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How political ideology affects climate perception: Moderation effects of time orientation and knowledge

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ABSTRACT

Extensive research has identified negative social, economic, and environmental impacts of climate change and have therefore proposed mitigation and adaptation measures. Policy making and implementation of those measures depend on public awareness and risk perception of climate change. This article investigates the relationship between an individual's political ideology and risk perception of climate change, and particularly whether this relationship is affected by one's time orientation and knowledge. We confirm that individuals with a higher ideological agreement with liberalism perceive a higher risk of climate change. This positive effect, however, is further augmented by individuals' future time orientation, and lessened by their knowledge of climate change. Our findings suggest that it requires a more tailored strategy in climate communication in order to improve policy making and implementation.

1. Introduction

An extensive literature has shown that climate change is associated with negative impacts on the natural environment, human society, and physical and psychological health of individuals (Walther et al., 2002; Patz et al., 2005; Doherty and Clayton, 2011). Mitigation and adaptation measures are essential to address those climate impacts, which call for appropriate policy making and implementation. In the policy-making process, public risk perception of climate change plays a key role. Although climate change risks can be studied and evaluated objectively, subjective perception of such risks is also important and is affected by individual characteristics.

Researchers in the fields of psychology, communication, and environmental science are increasingly interested in environmental and climate behaviors of individuals (Babaei et al., 2015; Geng et al., 2017; Russell et al., 2017; Wang et al., 2017). They have identified a plethora of factors that might influence public risk perceptions of climate change, including demographic factors (Davidson and Freudenberg, 1996; Liere and Dunlap, 1980), institutional trust (Poortinga and Pidgeon, 2003), attitudes, values, beliefs (O'Connor et al., 2002), heuristics and biases (van der Linden, 2017). Among the factors identified by scholars, political ideology is a critical one to shape individual

climate change cognition and behavior (Costa and Kahn, 2013; Hammar and Jagers, 2006; Unsworth and Fielding, 2014). For example, researchers found that conservatives, particularly the Republicans in the US context have a significantly lower level of climate change beliefs and concerns than liberals, particularly the Democrats in the US (Leiserowitz, 2005). The results imply that the conservatives tend to be more skeptical about climate change as a fact, while the liberals tend to accept it.

There is, however, insufficient research explaining risk perception of people with different political ideologies. Risk perception of climate change is a process including information searching, processing, and comprehensive judgement forming (Weber, 2010). Such a judgement forming process may be affected by political ideology, because people with alternative political ideologies differ in their way of information searching and processing and thereby perception of risks (Yang et al., 2014). Our first research question concerns whether political ideology toward liberalism is associated with a higher level of perceived risk of climate change.

If incremental variation in political ideologies is associated with different levels of climate change risk perception, communication of climate change and policy making requires more understanding of places for intervention. In cases where the objective is to gain further

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policy support, it is essential to understand conditions for increased risk perception. Besides the individual characteristics and social culture, many other behavioral aspects affect climate change perceptions (van der Linden, 2017). This article therefore explores the conditions that influences the effect of political ideology on climate risk perception.

Among the behavioral biases, how individuals deal with the present and future is an important one. According to the construal level theory of Trope and Liberman (2010), as the temporal distance increases, risks in the future are mentally construed at a more abstract level compared to those in the present. This bias, however, may be mitigated when individuals possess a strong future time orientation. In other words, differences in individuals' time orientation may influence the magnitude on which political ideology affects climate risk perception. According to the previous research, future time orientation would increase individual perception of potential environmental and energy risk, as climate change is future orientated for sustainable development (Brizga et al., 2014). But their research only considers the effect of future time orientation, as an independent variable, on risk perception. Baldwin and Lammers (2016) considers time perspective as a contextual variable, and find that past focus increases pro-environmental behaviors of the conservatives. There is still rarely any research about time orientation's influences on the magnitude of the effect of political ideology on individual risk perception.

Another behavioral bias comes from system justification theory, which suggests that some people prefer the status quo and perceive it as "stable, fair, just, and legitimate even when the system may be disadvantageous to others" (Jost and Hunyady, 2005). The implication is that individuals tend not to accept new information that may change their judgement. Less knowledge may further prevent people from accepting new information, leading to greater biases. Therefore, differences in individuals' knowledge of climate change may influence the magnitude on which political ideology affects climate risk perception. Similarly, the existing literature treats climate knowledge as an independent variable, suggesting that understanding of climate causes (Ming Lee et al., 2015), physical knowledge of climate change (Mumpower et al., 2016), and self-reported climate knowledge (Malka et al., 2009) affect risk perception of climate change. Knowledge also reduces the negative association between individualism and belief in climate change (Guy et al., 2014). There is still no research directly testing the influence of knowledge on the magnitude of the effect of political ideology on individual risk perception.

We investigated the research questions through a survey on Amazon Mechanical Turk. We find that a higher ideological agreement with liberalism is associated with a higher level of perceived risks of climate change. This positive effect of liberalism ideology on climate risk perception, however, is not independent from the contextual factors. It is augmented by individuals' future time orientation and lessened by their knowledge of climate change. The findings indicate the need for a more complicated communication strategy to facilitate climate action and policy support.

The remainder of the article is organized as follows: we first review the theories and develop our hypotheses for testing (Section 2), describe the research strategy, data collection, and measurement of variables (Section 3), then analyze the data and test hypotheses (Section 4), and finally discuss the implications of our findings (Section 5) and conclude (Section 6).

2. Hypotheses development

2.1. Political ideology and climate change risk perception

Political ideology is defined as an interrelated set of attitudes and values, which contain cognitive, affective, and motivational components and help to explain why people do what they do and how societies function in order to achieve proper goals such as social justice and social order (Jost et al., 2009; Kidwell et al., 2013). Some

researchers state that an individual's place within the dimension of conservatives versus liberals reflects one's central personal value and core beliefs toward the proper society goals and the approach to achieve them (Jost, 2012; Chin et al., 2013). Different from a dichotomous consideration of the liberals versus the conservatives in those studies, here we treat political ideology as two ends on a continuous spectrum. Political ideology was used by Caprara et al. (2006) as a central organizing axis for individual beliefs on a range of issues. Specifically, individuals with a higher agreement toward conservatism (hereafter conservatism) emphasize on authority, stability, and the status quo, and individuals with a higher agreement toward liberalism (hereafter liberals) focus on civil rights and social issues, containing diversity, social justice, social change, and natural environment protection (Jost et al., 2003).

In this study, we propose that political ideology, will be highly relevant for individual climate change risk perception. Individuals with a certain place in the political ideology spectrum will seek and confirm information consistently with their value and belief foundation, which shift their risk perception of climate change.

Specifically, liberals emphasize on civil rights and associated social issues and values empathy (Morrison and Miller, 2008). Individuals with this kind of political ideology may be seen as more compatible with the premises underlying almost any activist issue concerning social injustice. Thus, liberals tend to perceive environmental change as a higher level of risk and even prefers to act with promoting behaviors or actions to improve overall social justice (Janoff-Bulman et al., 2009). This is because climate change is a social issue that is appealing for higher degrees of personal efficacy and responsibility to care for the justice for the future generation (Kellstedt et al., 2008).

On the contrary, conservatives place more emphasis on authority and stability (Jost et al., 2003), which lead them to defend the status quo and to deny problems such as climate change that threatens system functioning (Antonio and Brulle, 2011). Several empirical studies found negative association of conservative ideology and the support of climate protection activities (e.g. Costa and Kahn, 2013) and climate policies (e.g. Hammar and Jagers, 2006; Unsworth and Fielding, 2014). Following the literature, we therefore propose:

H1. Political ideology toward liberalism has a positive effect on perceived risk of climate change by individuals. In other words, along the continuous ideology spectrum of conservatives versus liberals, the more politically liberal an individual is, the greater risk he/she will perceive of climate change.

2.2. The moderating role of future time orientation

Future time orientation refers to "the extent to which individuals consider the potential distant outcomes of their current behaviors and the extent to which they are influenced by these potential outcomes" (Strathman et al., 1994). It illustrates intrapersonal balance between immediate outcomes and future outcomes of individual present behaviors, which is regarded as a relatively stable characteristic. In other words, individuals with high future time orientation prefer to focus on distant needs and concerns, rather than the immediate ones. We therefore propose that high future time orientation augments the positive effect of individual's political ideology toward liberalism on climate change risk perception.

Specifically, liberals are more willing to build an individualized moral foundation based on their inner feelings about moral behaviors with specific regard to individual rights and welfare (Graham et al., 2009). They seek to protect others from potential harm and being mistreated, and their pursuit for social justice (Graham, 2013). When individuals have high future time orientation, they care about the rights and welfare of human beings not only for the current generation but also for future generations. Thus, they tend to have pro-environmental attitudes and behaviors.

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