facebook ( $n = 24$ ), NBC ( $n = 18$ ), and Fox News ( $n = 15$ ). Participants reported moderate-to-high levels of social media use on a weekly basis ( $M = 4.01$ ,  $SD = .979$ , 1 = *never*, 5 = *a great deal*). Two items also measured participants’ frequency of sharing information about climate change online or with friends and family (1 = *never*, 5 = *a great deal*). Participants reported moderate-to-low levels climate change-related sharing on this composite measure ( $M = 2.43$ ,  $SD = .847$ ,  $r = .49$ ).

## **2.1.2. Materials**

**2.1.2.1. Prevention and adaptation news articles.** All participants read a hypothetical news article, ostensibly written by *The Economist*, describing the need for infrastructure

development in the United States in order to help address the issue of climate change.

Within the article, the rationale for this infrastructure development was manipulated such that half the participants were told that these infrastructure changes were needed to help prevent climate change (e.g., increase energy efficiency of buildings, reducing emissions by installing photovoltaic panels on the roofing of government and industry buildings) while the other half were told these changes were needed to help adapt to future climate change impacts (e.g., increasing coastal building resiliency to flood impacts and sea level rise, enhancing water infrastructure to better manage future shortages). Aside from the manipulated content, all other article content and aesthetic components were held constant across conditions, and the articles were matched for length to the extent possible. Appendix A displays the two stimulus articles in full.

**2.1.2.2. Concern about adaptation-prevention tradeoffs.** The concern about tradeoffs between climate change adaptation and prevention was measured using five items adapted and extended from past research (Chapman, Lickel & Markowitz, unpublished data). These items were designed to address several potential concerns related to tradeoffs, such as the belief that focusing on adaptation measures will reduce politicians' efforts to prevent climate change, as well as the belief that adaptation projects will reduce the motivation or ability to afford preventative measures (e.g., "Focusing on adaptation projects would make it seem like we are giving up on trying to prevent climate change from happening."  $M = 4.10$ ,  $SD = 1.385$ ,  $\alpha = .91$ ; 1= *strongly disagree*, 7= *strongly agree*). Higher scores on the composite measure indicated greater concern about the existence of tradeoffs between prevention and adaptation.

**2.1.2.3. Concerns about social rejection.** Relational motives related to concerns about being rejected by others were measured using five scenarios from the adult rejection sensitivity measure (Downey & Fieldman, 1996). This measure assesses the extent to which individuals contemplate and are concerned about being rejected by others (friends and family, strangers, etc.) in a variety of social settings. In the study reported here, participants were provided with five hypothetical scenarios that could evoke concerns about being rejected (e.g., “You ask your parents or another family member for a loan to help you through a difficult financial time.”). Following each scenario, participants are asked to respond to two items, one of which measured concern/anxiousness about being rejected (e.g., “How concerned or anxious would you be over whether or not your family would want to help you?”; 1 = *very unconcerned*, 6 = *very concerned*) while the other measured the perceived likelihood that others would react in a positive or negative manner (e.g., “I would expect that they would agree to help as much as they can?”; 1 = *very unlikely*, 6 = *very likely*). In line with Downey and Fieldman (1996) a composite for this measure was created by multiplying the scores for the two items from each scenario (reverse scoring the “likelihood” item), and then taking the average of these scores across the five scenarios. This resulted in a composite ranging from 1 to 36 with higher scores indicating greater rejection sensitivity ( $M = 9.82$ ,  $SD = 5.036$ ,  $\alpha = .71$ ).

**2.1.2.4. Perceived network similarity concerning climate change beliefs.** A single item measured the extent to which participants perceived the majority of individuals in their social network/circle to hold primarily similar or dissimilar attitudes to themselves about climate change (“When thinking about your social network/social circle, would you say that most people have similar or different views from you on climate change?”; 1 =



*Majority hold different views from me, 3 = equal mix of people holding similar and different views from me, 5 = Majority hold similar views to me*). On average, responses fell slightly above the midpoint of the scale ( $M = 3.52, SD = .895$ ).

**2.1.2.5. Concern about climate change.** Six items measured participants' concern about climate change and perceived severity/urgency of responding (e.g., "I consider climate change to be one of the most serious threats to the world.";  $M = 5.27, SD = 1.419, \alpha = .93$ ; 1 = *strongly disagree*, 7 = *strongly agree*), adapted from past research (Chapman, Corner, Webster & Markowitz, *manuscript in preparation*).

**2.1.2.6. Willingness to share and communicate the message.** Five items were used to measure different dimensions of the decision to share the article seen during the study. One of these indexed a simple dichotomous sharing decision, asking whether participants thought they would share the article on social media or email/forward the article to others (Yes = 59, No = 131). A second item measured how willing participants would be to share this specific article relative to others they have seen about climate change ( $M = 4.02, SD = 1.333$ ; 1 = *much less willing*, 7 = *much more willing*). Two items measured how willing (1 = *very unwilling*, 7 = *very willing*) they would be to have conversations about the details/viewpoint of the message with someone they know who is not concerned or skeptical ( $M = 4.20, SD = 1.551$ ) or already concerned ( $M = 4.88, SD = 1.472$ ) about climate change. The fifth item assessed participants' perceived likelihood (1 = *very unlikely*, 7 = *very likely*) that they would have conversations about the details/viewpoint of the article with friends or family members ( $M = 4.12, SD = 1.526$ ). For analytic purposes, each item was examined separately as they measure conceptually different components of the decision to share a message.

**2.1.2.7. Beliefs about others' reactions to the message.** Participants were asked to rate whether they thought the message would increase or decrease others' willingness to engage in pro-environmental behaviors, and whether they thought their decision to share the article would motivate others to also share the article. These two questions were asked separately in reference to those not concerned about climate change (e.g., "Do you think this message would motivate other people you know that are NOT concerned about climate change to also share this message?"; 1 = *greatly decrease motivation*, 7 = *greatly increase motivation*;  $M = 4.07$ ,  $SD = .743$ ,  $r = .57$ ) and those already concerned about climate change (e.g., "When thinking about people you know that are concerned about climate change, do you think this specific message would increase or decrease their concern and pro-environmental behaviors?"; 1 = *greatly decrease concern*, 7 = *greatly increase concern*;  $M = 4.84$ ,  $SD = .819$ ,  $r = .60$ ). These items were averaged into two separate composites. For both composite measures, higher scores indicate greater belief that the article would have a positive influence on others' climate change-related behavior.

**2.1.2.8. Beliefs about others' reactions to sharing the message.** Several items measured participants' beliefs about how others would view them if they were to share the article. Three items assessed the extent to which they were concerned about how sharing the article would make others in general view them (e.g., "I am concerned that others might make assumptions about the type of person I am if I shared this message."; 1 = *strongly disagree*, 7 = *strongly agree*). These three items formed a reliable composite with higher scores indicating greater concern ( $M = 2.76$ ,  $SD = 1.423$ ;  $\alpha = .84$ ).

The next set of items measured participants' assessments of how they thought others that are either concerned or not concerned about climate change would view them if they were to share the article. There were three items asked for each of these two reference groups. Two of the items assessed negative perceptions (e.g., "If I share this message, those NOT concerned about climate change in my social network/social circle will view me as exaggerating the issue of climate change."; 1 = *strongly disagree*, 7 = *strongly agree*), while one item measured positive perceptions (e.g., "If I share this message, those concerned about climate change in my social network/social circle will likely view me as well informed about the issue."; 1 = *strongly disagree*, 7 = *strongly agree*). However, the latter item assessing positive perceptions was dropped from the analyses due to low inter-item and item-total correlations with the negative perception items. Separate composites were created for the two negative perception items asked about those not concerned about climate change ( $M = 3.97$ ,  $SD = 1.524$ ;  $r = .73$ ) and those already concerned about climate change ( $M = 2.69$ ,  $SD = 1.334$ ;  $r = .69$ ).

**2.1.2.9. Assessment of message characteristics.** Participants also rated the extent to which each message met a variety of positive message-related criteria (1= *not at all*, 7= *completely*). Four items assessed the perceived quality and accuracy of the article (trustworthy, accurate, believable, exaggerated [reverse coded];  $M = 5.08$ ,  $SD = 1.430$ ,  $\alpha = .92$ ), while two items measured the extent to which participants found the article to be engaging and motivational (interesting/engaging, inspirational/motivating;  $M = 4.21$ ,  $SD = 1.578$ ;  $r = .72$ ).

### **2.1.3. Procedure**

Participants were recruited online via MTurk for participation in a 20-30 minute study. The study was described to prospective participants as a research project aiming to better understand public perceptions of prominent environmental issues. They were informed in the recruitment materials that they would be asked a series of questions about environmental issues, aspects of their personality, and read a brief news article about a current environmental issue. Compensation was \$1.00 (USD) for full completion of the study.

After consenting to participate, participants first responded to a series of demographic measures, followed by the measures of concern about climate change, concern about tradeoffs between climate change prevention and adaptation, sensitivity to social rejection, and the extent to which they perceive their social networks to hold primarily similar or dissimilar views about climate change relative to themselves (all presented in a random order). Participants were then randomly assigned to read either the climate change prevention or adaptation article, which formed the two experimental conditions in the study. Following this, all participants responded to the dependent measures assessing willingness to share and discuss the article, beliefs about how others would react to the article, beliefs about how others would react to them for sharing the article, and assessments of the accuracy and motivational qualities of the article. At the end of the study, participants were provided with a debriefing form describing the full nature of the study, as well as links to websites with more information about climate change prevention and adaptation.

## 2.2. Results

### 2.2.1. Descriptive Statistics and Correlations

Table 1 displays the descriptive statistics for the ordinal independent and dependent measures utilized in the study. Whereas participants in our study reported relatively high levels of concern about climate change overall, moderate levels of concern about tradeoffs between prevention and adaptation were observed. Participants also reported moderate-to-low levels of rejection sensitivity, consistent with the original scale norms found by Downey and Fieldman (1996). Responses overall were slightly above the midpoint on the network similarity measure, suggesting that on average participants perceived there to be slightly more individuals in their social networks that held similar views to themselves on climate change.

Responses to the majority of the measures of willingness to share or hold conversations about the messages fell around the midpoint of the scale and were normally distributed, as did the measures of beliefs about how those concerned or not concerned about climate change would react to the messages. Participants were relatively unconcerned about how others would view them for sharing the article, although this concern was a full scale point higher on average when thinking about those not concerned about climate change relative to those already concerned about climate change, or others in general. The messages were rated as above average on accuracy, and around the midpoint on the message's ability to engage and inspire.

Concern about tradeoffs was positively correlated with climate change beliefs,  $r(189) = .16, p = .032$ , but not with rejection sensitivity or perceived network structure similarity,  $r's < .03, p's > .7$ . Rejection sensitivity was negatively correlated with the

perception that one's network is similar to oneself in terms of climate change beliefs,  $r(189) = -.17, p = .02$ . Climate change beliefs were also positively correlated with perceptions of network similarity,  $r(189) = .23, p = .001$ .

Table 2 displays the relationships between each of the outcome measures and tradeoffs concern, rejection sensitivity, network similarity, and climate change beliefs. Collapsed across experimental condition, tradeoffs concerned was only significantly correlated (negatively) with the belief that the messages will positively influence those already concerned about climate change,  $r(189) = -.16, p = .028$ . As predicted, rejection sensitivity was positively correlated with each of the measures of concern about how others would view oneself for sharing the message ( $r$ 's  $> .28, p$ 's  $< .001$ ). Interestingly, rejection sensitivity was also negatively correlated with willingness to discuss the article with friends and family,  $r(189) = -.16, p = .023$ , as well as perceptions of message accuracy,  $r(189) = -.16, p = .022$ .

Network structure similarity was not significantly correlated with any outcome measures ( $r$ 's  $< .15, p$ 's  $> .10$ ). Climate change concern was positively correlated with all of the sharing outcomes, as well as with positive assessments of the message characteristics ( $r$ 's  $> .25, p$ 's  $< .001$ ). Climate change concern was also negatively correlated with the belief that others and those not concerned about climate change would view oneself negatively for sharing ( $r$ 's  $> -.15, p$ 's  $< .05$ ). The only measures that climate change concern was not correlated with were the belief that the message would positively influence those already concerned about climate change and the concern that those not concerned about climate change would view oneself negatively. This pattern of correlations suggest that, collapsed across articles, climate change concern is most

strongly correlated with the sharing and message-related outcomes. When examined on its own, tradeoffs concern and network similarity were both very limited predictors of the outcomes, while rejection sensitivity was primarily a predictor of concerns about how others would view oneself for sharing messages.

Additionally, we examined the correlations between each of the dependent measures of the study. These are displayed in Table 3. Strong positive correlations can be observed among each of the measures of willingness to share the article ( $r$ 's  $> .35$ ,  $p$ 's  $< .001$ ). Additionally, ratings of message accuracy and interest/engagement were both strongly correlated with the willingness to share or discuss the articles ( $r$ 's  $> .25$ ,  $p$ 's  $< .001$ ). The belief that the articles would positively impact those concerned and those not concerned were also positively correlated with the willingness to share the article ( $r$ 's  $> .20$ ,  $p$ 's  $< .001$ ). However, the concern about how others (in general, those concerned, and those not concerned about climate change) would view oneself for sharing the articles were very weak, and in most cases nonsignificant, predictors of the decision to share the articles. These results suggest that possessing the belief that an article will produce a positive impact on others' behavior was more important to the decision to share than relational concerns about how others would view oneself for sharing.

### **2.2.2. The Effect of Prevention and Adaptation Messages on Willingness to Share**

While no specific hypotheses were formulated regarding overall differences in ratings of the two articles, independent samples t-tests were first performed to examine whether the two experimental conditions significantly differed on our sharing-related outcomes. Participants were significantly more likely to report being willing to share the prevention article with those not concerned about climate change ( $M = 4.41$ ,  $SD = 1.602$ )

than the adaptation article ( $M = 3.97$ ,  $SD = 1.465$ ),  $t(188) = 1.98$ ,  $p = .049$ ,  $d = .29$ . There was also a significant difference between article conditions on the extent to which participants believed that others in general would view them negatively for sharing the articles,  $t(188) = 2.07$ ,  $p = .04$ ,  $d = .30$ . The adaptation article ( $M = 2.98$ ,  $SD = 1.399$ ) was rated as more likely to cause others to view oneself negatively for sharing relative to the prevention article ( $M = 2.56$ ,  $SD = 1.422$ ). There was also a significant difference on the extent to which participants perceived the two articles to be accurate depictions of climate change,  $t(2.21)$ ,  $p = .029$ ,  $d = .32$ . The prevention article was rated as more accurate ( $M = 5.29$ ,  $SD = 1.361$ ) than the adaptation article ( $M = 4.84$ ,  $SD = 1.474$ ),  $t(188) = 2.21$ ,  $p = .029$ ,  $d = .32$ , although both articles were rated above the midpoint in terms of accuracy. There were no other differences between the two article conditions.

### **2.2.3. The Interaction between Article Condition and Tradeoffs Concern**

Next, we examined the hypothesis that, across the multiple ratings of willingness to share the articles, beliefs about others' reactions to the articles, and beliefs about how others would react to oneself for sharing the article, greater tradeoffs concern would result in less positive attitudes toward the adaptation article relative to the prevention article. Moderated regression analyses to test these predictions were performed using Hayes' PROCESS macro for SAS 9.4 with article condition (0 = prevention, 1 = adaptation) entered as a dummy coded independent variable and tradeoffs concern (ordinal) entered as the moderator (Hayes, 2013; Model 1).

There was a significant interaction between concern about tradeoffs and experimental condition on the willingness to discuss the article with those not concerned about climate change,  $b = -.34$ ,  $SE = .16$ ,  $p = .035$ . Figure 1 provides a graphical display



of this interaction. When low in tradeoffs (-1 SD = 2.27), there were no significant differences in sharing preferences for the two articles,  $b = .04$ ,  $SE = .31$ ,  $p = .89$ .

However, consistent with our predictions, when high in tradeoffs concern (+1 SD = 5.49), participants were significantly less likely to share the adaptation article relative to the prevention article,  $b = -.90$ ,  $SE = .31$ ,  $p = .005$ .

There was also a marginally significant interaction between tradeoffs concern and article condition on willingness to have conversations about the article with friends and family,  $b = -.29$ ,  $SE = .16$ ,  $p = .076$ . This interaction follows the same pattern as the interaction displayed in Figure 1. When low in tradeoffs concern, participants did not differ on willingness to discuss the two articles,  $b = .24$ ,  $SE = .31$ ,  $p = .381$ . When high in tradeoffs concern, participants were slightly more willing to share the prevention article than the adaptation article, though the simple slope for this effect was non-significant,  $b = -.52$ ,  $SE = .31$ ,  $p = .102$ .

There was also a marginally significant interaction between tradeoffs concern and article condition on whether participants felt that others in general would view them negatively for sharing the message,  $b = .28$ ,  $SE = .15$ ,  $p = .064$ . For those low in tradeoffs concern, viewing the prevention article relative to the adaptation article did not impact their concern about how others would view them,  $b = .04$ ,  $SE = .29$ ,  $p = .90$ . When high in tradeoffs concern, participants were more concerned about how others would view them for sharing the adaptation article relative to the prevention article,  $b = .80$ ,  $SE = .29$ ,  $p = .006$ . A similar interaction pattern occurred when participants contemplated how those already concerned about climate change would view them if they were to share the article,  $b = .30$ ,  $SE = .14$ ,  $p = .035$ . When low in tradeoffs concern, beliefs that those

already concerned about climate change would view oneself negatively for sharing the article did not differ across articles,  $b = -.19$ ,  $SE = .27$ ,  $p = .496$ . When high in concern about tradeoffs, participants were more worried about being viewed negatively in the adaptation condition relative to the prevention condition,  $b = .64$ ,  $SE = .27$ ,  $p = .021$ . There were no other marginal or significant interactions for the other outcome measures.

Moderated regression analyses were also performed to examine whether general climate change concern, rather than concern about tradeoffs specifically, interacted with article condition to influence reactions to the adaptation and prevention articles. None of these interactions were significant or trending ( $p$ 's  $> .10$ ), suggesting the importance of concern about tradeoffs in particular, rather than concern about climate change more broadly, in influencing willingness to share articles about climate change adaptation relative to prevention.

#### **2.2.4. Interaction between Rejection Sensitivity, Tradeoffs Concern, and Article Condition**

We next examined the hypothesis that rejection sensitivity would enhance the extent to which tradeoffs concern would negatively influence assessments of and willingness to share the adaptation article relative to the prevention article. Moderated moderation analyses were performed using Hayes' PROCESS macro for SAS 9.4 (Hayes, 2013; Model 3), entering rejection sensitivity (continuous) as a moderator of the moderation relationship between tradeoffs concern (continuous) and article condition (dummy coded; 0 = prevention, 1 = adaptation) on the outcomes. Figure 2 displays a conceptual representation of the moderated moderation analyses. As no specific predictions were made a priori regarding whether these three way interactions would

emerge more strongly when participants reflected on those concerned or not concerned about climate change, or whether these effects would occur for specific content areas (e.g., willingness to share the message) and not others (e.g., concern about how others would view oneself for sharing the message), three way interactions were examined for all relevant dependent measures. There were no significant, marginal, or trending three way interactions between rejection sensitivity, tradeoffs concern, and article condition on any of the outcome measures.

### **2.2.5. Exploratory Analysis: Interaction between Network Structure, Tradeoffs Concern, and Article Condition**

Given the anticipated importance that the perception of others in one's social network/social circle holding similar climate change attitudes to oneself on decisions to share articles or discuss climate change, we also ran exploratory analyses examining whether there were three way interactions between tradeoffs concern, article condition, and perceived network similarity. Again, as no a priori hypotheses were made with regard to network structure or its effects on specific outcomes and not others, three way interactions were performed for all outcome measures. A number of significant three way interactions emerged, following similar patterns across analyses.

There was a significant three way interaction between tradeoffs concern, perceived network similarity, and article condition on willingness to share the article online,  $b = .45$ ,  $SE = .16$ ,  $p = .006$ . When participants perceived their network structure to be dissimilar to themselves, there was a significant interaction between tradeoffs concern and condition,  $b = -.64$ ,  $SE = .23$ ,  $p = .005$ , such that participants were less willing to share the adaptation article when higher in tradeoffs concern. When high in network

similarity there was not a significant interaction between tradeoffs concern and article condition,  $b = .17$ ,  $SE = .18$ ,  $p = .362$ . Figure 3 provides a graphical display of the observed three way interaction.

The interaction between condition, tradeoffs concern, and network similarity on willingness to have conversation with friends and family about the article was also significant,  $b = .61$ ,  $SE = .18$ ,  $p < .001$ . When individuals perceived their network to be dissimilar in belief to themselves, the interaction between condition and tradeoffs concern was significant,  $b = -.94$ ,  $SE = .25$ ,  $p < .001$ , and followed the same pattern as the interaction for willingness to share the article described above. When participants viewed their network structure as similar in belief, the interaction between tradeoffs concern and condition was not significant,  $b = .15$ ,  $SE = .20$ ,  $p = .473$ .

A marginally significant three way interaction also emerged on the dichotomous measure of willingness to share the article (0=no, 1=yes),  $b = .49$ ,  $SE = .28$ ,  $p = .08$ . When participants perceived their network structure to be dissimilar in beliefs about climate change, the interaction between condition and tradeoffs was non-significant. However, it was trending such that participants high in tradeoffs were more willing to share the prevention article than the adaptation article,  $b = -.63$ ,  $SE = .39$ ,  $p = .104$ . When participants perceived their network to be similar in climate change beliefs to themselves, there was no significant interaction between condition and tradeoffs concern,  $b = .24$ ,  $SE = .30$ ,  $p = .426$ .

There was a three way interaction between condition, tradeoffs concern, and network similarity on beliefs about whether the article would impacts skeptics' attitudes about climate change as well,  $b = .29$ ,  $SE = .09$ ,  $p = .001$ . When low in perceived network

similarity, the interaction between condition and tradeoffs was significant such that when high in tradeoffs participants were less likely to believe that the adaptation article (relative to the prevention article) would positively impacts skeptics' climate change attitudes,  $b = -.40$ ,  $SE = .12$ ,  $p = .002$ . When high in perceived similarity, the interaction between tradeoffs concern and condition was not significant,  $b = .13$ ,  $SE = .10$ ,  $p = .203$ . There were no three way interactions on beliefs about how the article would affect attitudes of those concerned about climate change.

There were no three way interactions when participants were asked to reflect on how they thought others (in general, those not concerned about climate change, and those already concerned about climate change) would view them if they were to share the article. These latter results indicate that the influence of network similarity may be more salient and important when it comes to wanting to convince others to act on climate change, rather than when reflecting on potential self-directed negativity from others.

We also examined whether there were three way interactions on participants' assessments of the extent to which they thought the articles were accurate and engaging/inspirational. There was a significant three way interaction on the perceived accuracy of the message,  $b = .58$ ,  $SE = .17$ ,  $p = .001$ . When network similarity was perceived as low, tradeoffs concern and condition interacted such the adaptation article was rated as less accurate than the prevention article when participants are high in tradeoffs concern,  $b = -.81$ ,  $SE = .24$ ,  $p = .001$ . When high in network similarity, there was not a significant interaction between condition and tradeoffs concern,  $b = .23$ ,  $SE = .19$ ,  $p = .218$ . There was also a significant 3-way interaction on the extent to which participants perceived the message as engaging and motivational,  $b = .67$ ,  $SE = .19$ ,  $p =$

.001. When low in network similarity the interaction between tradeoffs and condition is significant and follows the same pattern as the findings for message accuracy,  $b = -.83$ ,  $SE = .26$ ,  $p = .002$ . Interestingly, when high in network similarity, there was also a marginally significant interaction between tradeoffs and condition,  $b = .38$ ,  $SE = .21$ ,  $p = .076$ . Here, the adaptation article was rated as less engaging/inspirational than the prevention article for those low in tradeoffs, whereas both articles received similar ratings of engagement/inspiration when high in tradeoffs.

In addition to the aforementioned interactions, there was also a marginal three way interaction on willingness to communicate about the article with those already concerned about climate change,  $b = .35$ ,  $SE = .18$ ,  $p = .053$ , which followed a different pattern from all of the previously described interactions. Here, there was not a significant interaction between condition and tradeoffs concern when one's network was perceived to be dissimilar in climate change beliefs,  $b = -.28$ ,  $SE = .25$ ,  $p = .259$ . When perceived similarity in network belief is high however, there was a marginally significant interaction such that willingness to share the adaptation article with those concerned about climate change was higher when participants were high in tradeoffs relative to when it was low,  $b = .35$ ,  $SE = .20$ ,  $p = .083$ . Thus, whereas tradeoffs concern in general tended to produce less willingness to share the adaptation article relative to the prevention article, when participants believed others in their social network held similar beliefs about climate change to themselves, they were slightly more willing to share the adaptation article. However, it is worth noting that this interaction pattern was marginal, and is the only effect of the analyses following this pattern.

## CHAPTER 3

### GENERAL DISCUSSION

#### **3.1. Review and Limitations of Experimental Findings**

The experiment described here provided the first examination of how ideological beliefs, relational motives, and the framing of a risk simultaneously influence individuals' decisions to communicate different messages about a risk interpersonally. In particular, this research examined whether one's concern about tradeoffs between climate change adaptation and prevention policy as well as sensitivity to social rejection influenced the motivation to share an article about different policies related to climate change. This research also examined several affective and cognitive dimensions of the decision to communicate about an article interpersonally, such as the concern that others would view oneself negatively for sharing a message about adaptation or prevention.

Findings of the experiment yielded partial support for the study hypotheses. Greater concern about tradeoffs was associated with less willingness to have conversations with friends and family about an article when it was framed as being related to adaptation. Greater concern about tradeoffs also predicted less willingness to share the adaptation article with those not currently concerned about climate change. Interactions emerged for how participants felt others would view them for sharing the articles as well. Furthermore, concern about tradeoffs increased the belief that others in general and those already concerned about climate change would view oneself negatively for sharing information about climate change adaptation relative to prevention. Importantly, the effects observed on these preferences for sharing adaptation and

prevention articles was specific to concern about tradeoffs, and did not emerge when examining general climate change concern instead.

However, not all of the effects of tradeoff concerns were significant in these analyses. Interactions did not emerge for the single item measures of willingness to share the article online, as well as on beliefs about how the articles would impact others' pro-environmental behaviors. A post-hoc exploratory analysis using a single face-valid item ("Focusing on adaptation will make it seem like we are giving up on trying to prevent climate change.") taken from the larger tradeoffs composite significantly strengthened our observed effects however, and additional interactions in the hypothesized directions also emerged. In particular, with the single-item measure significant interactions were found between tradeoffs concern and article condition on the ordinal measure of willingness to share the message online and on the belief that the adaptation article would reduce the likelihood of those not concerned about climate change engaging in future pro-environmental behavior. While these item-specific findings are significant and in the hypothesized directions, isolating effects for a single-item—particularly when the original full measure was reliable—is not definitive and demands replication. Thus these analyses were not reported in the results section. These findings may suggest lower construct validity for our full measure of tradeoffs concern, warranting further psychometric testing to refine the measure for future research.

Exploratory analyses also highlighted an important role of perceived network structure in determining how tradeoffs influenced sharing decisions for adaptation and prevention articles. A series of three way interactions emerged, which indicated that the negative influence of tradeoffs concern on willingness to share and attitudes toward the



adaptation article occurred specifically when participants perceived their network to hold dissimilar views to themselves about climate change. While preliminary, these findings suggest that perceptions of network similarity and dissimilarity may be an important determinant of what messages individuals are willing to share interpersonally. However, as these effects were not hypothesized a priori and an equally plausible hypothesis could have been made about an opposite pattern of results, future research should further unpack the role of perceived network structure in secondhand communication prior to drawing conclusions about its role in sharing behavior. One potential method of doing so would be to conduct studies in which network structure is manipulated (e.g., placing participants in communication chains where they are told the chain is comprised of those with similar or dissimilar views to themselves) to examine whether this influences what types of information individuals communicate about a risk in real time.

As predicted, rejection sensitivity was positively correlated with the concern about how others would view oneself for sharing information about climate change, collapsed across conditions. The three way interaction hypotheses were not supported however. Rejection sensitivity did not exacerbate the extent to which concern about tradeoffs and influenced sharing preferences for adaptation and prevention articles. There are several potential reasons why this may be the case. One possibility is that creating a shortened five-item version of the rejection sensitivity scale generated a less reliable ( $\alpha = .71$ ) and valid measurement of the construct, thus reducing our ability to detect its effects. Alternatively, rejection sensitivity may not be the most appropriate construct for the conceptualization of relational motives in this context. Indeed, the rejection sensitivity scale is used widely in research on intimate relationships (Berenson et al., 2009). Perhaps

a more appropriate measure of relational motives in this context would be a measure that specifically assesses concerns for social image and the desire to be liked/approved of by others more generally. Other related constructs, such as self-esteem, may be more appropriate measurements to address to the role of relational motives in the decision to share information about risks with others.

In addition to measurement and construct issues, for heavily politicized topics such as climate change that have become embedded in social identity processes for many (Fielding & Hornsey, 2016), concern about negative social evaluation may be less important for the decision to propagate information. Indeed, examination of the correlations between the outcome measures in this experiment suggest that motivations to share the articles were much more strongly correlated with beliefs about how the information would influence others' environmental behavior than with concern about whether others would view oneself negatively. Thus, relational motives as a factor influencing willingness to share risk-related information may be less directly related to sharing in these contexts. Finally, it is also possible that relational motives may be more relevant for certain forms of secondhand communication, such as face-to-face conversation, and less relevant for others, such as posting on social media where there is an increased distance between individuals and greater ability to withdraw from negative feedback. Therefore, future research should pursue multiple avenues to address these questions. Studies should seek to determine optimal measures of relational concerns for risk communication contexts, as well as explore potential differences in the role of relational motives in different forms of communication behavior and for less politicized risks.

### **3.2. Implications for Risk Communication and Environmental Decision Making Research**

While only providing partial evidence for the core research hypotheses, this experiment is the first of its kind to unpack how context-specific ideological beliefs (i.e., being both concerned about climate change *and* concerned about tradeoffs in climate change response strategies) influences secondhand communication. These findings highlight the important and understudied effects of interpersonal communication in how risk perceptions are formulated and propagated. This research builds on the past literature within the SARF framework, and provides increased validity to recent calls for more research on interpersonal communication dynamics in risk research (e.g., Binder et al., 2011). Furthermore, building on the cultural cognition and motivated reasoning literatures (e.g., Kahan, 2011), this research suggests that motivated processes influence not just single individuals' assessments of risks such as climate change, but also what information about those risks they are willing to communicate with others.

It is also worth noting that the experiment discussed here was conducted with a relatively mild experimental manipulation, and performed in a context where the majority of participants perceived the dominant issue (i.e., climate change) as a risk, but differed in their assessments of the best solutions to the risk (i.e., adaptation relative to prevention). Given this nuance and the fact that significant effects still emerged for a number of core sharing measures, it seems likely that these effects would generalize and potentially be stronger for other risk-related topics both within and outside of the environmental domain. Thus, researchers in risk communication should expand their work beyond the current emphasis on media framing to further unpack the dynamics of

secondhand risk communication. This shift in perspective provides a novel opportunity for researchers in multiple fields, including social and cognitive psychology, communications and media studies, political science, and computer science to collaborate and integrate their research to better understand both small and large-scale dynamics and implications of secondhand communication.

The findings of this research also have implications for environmental decision making research on climate change adaptation and prevention behavior. In spite of the discussion and debate in the literature on the role of tradeoffs between climate change prevention and adaption, there is a strikingly limited amount of behavioral research on the topic. The recent studies that have been conducted on the topic adopt a very limited perspective on behavioral tradeoffs, and provide mixed and inconclusive evidence about these tradeoffs (e.g., Carrico et al., 2015). The experiment reported here adopted a novel perspective to this problem by hypothesizing that, rather than concerns about tradeoffs directly influencing environmental behavior, these concerns may be more likely to influence what information advocates are willing to share about adaptation and prevention with others due to concerns about their reactions. The findings of this research suggest that information about adaptation is less likely to be propagated and evaluated positively by those concerned about tradeoffs between adaptation and prevention. While preliminary, these findings suggest that studying information acquisition and propagation as it relates to dimensions of environmental risks and hazards such as tradeoffs may be a promising direction for future research. Given the primacy of social media and interpersonal discussion in individuals' daily lives, formulating messaging strategies that

can navigate these realms and ensure propagation of pertinent climate change risk-related information is a pertinent topic warranting further research.

### **3.3. Future Directions**

In addition to the potential extensions covered in the prior section, there are several other promising future directions in which to take this line of research. An interesting and unanswered question is whether the concern about tradeoffs between adaptation and prevention might influence initial information seeking, in addition to information sharing. Thus, when given the option of reading an article about climate change adaptation or prevention, concern about tradeoffs may influence which information individuals self-select to view, which may have a compounding effect on their subsequent decision to share the information.

An additional point of examination could be to use an alternative measure to relational motives in a follow up study and examine whether the role of relational motives on information sharing depends on the nature of the interpersonal communication being engaged in (e.g., face-to-face communication versus online communication). It is plausible that, rather than general rejection sensitivity, constructs such as introversion and extroversion, or self-esteem, may be more directly related to sharing decisions in this context.

Given the exploratory finding of the importance of perceived network structure in this experiment, future studies could also seek to replicate this effect and build upon it by manipulating the perceived structure of a social network in which participants are operating in the study. Experiments in this domain could directly test whether participants' decision to share certain information about climate change prevention and

adaptation is influenced by whether the network is highly similar or dissimilar in beliefs about climate change. Drawing on the past research on audience tuning (e.g., Echterhoff et al., 2013), it is possible that the influence of network structure on sharing decisions could also influence the sharer's own memory and attitudes toward the information they share over time. Furthermore, an important future direction would be to examine all of the aforementioned findings in the contexts of different risks to demonstrate their relevance and importance beyond climate change and the concern about tradeoffs between adaptation and prevention.

Given the recent research on how social sharing can dramatically shape how individuals both construct and remember information about risks (e.g., Coman et al., 2009; Hirst & Echterhoff, 2012), an interesting future research direction would be to examine how ideology and relational motives influence both secondhand communication as well as the formation of memories about a variety of risks using an information propagation paradigm. Consistent with recently used propagation paradigms (e.g., Coman & Hirst, 2011), the first person in a chain could be given information about the risk-related topic and then given the option to selectively pass along all or certain pieces of information to the next person in the chain, and so on. In this design, we could track whether each individual's ideological beliefs about the risk and relational motives influence their sharing decisions. Separate communication chains could be created in advance comprised of those holding either positive or negative ideological beliefs about the topic (e.g., climate change skeptics versus non-skeptics). This would then allow researchers to examine whether the final pieces of information shared in the communication chains (and participants' memory of the article information) are

qualitatively different for chains high or low in tradeoffs concern. This latter paradigm would provide an important advance of past research in risk communication by incorporating both the new secondhand communication findings presented here as well as the burgeoning literature on how social factors influence memory of information and world events.

### **3.4. Concluding Remarks**

The experiment presented here provides the first examination of how specific ideological beliefs can influence the decision to propagate different types of information pertinent to a risk such as climate change. This research suggests that those who are concerned about climate change and additionally express a concern about adaptation policies negatively influencing preventative climate change action are less willing to share information with others about responding to climate change if the response is framed as more related to adaptation than to prevention. Future research in risk communication should expand its investigation of ideological and interpersonal processes to not just examine how specific individuals formulate opinions about risks such as climate change, but also uncover the ways in which these dynamics influence how risk-related information is communicated between individuals in society. These investigations will both extend theory and aid practice in understanding how best to (not) communicate about politicized risks in order to motivate appropriate responses among the public.

# APPENDICES

## APPENDIX A

### STIMULUS MATERIALS

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#### Climate Change Prevention

## Climate Change Prevention: Investing in our Infrastructure

*Infrastructure changes needed to help prevent climate change, experts say.*

January 22<sup>nd</sup> 2016

Environmentalists have long said the world should concentrate on tackling climate change to avoid potential drastic effects. In spite of recent advances, we still have a long way to go. A recent report by a group of United States engineers, infrastructure specialists, and policy advocates suggests that significant changes to the U.S. infrastructure are needed to help reduce contributions to climate change.



Research detailing the impacts of climate change has revealed that without preventative action by governments and the public, the effects of climate change will drastically impact all of us. A major response currently advocated is to reverse or reduce human contributions to climate change. Changes to U.S. infrastructure can be an important way of attaining this goal, the new report suggests.

Investing in new “green” building infrastructure in major cities, for example, can dramatically reduce current greenhouse gas emissions by increasing energy efficiency. Investment in the utilization of alternative energy sources, such as placing solar panels on major government and private-sector business buildings, would go a long way in reducing our collective carbon footprint. These are just several examples of the many options currently being advocated and in need of funding and public support.

The researchers have sent a condensed version of the report to government leaders as well as major environmental organizations in the hopes to raise awareness of this pressing need. With an uncertain future and climate change becoming progressively rapid, it is vital that preventing climate change receives the attention that is necessary.

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## Climate Change Adaptation

# Climate Change Adaptation: Investing in our Infrastructure

*Infrastructure changes needed to help prepare for climate change, experts say.*

January 22<sup>nd</sup> 2016

Environmentalists have long said the world should concentrate on tackling climate change to avoid potential drastic effects. In spite of recent advances, we still have a long way to go. A recent report by a group of United States engineers, infrastructure specialists, and policy advocates suggests that significant changes to the U.S. infrastructure are needed to help prepare for and adapt to impending climate change impacts.



Research detailing the impacts of climate change has revealed that without adaptive action by governments and the public, the effects of climate change will drastically impact all of us. A major response currently advocated is to adapt and begin preparing for future climate change impacts. Changes to U.S. infrastructure can be a major way of attaining this goal, the new report suggests.

Investing in new building infrastructure in major cities, for example, can dramatically reduce the threat of climate change impacts by making major cities resilient against impacts such as coastal flooding, or strains on water resources due to severe drought. Investment in infrastructure changes where climate change impacts are projected to occur in the near future would go a long way in ensuring the safety of us all. These are just several examples of the many options currently being advocated and in need of funding and public support.

The researchers have sent a condensed version of the report to government leaders as well as major environmental organizations in the hopes to raise awareness of this pressing need. With an uncertain future and climate change becoming progressively rapid, it is vital that adapting to climate change receives the attention that is necessary.

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## APPENDIX B

### TABLES

Table 1  
Descriptive statistics and reliability coefficients for study measures

| <i>Variable</i>   | <i>M</i>          | <i>SD</i> | <i>Median</i> | <i>Minimum</i> | <i>Maximum</i> | <i>Reliability</i> |
|---|-------------------|-----------|---------------|----------------|----------------|--------------------|
| <b>Independent Variables</b>  |                   |           |               |                |                |                    |
| Tradeoffs concern   | 4.10              | 1.385     | 4.20          | 1.4            | 7              | .91                |
| Rejection sensitivity   | 9.82 <sup>b</sup> | 5.036     | 9.60          | 1              | 26.8           | .71                |
| Network belief similarity   | 3.52 <sup>a</sup> | .895      | 4.00          | 1              | 5              | N/A                |
| Climate change concern  | 5.27              | 1.419     | 5.50          | 1.33           | 7              | .93                |
| <b>Dependent Variables</b>  |                   |           |               |                |                |                    |
| Willing to share  | 4.02              | 1.333     | 4.00          | 1              | 7              | N/A                |
| Willing to discuss with friends/family  | 4.12              | 1.526     | 4.00          | 1              | 7              | N/A                |
| Willing to share with those not concerned about climate change                    | 4.20              | 1.551     | 4.00          | 1              | 7              | N/A                |
| Willing to share with those concerned about climate change                        | 4.88              | 1.472     | 5.00          | 1              | 7              | N/A                |
| Message will positively influence those not concerned about climate change        | 4.07              | .743      | 4.00          | 1              | 6.5            | .57 <sup>c</sup>   |
| Message will positively influence those concerned about climate change            | 4.84              | .819      | 5.00          | 1              | 7              | .60 <sup>c</sup>   |
| Others will view oneself negatively for sharing                                   | 2.76              | 1.423     | 2.33          | 1              | 6.33           | .84                |
| Those not concerned about climate change will view oneself negatively for sharing | 3.97              | 1.524     | 4.00          | 1              | 7              | .73 <sup>c</sup>   |
| Those concerned about climate change will view oneself negatively for sharing     | 2.69              | 1.334     | 2.50          | 1              | 7              | .69 <sup>c</sup>   |
| Message's accuracy  | 5.08              | 1.430     | 5.25          | 1              | 7              | .92                |
| Message's Interest/engagement   | 4.21              | 1.578     | 4.50          | 1              | 7              | .72 <sup>c</sup>   |

*Note.* Items denoted with the superscript <sup>a</sup> indicate items scored on scales ranging from 1 to 5. Items denoted with the superscript <sup>b</sup> indicated items scored on scales ranging from 1 to 36. All other items were scored on scales ranging from 1 to 7. Reliability values marked with the superscript <sup>c</sup> signify Pearson correlation coefficients, which were computed for composite scales consisting of only two items. All other reliability values are Cronbach's alphas.

Table 2

Bivariate correlations between each independent measure and the dependent study measures

|   | Tradeoffs<br>Concern | Rejection<br>Sensitivity | Network Belief<br>Similarity | Climate Change<br>Concern |
|---|----------------------|--------------------------|------------------------------|---------------------------|
| Willing to share (dichotomous)  | .05                  | -.01                     | .05                          | .26***                    |
| Willing to share (ordinal)  | .07                  | -.10                     | .06                          | .30***                    |
| Willing to discuss with friends/family  | .03                  | -.16*                    | .13                          | .42***                    |
| Willing to share with those not concerned about climate change                    | .12                  | < .01                    | .03                          | .30***                    |
| Willing to share with those concerned about climate change                        | .10                  | -.08                     | < .01                        | .45***                    |
| Message will positively influence those not concerned about climate change        | -.08                 | -.01                     | .09                          | .16*                      |
| Message will positively influence those concerned about climate change            | -.16*                | -.03                     | .06                          | .05                       |
| Others will view oneself negatively for sharing                                   | -.06                 | .34***                   | -.10                         | -.16*                     |
| Those concerned about climate change will view oneself negatively for sharing     | -.02                 | .29***                   | -.10                         | -.21**                    |
| Those not concerned about climate change will view oneself negatively for sharing | -.02                 | .42***                   | -.09                         | .01                       |
| Message's accuracy  | .06                  | -.17*                    | .06                          | .62***                    |
| Message's interest/engagement   | .09                  | -.09                     | -.06                         | .29***                    |

*Note.* All values are Pearson correlation coefficients. \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$

Table 3  
Bivariate correlations among dependent study measures

|  | (1)    | (2)    | (3)    | (4)    | (5)    | (6)    | (7)    | (8)    | (9)    | (10)  | (11)   | (12) |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|------|
| (1) Willing to share (dichotomous)   | 1      |        |        |        |        |        |        |        |        |       |        |      |
| (2) Willing to share (ordinal)   | .51*** | 1      |        |        |        |        |        |        |        |       |        |      |
| (3) Willing to discuss with friends/family                                     | .48*** | .62*** | 1      |        |        |        |        |        |        |       |        |      |
| (4) Willing to share with those not concerned about climate change             | .38*** | .49*** | .62*** | 1      |        |        |        |        |        |       |        |      |
| (5) Willing to share with those concerned about climate change                 | .39*** | .52*** | .58*** | .48*** | 1      |        |        |        |        |       |        |      |
| (6) Message will positively influence those not concerned about climate change | .24*** | .38*** | .36*** | .38*** | .23**  | 1      |        |        |        |       |        |      |
| (7) Message will positively influence those concerned about climate change     | .31*** | .44*** | .38*** | .34*** | .34*** | .38*** | 1      |        |        |       |        |      |
| (8) Others will view oneself negatively for sharing                            | -.12   | -.04   | < .01  | -.05   | -.01   | .07    | .03    | 1      |        |       |        |      |
| (9) Those concerned will view oneself negatively for sharing                   | -.16*  | -.04   | -.13†  | -.13†  | -.10   | .06    | < .01  | .58*** | 1      |       |        |      |
| (10) Those not concerned will view oneself negatively for sharing              | -.01   | < .01  | -.06   | -0.02  | .02    | .08    | .06    | .51*** | .35*** | 1     |        |      |
| (11) Message's accuracy  | .27*** | .44*** | .48*** | .30*** | .46*** | .27*** | .18*   | -.13†  | -.22** | -.03  | 1      |      |
| (12) Message's interest/engagement   | .44*** | .57*** | .58*** | .47*** | .53*** | .38*** | .44*** | < .01  | -.02   | < .01 | .53*** | 1    |

Note. All values are Pearson correlation coefficients. \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .01$ , †  $p < .10$

## APPENDIX C

### FIGURES

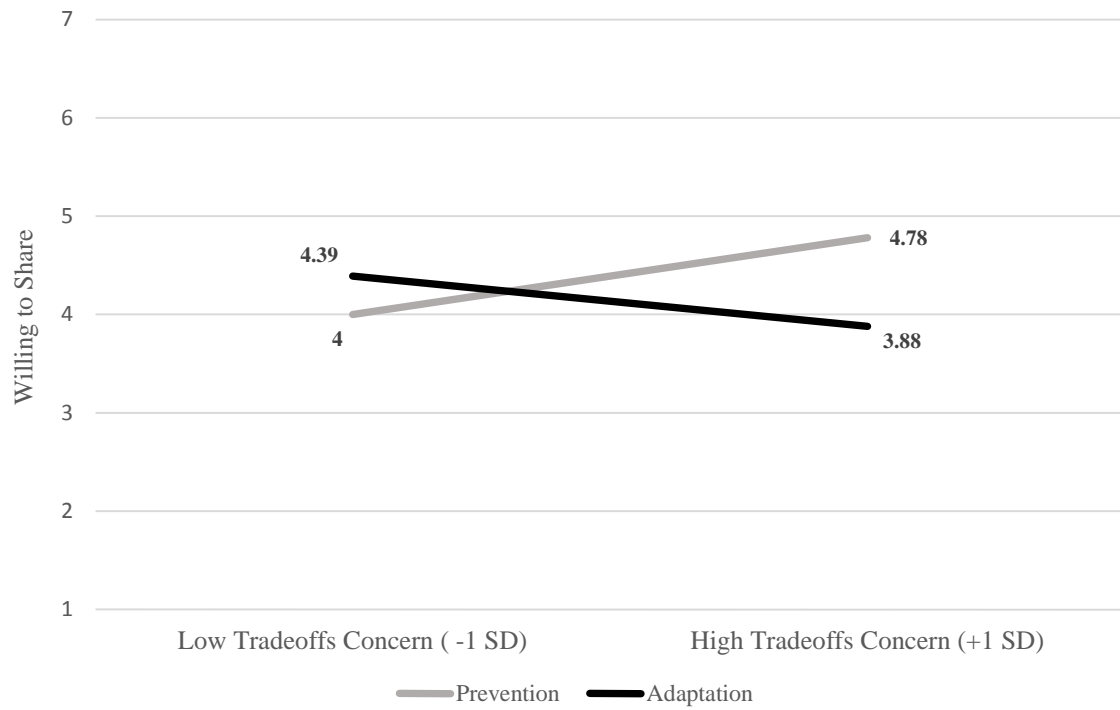


Figure 1. The interaction between tradeoffs concern and condition on willingness to discuss the article with those not concerned about climate change.

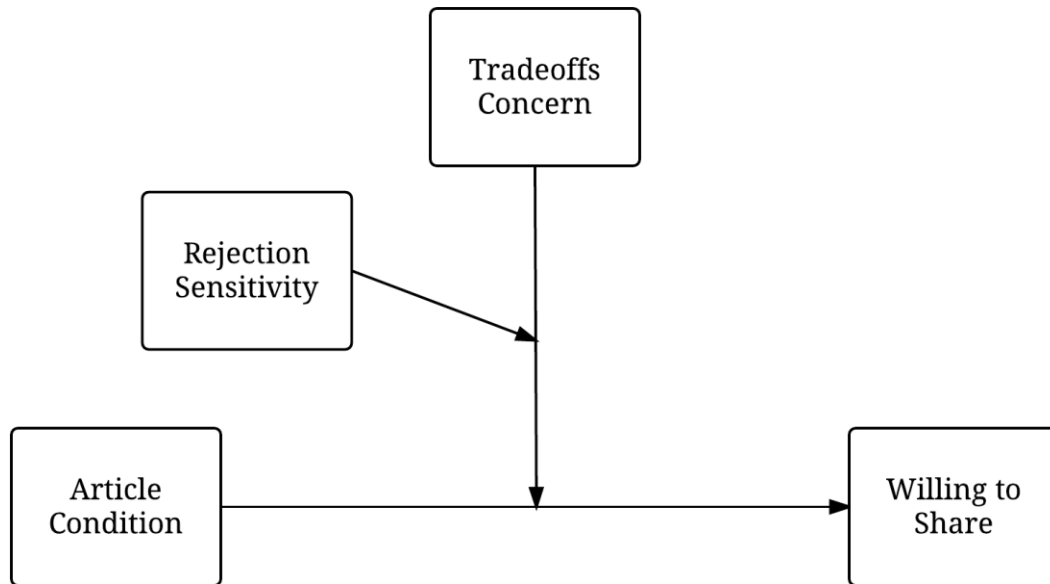


Figure 2. Conceptual model of the moderated moderation hypothesis. It was hypothesized that there would be a three way interaction between article condition, tradeoffs concern, and rejection sensitivity on willingness to share the articles, as well as the other study outcomes. For clarity, only willingness to share is represented in this model. It was predicted that greater rejection sensitivity would enhance the effects of tradeoffs concern on willingness to share the adaptation article. The results did not support this hypothesis.

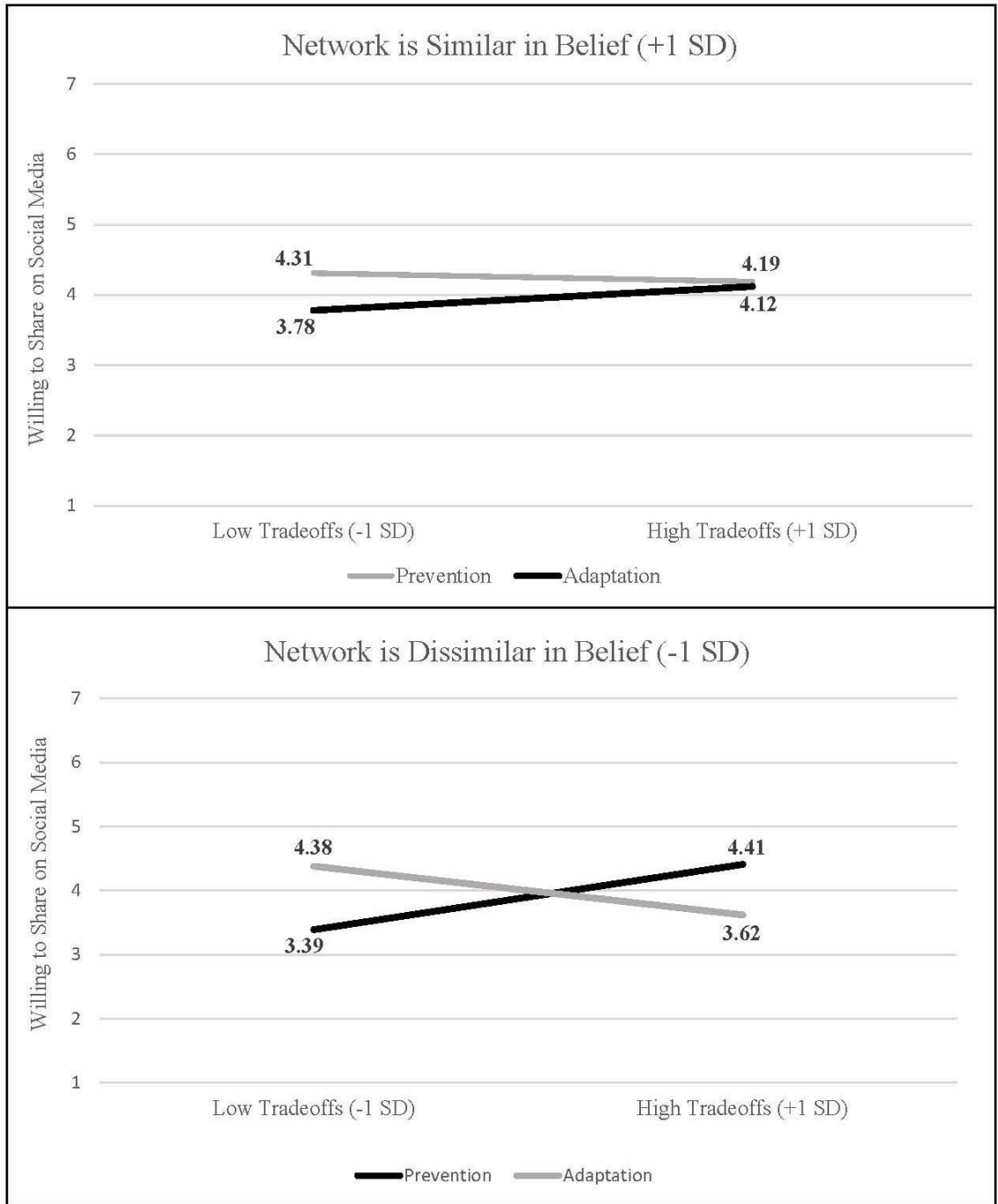


Figure 3. Significant three way interaction between article condition, tradeoffs concern, and perceived network similarity on willingness to share the article. The top panel plots the non-significant interaction between concern about tradeoffs and article condition when participants were high in perceived network similarity. The bottom panel displays the significant interaction between concern about tradeoffs and article condition when participants perceived their network to be dissimilar (-1 SD on network similarity) to themselves in terms of climate change belief.

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