DISSERTATION

BELIEFS, IDEOLOGIES, CONTEXTS AND CLIMATE CHANGE: THE ROLE OF HUMAN VALUES AND POLITICAL ORIENTATIONS IN WESTERN EUROPEAN AND TRANSITION STATES

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ABSTRACT

BELIEFS, IDEOLOGIES, CONTEXTS AND CLIMATE CHANGE: THE ROLE OF HUMAN VALUES AND POLITICAL ORIENTATIONS IN WESTERN EUROPEAN AND TRANSITION STATES

Anthropogenic climate change presents a threat on a scale unlike any other faced by human civilizations. Accordingly, extensive research has engaged with questions about which types of characteristics and under which conditions make it more or less likely for a person to be concerned about climate change, engage in actions aimed at fighting climate change, and support climate change relevant policies. Of this prior research, political factors and human values have emerged as key predictors. Values and political factors are deeply related constructs, and do not operate in isolation of each other. But, as of yet, little is known about how these factors interrelate to affect differences in climate change attitudes and behaviors. Further, contextual factors, such as political structures, affluence, and prior histories, have been linked to climate change attitudes and behaviors. Recent findings have noted stark differences between key predictors in Western European and post-communist transition states, such as those between political factors and human values. But, it is unclear in which ways these contextual differences systematically differentiate the patterning of climate change attitudes and behaviors.

Accordingly, this dissertation engages theoretically and empirically with the issues of how human values and political factors interrelate to determine climate change attitudes and behaviors, and how these forces diverge based upon the Western European and transition state settings. Overall, when values and politics are in alignment, these forces affect an amplification of climate change attitudes and behaviors, a finding consistent in both settings. But, the role of human values and political factors substantively differs between these state groupings, as well as across different forms of climate change attitudes and behaviors.

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DEDICATION

To Julia, Paddy and Ronan

Let us be loving, hopeful and optimistic. And we'll change the world

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Dissertation Overview

1.1 Introduction

Climate change presents a potentially existential threat to present and future generations of humanity, requiring rapid transformations in individual and collective actions, shifting from an exploitative- to stewardship-approach towards the Earth system (Steffen et al., 2018; Lenton et al., 2019). Global governmental agreements, such as the 2015 Paris Accords, have set ambitious targets for GHG emissions reduction. In order to meet emission reduction goals, rapid sociopolitical transitions are necessary (Farmer et al., 2019; Otto et al., 2020a). Social systems are on the verge of potentially the greatest changes since the Industrial Revolution, either towards mitigation solutions towards climate change, or as a result of responses to the impacts.

While the potential impacts of climate change will be directly experienced by most social systems, comparatively greater scientific interest has been paid to the effects of climate change on natural systems, as opposed to the relationships with social systems (Overland and Sovacool, 2020). To be able to identify politically and socially feasible mitigation solutions, it is imperative that we understand under which conditions are people more or less likely to be concerned about climate change, support public policies in response to climate change, and be willing to engage in pro-climate change behaviors. Further, it is important to understand how these conditions vary under different cultural and political contexts (in particular, areas outside of developed, Western democratic states).

For this dissertation, I engage a comprehensive examination of how human values and political frames shape individual concern, behaviors and policy support surrounding climate change within Europe, with a particular focus on differences between Western European and post-communist, transition States.

Over previous decades, a growing body of literature has assessed the role of a large set of individual factors driving attitudes and behaviors in response to climate change (such as political orientations, trust, knowledge, adaptive capacities, education and socio-demographic characteristics). Political factors and individual values systems are amongst the most substantive factors motivating climate change attitudes (Hornsey et al., 2016). The role of political factors has been extensively studied (McCright et al., 2016b), particularly within the context of the United States and other English-speaking countries, where people with left-leaning political orientations, or those who support left-leaning political parties, are generally more concerned about climate change and more supportive of actions aimed at mitigating climate change. Human values, such as biospheric, universalist or benevolent values, have been found to have a positive relationship with climate change attitudes and behaviors (Dietz et al., 2007; Poortinga et al., 2011, 2019).

But, comparatively less research focuses on the role of human values and climate change, particularly within cross-national or comparative studies, as the empirical literature is largely individual case studies, or psychological models (see Marquart-Pyatt, 2008; Dietz et al., 2002). Further, there are currently minimal linkages between human values and political factors, in particular, understanding how they act independently and interactively to shape climate change attitudes and behaviors.

Therefore, this presents two crucial gaps in our current knowledge:

First, how political factors and human values operate first independently, and subsequently interactively, to shape climate change attitudes and behavior. As noted, human values and political factors have been commonly utilized as antecedents to climate change attitudes and behaviors. But, the political factors and human values are not independent of each other, but rather strongly interrelated constructs. Values form the 'building blocks' of an individual's political preferences (Rokeach, 1973; Converse, 1964). When making political decisions, people are presumed to draw upon their values to help organize and prioritize certain political goals over others (Piurko et al., 2011). As such, people are assumed to hold political orientations and prefer political parties and policies that are in alignment with their values (Barnea and Schwartz, 1998; Schwartz et al., 2010),

as individuals strive to maintain internal consistency between their values and political attitudes (Krosnick, 1988).

Jost et al. (2003) argues that conservative political ideologies are related to individual resistance to change, and individualist values that justify inequalities (such as prioritizing power and prestige), while liberal ideological approaches are more rooted in values emphasizing open-mindedness, benevolence, and flexibility. Numerous recent studies have also noted strong relationships between values and political orientations. Recent studies have noted the linkages between the two (Thorisdottir et al., 2007; Aspelund et al., 2013; Piurko et al., 2011, see). Of particular note Caprara et al. (2006) find that human values explained roughly 18% of the variance in voting patterns in a sample of Italians, while commonly used demographics (such as age, education and gender) only explained a further 2%. Clearly, the constructs of values and political attitudes are deeply connected within individuals.

But, currently, little research has explained how these factors interrelate to shape climate change attitudes and behaviors. Does the alignment of conservative political orientations and self-enhancement values act as an amplifying effect, further dampening climate change attitudes and behaviors within individuals? Or how much of the effect of human values is directly affecting climate change attitudes and behaviors, or is most of this attenuated indirectly via political values? These theoretically and substantively important questions remain largely answered within the current literature. As such, I engage the following initial research question for this dissertation:

Research Question I: How does the interrelation between individual human values and political orientations shape climate change significant attitudes and behaviors?

Second, how do the effects of political factors and human values vary within diverse cultural and political contexts? The literature on climate change attitudes and behaviors disproportionately focuses on the United States (and other similar English-speaking states), and to a lesser degree, Western European states. A recent meta-analysis by McCright et al. (2016b) finds that roughly 70% of all empirical research on climate change attitudes and behaviors focuses on US-based case studies, while only 10% are cross-national analyses. This is clearly an issue, as each country faces

their own unique impacts and concerns with regards to climate change, and each having their own unique cultural and political histories and structures shaping attitudes and possibilities for action within each unique state.

This gap is likely due to bias of US-based scholars and publication venues to focus on domestic issues of climate change attitudes and concerns, as well as the lack of publicly available academic resources to properly assess these varying contextual effects. Until recently, few survey cross-national data programs have contained items measuring climate change attitudes and behaviors, and almost none have contain indicators for human values. The 2016 European Social Survey (ESS) is the first major cross-national survey program to contain items for climate change attitudes and behaviors, as well as indicators for political factors and human values. Further, the ESS allows for comparative investigation of climate change attitudes and behaviors, containing data from a sum of 22 European countries, including 7 transition states.

An emerging literature pays specific attention to environmental attitudes within the post-communist, transition states, as comparatively, people within the states have been found to have comparatively lowers levels of concern for climate change, or willingness to engage in climate change actions (Chaisty and Whitefield, 2015; Marquart-Pyatt, 2012; Hadler and Wohlkonig, 2012; Haller and Hadler, 2008). These differences are presumed to be a result of the "stickiness" previous state socialist policies, where environmental conditions were a comparatively lower priority, a legacy that continues to impact public opinions in these states (Chaisty and Whitefield, 2015). Further, recent research notes that commonly used predictors of climate change attitudes and behaviors, such as political factors, appear to have divergent effects within transition states (McCright et al., 2016a; Lewis et al., 2018; Smith and Mayer, 2018a). But, as of yet, there is little known about the role of human values, and how they interact with political factors, to shape climate change attitudes and behaviors in transition states, notably human values. Nor is there research comparing the effect of other common determinants of climate change attitudes and behaviors between Western European and transition states (such as forms of trust, education and socio-demographic characteristics).

Therefore, I explore the two further research questions:

Research Question II: How do human values and political orientations directly and indirectly shape climate change attitudes and behaviors in transition states?

Research Question III: How to do the effects of common determinants of climate change attitudes and behaviors vary between Western European and transition states?

Lastly, a majority of the previous studies on climate change attitudes and behaviors have focused on either understanding the patterning of climate change beliefs (anthropogenic/skeptical) or how concerned people are about climate change (measures of risk perceptions) (McCright et al., 2016b). This is again, likely due to item availability within larger survey programs (such as the GSS and ISSP), but also potentially as a reaction to rise of climate change skeptic movement, beginning in the 1990s in the US. But, such a focus misses other key components of climate change, namely, under which conditions are people more likely to make behavioral changes in response to climate change and be more supportive of climate change policies. If the rate of global emissions need to reduce by 5-10% each year to meet IPCC goals of less than 2 degrees warming, or 10-20% to reach net zero emissions by 2050, rapid transitions are clearly necessary (Otto et al., 2020a). Current social science research needs to support these transitions, providing data and mechanisms on the ways in which people are willing to make individual and collective behavioral changes and support policies.

Further, it is less clear if the effect of common determinants of climate change attitudes and behaviors is consistent across different forms of outcomes (beliefs, concerns, behaviors, policy support). An overview of the independent literatures of climate change beliefs, concerns, behaviors and policy suggest unique differences in individual effects and mechanisms. For example, political factors appear to be more substantive in shaping beliefs and policy support surrounding climate change (Hornsey et al., 2016), but less so for individual behaviors (McCright et al., 2016b). But, currently, there is little understanding of the comparative effects of common determinants across climate change attitudes and behaviors.

Therefore, for this dissertation, I evaluate the final research question:

Research Question IV: How does the effect of human values and political frames differ based upon the type of climate change attitude or behavior?

1.2 Structure of Dissertation

For this dissertation, I engage four, sequential research papers engaging with the role of human values and political orientations shaping climate change significant attitudes and behaviors in Europe:

For my first paper, I conduct a 'state of the literature' review of the role of human values and political factors shaping climate change attitudes, beliefs, concerns and actions. This paper will serve as the foundation for the three subsequent empirical papers. This review paper takes the primary form of a comprehensive literature review and synthesis of several distinct, and at times overlapping, literatures; (1) the role of political factors on climate change attitudes, beliefs, concerns and actions, (2) the effect of human values on climate change perceptions, (3) how values and political orientations interact to effect climate change attitudes and behaviors, (4) how the effect of values and political orientations on climate change dispositions and actions differs in post-communist, transition states, and lastly (5) the unique dynamics of climate change beliefs, concerns, behaviors and policy perceptions.

In the second paper, I perform an empirical study on the interrelated role of values and political orientations shaping climate change dispositions and actions in Western European countries. In particular, this paper will focus on the moderating role of human values on the relationship between political orientations and climate change practices and dispositions within Europe.

In the third paper, I develop a second empirical study in which I will focus on the divergent effects of human values and political orientations on climate change significant attitudes and behaviors between Western European and post-communist, 'transition' states. Recent literature suggests that human values and political orientation are not as effective of predictors in transition states, or that they have opposite directional effects. As such, further specific attention should be

paid to these transition states, as they have a unique political, social and economic history driving individual climate change attitudes and behaviors.

Lastly, in the fourth paper I perform a comparative analysis of how the effect of common determinants of climate change attitudes and behaviors differs, or is similar, between Western European and transition states. This will build upon the results of the third paper, but expand the analysis beyond human values and political factors to other constructs, such as trust, knowledge, education and socio-demographic characteristics. The ultimate goal of this final paper is to provide a broader understanding of when certain attributes are similar/dissimilar across these countries with diverse cultures and recent political histories.

1.2.1 Contributions of Dissertation

The primary contribution focuses on developing the relationship between human values and political attitudes in driving climate change actions. The extant literature has established that values and political attitudes act independently as strong predictors of climate change actions, concerns and behaviors. But drawing from the social psychology literature, we know that human values and attitudes are heavily interdependent upon each other. These forces act, and re-act, with and on each other as primary drivers of environmental dispositions. Moreover, empirical studies have noted the strong role of values in determining individual political attitudes. But while the literature has established the independent roles of human values and political attitudes on climate change dispositions, as well as establishing that human values and political attitudes are strongly related, there is, currently, little understanding of how human values and political attitudes can interact with each other to drive climate change beliefs, attitudes and behaviors. As such, this is the primary research gap in which this larger project sits. In the dissertation, I first address literature on the independent roles of political attitudes and human values in driving climate change dispositions. I then explore the interrelated nature of political attitudes and human values. Following this review, I develop a theoretical argument concerning the interrelation of these two constructs

which, I argue, is crucial to understanding the patterning of climate change beliefs, behaviors and policy perceptions.

Next, this dissertation aims to further explore whether the effect of human values and political attitudes is not fixed cross-nationally, or rather if these effects change greatly due to the broader social and cultural context of an individual? The lived experience of individuals varies greatly due to the social and political contexts, as such, the ways in which people experience political identities, or develop their values, depends greatly on the context (Tilly, 1995; Gieryn, 2000; Feinberg et al., 2017). Currently, the vast majority of quantitative empirical literature focuses on climate change attitudes and behaviors within Western-state perspective (McCright et al., 2016b). But, this focus fails to note the differences of cultural contexts, for example, the differences between Western and Eastern European residents. Individuals from post-communist, transition states have, and continue to, experience key determinants of climate change differently than people from Western European states (Chaisty and Whitefield, 2015; Marquart-Pyatt, 2012; Hadler and Wohlkonig, 2012; Haller and Hadler, 2008). So much so that the meaning of politically "left" and "right" are largely oppositional within these states, where left ideologies are often associated with free-market based solutions, while politically right is connected with the previous state socialist regimes (McCright et al., 2016a; Chaisty and Whitefield, 2015). Further, human values are reflective of unique socialization of each individual, and can shift over time, particularly in response to abrupt transitional events, persuasive communications, and the need to resolve internal consistencies between values and attitudes. This raises a number of questions about whether human values vary on the macro-level between Eastern and Western European states, as well as for the individuals within these states.

Currently, there is an emerging literature on divergent climate change beliefs, behaviors and policy preferences within post-communist, transition states (McCright et al., 2016a; Lewis et al., 2018; Smith et al., 2018). But, there is little understanding of how the role of values can differ within these states, or how political attitudes and human values would interact divergently in post-communist transition states. The primary goal of the fourth paper is to identify if and how

transition states differ relative to Western European counterparts in common drivers of climate change attitudes and behavior (such as trust, education and socio-demographics).

Lastly, within the current literature, the vast majority of survey based empirical studies have focused on either predicting climate change beliefs or concerns, with more limited attention paid to behaviors and policy support. This is primarily a product of the response items available in publicly available cross-national survey data. But, while much attention has been paid to identifying key drivers of these beliefs, concerns and behaviors, far less attention has been paid to how the effect of these predictors may vary across climate change outcomes. Rather, the literature largely treats these methodologically and theoretically the same, regardless of the type of climate change attitude or behavior.

For this dissertation, I intend to pay close attention to how the key predictors of interest, political frames and human values, may have differing effects dependent upon the outcome. In the first paper, I develop a framework for how climate change beliefs, concerns and behaviors have similar and unique components, and identify notable gaps within the existing literature. In the second and third papers, I adopt a multi-measures approach to compare the differences between climate change beliefs, concerns and behaviors.

Chapter 2

Values, Politics and Climate Change: The interrelation of human values and politics shaping climate change attitudes and behaviors

2.1 Introduction

Climate change presents a potentially existential threat to future generations of humanity, requiring a shift in societal actions from exploitative to stewardship of the earth system (Steffen et al., 2018). Global governmental agreements have set ambitious targets for greenhouse gas energy reduction (such as the 2017 Paris Accords). But, in order to transition social systems away from carbon-based schemes, rapid societal transformations are necessary to shift these systems into qualitatively different, non-carbon based, states (Farmer et al., 2019). However, public support for climate change ameliorative actions is crucial in facilitating political changes to shift contemporary social structures into post-carbon transition states (Soroka and Wlezien, 2010; Wlezien, 1995). Shifts in public opinion can punctuate previously stably and 'sticky' institutions, leading to policy change (Baumgartner and Jones, 2010), and increased activism and public concern regarding climate change can generate new coalitions, or shift the priorities of existing ones (Sabatier, 1988; Weible and Sabatier, 2017a).

In recent decades, an extensive literature has developed to understand the patterning and drivers of attitudes, concerns and actions towards climate change. Studies of individual-level determinates have noted several socio-demographic patterns. Generally, older age, male gender identification and lower educational attainment have found to be negatively related to pro-climate change attitudes and behaviors (Milfont et al., 2015; McCright, 2010; Echavarren, 2017; Poortinga et al., 2011). Social characteristics, such as trust in society and institutions (Smith and Mayer, 2018b; Fairbrother, 2016), trust in climate science (Ding et al., 2011; Lewandowsky et al., 2013b),

scientific knowledge (Whitmarsh, 2011; Kahan et al., 2012) and adaptive capacity (Mayer and Smith, 2018; Feinberg and Willer, 2011) have all been found to shape climate change attitudes and behaviors. Further, individual experiences with extreme weather events (Spence et al., 2011; Hamilton and Stampone, 2013), or subjective vulnerability to climate change risks (Satterfield et al., 2004) are found to have a positive relationship with climate change concerns.

Human values and political orientations are amongst the most robust and strongest predictors of climate change beliefs (Hornsey et al., 2016). In English speaking countries, particularly the United States, political attitudes are a strong driver of climate change beliefs (see McCright et al., 2016a; McCright and Dunlap, 2011b). In general, those on the political right are less likely to be concerned about climate change, to support climate change policies, to engage in climate change ameliorative actions and are more likely to have climate change skeptical views. While this phenomenon is most prominent in Anglophones states, similar political polarization has been found in Western European states (McCright et al., 2016a; Lewis et al., 2018; Smith and Mayer, 2018a).

Similarly, human values been frequently identified as key predictors of climate change attitudes and behaviors (Corner et al., 2014; Kahan et al., 2011; Poortinga et al., 2004; Dietz et al., 2007). Values set boundaries for which sorts of behaviors are considered acceptable (or moral), and frame the ways in which people experience the social world (Hitlin and Piliavin, 2004). As such, they are often noted to shape how people view and interact with the environment (de Groot and Steg, 2008; Stern, 2000). Schwartz (1992, 1994) conceptualization of basic human values presents an oft-adopted framework to understanding the role of values in shaping the environment. In particular, people with self-transcendent (altrustic) values have been observed to have greater concerns for the environment (Poortinga et al., 2019; Corner et al., 2014; de Groot and Steg, 2008), while individuals with more conservative values (such as tradition and security) are less likely to be concerned about the environment (Stern et al., 1998; Schultz and Zelezny, 1999).

But while the independent patterning of human values and political orientations on climate change attitudes and behaviors is well documented, little is known about the interrelation between

these socio-political factors. Rather, in studies of the role of human values, political factors are commonly adopted as a control variable (Dietz et al., 2007; Poortinga et al., 2011, 2019, see), and inversely, indicators for human values are rarely included in studies focusing on effects of political factors.

Human values and political factors do not act independently of each other, but rather are deeply interrelated constructs. Values are central to political orientations and beliefs (Caprara and Zimbardo, 2004; Feldman, 1988), acting as the 'building blocks' of political orientations and dispositions (Rokeach, 1973; Converse, 1964). Individuals draw upon these values to help organize and prioritize their diverse political belief, to help them make political decisions, and to frame the ways in which they communicate with other about politics (Piurko et al., 2011). Given the interrelated nature of politics and human values, it is likely that they interact to effect climate change attitudes and beliefs.

Therefore, this dissertation examines the interrelated role of human values and political orientations shaping climate change attitudes and beliefs, and how these effects could differ based upon the cultural and historical contexts. As such, this study first explores the relationship between political factors and climate change attitudes and behaviors, establishing the patterning of common drivers, as well as identifying cross-national differences. Second, this dissertation examines the role of human values in shaping climate change attitudes and behaviors and examines the interactive role of human values and political orientations as related constructs. Third, it explores whether and how the roles of human values and political orientations could differ for the climate change attitudes and behaviors of people in post-Communist, transition states. Fourth, this study compares the effects of human values and political factors, as well as other commonly used determinants of climate change attitudes and behaviors (such as trust, education and socio-demographics) between Western European and transition states. Lastly, this dissertation examines how the effects of political factors and human values can vary depending on the type of climate change attitude or behavior being studied.

In order to develop the background necessary for this dissertation, this chapter takes the following format: first, a comprehensive background of the roles of political factors and human values in shaping climate change attitudes and behaviors; next, a development of the interactive nature of political factors and human values, and how these relationship can amplify/dampen individual climate change attitudes and behaviors; third, an exploration of the cross-national differences in climate change attitudes and behaviors, with a specific focus on the emerging literature on transition states; and lastly, conclude with an examination of the different types of constructs of climate change that have been adopted in the literature (beliefs, concerns, behaviors and policy support), and a motivation for adopting multiple measures approaches to understanding the independent and interactive roles of human values and political factors.

2.2 Political Factors

2.2.1 Political Orientations and Party Identification

Political factors can be broadly categorized into two groups, political orientations and party identification. Generally, political ideology is understood as the set of beliefs an individual holds regarding the preferred role of government. These beliefs guide individual dispositions toward wide ranges of policy issues (Converse, 1964; Gerring, 1997). The roots of political ideologies are both individual and social. First, individuals are assumed to develop political ideologies in congruence with their own personalities, and psychological needs (Caprara and Zimbardo, 2004; Feldman, 2003). That is, if one has a need for order and structure, they are more likely to adopt a political ideology close to conservatism, or even right-wing authoritarianism (Jost et al., 2003). Second, individuals take on political ideologies that are in line with their class-interests (Lipset and Rokkan, 1967; Evans, 2000). As class structures have diversified across race, class and locality over recent decades (Lipset, 1960; Alford, 1967), the relationship between class and ideology has weakened (Manza et al., 1995; Evans, 2000). As such, political ideology remains a product of agential- and structural components, driving an individual's political preferences, attitudes and behaviors.

Party identification, on the other hand, is often understood as a social identity, where individuals adopt a party, and set boundaries for who is 'in' and 'out' of their group (Iyengar et al., 2012; Colvin et al., 2015). People develop a sense of belonging to their 'in-group' (Tajfel, 1978), and this emotional attachment drives individuals to adopt the norms and attitudes that are akin to those of the group (Weisberg and Greene, 2003; Brewer and Brown, 1998). That is, Republicans are more likely to adjust their attitudes to be line with those of the party, especially on salient issues (Unsworth and Fielding, 2014), resulting in a smoothing-over process, harmonizing attitudes within the party. The consolidation process of political social identities therefore leads to further polarization between different party members, as individuals are less likely to adopt the attitudes of the 'out' groups (Mason, 2015; Greene, 2004).

Whereas in the past, people's political ideology and party identification were considered to be more discrete, the relationship between these constructs has becoming more closely linked in recent decades (Abramowitz and Saunders, 2006; Green et al., 2002), where individuals are more likely to be affiliated for the party that more closely represents their ideological disposition. Within the US, this increased relationship between ideology and affiliation is likely caused by a realignment of white voters in the American North and South since the 1970s (Abramowitz and Saunders, 2006). But, contemporary political realignments, particularly within the Republican Party (rise of the Tea Party, and subsequent shift towards 'Trumpism'), note that again, ideologies and affiliations may be engaging in a new cycle of coupling, or decoupling. Similarly within Western European states, many traditional center-left and center-right parties have substantial decreases in support, with voters realigning towards right wing populist parties (such as the AfD in Germany and Rassemblement National in France) or more recently, also towards left-leaning green parties (i.e. 2019 European Parliamentary Elections). These shifts indicate that voters may be willing to abandon their allegiances to traditional 'big-tent', more centrist parties, in favor of an emerging, diverse set of more ideologically focused parties. As such, voters may be more willing to directly align their party identifications with their specific political ideologies.

Such shifts also raise the issues of causal ordering, i.e. whether political ideology effects party identification, the opposite, or this relationship is non-recursive (Beasley and Joslyn, 2001; Converse, 1976). Utilizing experimental data, Gerber et al. (2010) find that identifying with a political party does increase affiliation and development of social, political identity, but does not necessarily translate to shifts in personal opinions or political actions. That is, party identification leads one to evaluate the members of their group more favorable and of the 'out group' less favorably, but not necessary shift the individual attitudes or behaviors of the person. This suggests while there is a correlation between political ideologies and party affiliation, this relationship is not overly deterministic. For example, within the increasingly polarized US-based context, political orientation (measured on a left-right scale) is moderately associated with party affiliation ($r = 0.55$)[1]. That is, only 30% of the variance of party affiliation is explained by political orientation.

2.2.2 Political Factors and Climate Change

Since the beginnings of modern sociological inquiries into human-environmental systems, political factors have been a core focus of patterning environmental attitudes (Dunlap, 1975). A decades long, robust literature has observed political preferences as one of the most consistent predictors of climate change attitudes, behaviors and policy support (Hornsey et al., 2016; McCright et al., 2016b; McCright and Dunlap, 2011a). The theoretical causes for this polarization can be broadly grouped under the 'anti-reflexivity' thesis, where individuals, groups, and politically-motivated organizations on the 'right' are more likely to be supportive of free market, capitalist systems. Therefore, they are also more likely to reject the problems that the economic system causes, such as climate change, than those on the 'political left' (McCright and Dunlap, 2010). Further, conservatives may be more likely to resist the solutions that may be required to fix problems caused by climate change, as they likely involve governmental interventions into markets, a phenomenon which Campbell and Kay (2014) call "solution aversion".

[1] Pearson's r. Source: General Social Survey, 2018

As discussed above, individual party identification can be seen akin to social identities (Iyengar et al., 2012; Colvin et al., 2015). As such, people are likely to change their attitudes and beliefs to be in line with dominant viewpoints of the group. As such, those that identify as being conservative will align their attitudes with others who are conservative. This process is particularly effective on issues where partisan identities and issues are perceived as important or are salient, as is the case with climate change (Unsworth and Fielding, 2014). Thus, differences in opinion between group members tend to be 'smoothed over', resulting in increased political polarization (Greene, 2004; Mason, 2015).

The group-level political differences in climate change attitudes are often shaped by elite members' cues and attitudes. Individuals do not hold entirely internally consistent preferences, but rather, are presumed to be responsive to messaging from elite in-group members (Cohen, 2003; Malka and Lelkes, 2010; Tesler, 2017). Elite conservative actors and groups have campaigned in shifting public opinion against climate change policies and measures. A network of conservative think tanks and media relations firms, often with significant funding from the fossil fuels industry, have played a prominent role shaping public discourse (Jacques et al., 2008; McCright and Dunlap, 2003), which was further amplified by conservative-friendly media outlets (Feldman et al., 2012; Hmielowski et al., 2014). Religious conservative elites have engaged in anti-climate change discourse, framing the modern environmental movement as an emerging modern religion, one that is a threat to not just Christianity, but the personal and political freedom on all Americans (Hempel et al., 2014). Individuals are responsive to these cues, and shape their attitudes and beliefs to be in line with the in-group. This is a process that Kahan (2015, 2017) calls "identity protective cognition", as individuals adjust their beliefs to preserve status within the in-group. Empirical analyses have found a substantive effect of elite cues driving attitudes towards climate change in the United States (Brulle et al., 2012; Farrell, 2016).

But, while these these elite cues lead to political polarization of climate change attitudes and behaviors, recent research suggest that the same is not true for individual policy preferences. Rather, people often carry paradoxical policy preferences (Mettler, 2011). For example, Mayer

(2017) finds that conservatives are likely to report that the energy production industry is over-regulated, reflecting key messaging of elite cues. But, conservatives are supportive of specific regulatory policies that are far more stringent than ones currently in place. As such, there may be differences in the effect of political polarization on attitudes/beliefs towards climate change and individual policy preferences.

Recent literature on political preferences and climate change attitudes and behaviors have used ideology and party identification rather interchangeably, consistently finding that left-leaning ideology or Democratic party support is positively related to pro-climate change attitudes (McCright et al., 2016b). Numerous studies also include indicators for both political ideology and party identification (e.g. Wood and Vedlitz, 2007; McCright, 2011; McCright et al., 2016b), finding positive, independent effects for both constructs. Alternatively, Shwom et al. (2010) and Smith and Leiserowitz (2012) report positive, but non-significant, effects of political ideology and party identification.

2.2.3 Other Political Drivers

Individual approaches towards the environment could be further linked to an alternative measure of political ideology: beliefs in the role of the free market. Conservative political parties and individual ideologies are most commonly associated with the endorsement of "free markets" as the ideal economic system. As discussed above, McCright and Dunlap (2011b) connects free-market ideology with political orientation, as climate change adaptations require market intervention and therefore is in opposition to conservative ideologies, while protections against climate change is more consistent with left-wing views about the role of the state in promoting the collective welfare of the citizenry. Further, Heath and Gifford (2006) argue that as free market ideologies suppose that the "invisible hand" will correct for failures of the system, there is little for an individual to be concerned about regards with the environment.

Recent literature also supports the similarities in the relationships between either free-market/political ideology and the climate change attitudes. In a cross-national study, Smith and

Mayer (2018a) find that the patterning of climate change attitudes is similarly predicted by utilizing a measure of political or free-market ideology. While Heath and Gifford (2006) and Lewandowsky et al. (2013a) find that free-market ideology is associated with climate change skepticism in Australia in similar patterns to the role of support for the Liberal Party (a major center-right party).

Further, educational attainment has been long found to be positively related to environmental attitudes (Muttarak and Lutz, 2014; Striessnig et al., 2013). But, an emerging subfield has noted the a moderating relationship between education and political orientation on climate change attitudes. These studies find that, for people on the political left, greater educational attainment increases pro-climate change attitudes. But, the opposite it true for people with conservative political identities, where higher education is negatively associated with climate change attitudes (Hamilton, 2011; McCright, 2011). This moderating relationship has been observed in a number of different aspects of climate change attitudes in the United States, including: climate skepticism (Hamilton and Stampone, 2013; Stevenson et al., 2014); subjective climate change knowledge (Hamilton and Saito, 2015; Hamilton and Stampone, 2013) and trust in climate change science (Hamilton et al., 2015; Hamilton, 2016).

In sum, political determinants remain at the core of understanding individual dispositions towards the climate change, and the environment more broadly. There appear to be multiple forms of political orientations and identities, that have some overlap, but also appear to hold unique effects. Further, other related variables, such as education, can moderate the relationships between these political variables and environmental outcome. Therefore, whether adopting measures of political orientiation, party affiliation, or other political ideologies, careful attention needs be paid to these indicators, to be able to parse out the effect of these factors on specific climate change attitudes and behaviors.

2.3 Human Values

Rokeach (1973, p. 5) defines values as "enduring beliefs that a specific mode of conduct is personally or socially preferable to an opposite or converse mode of conduct or end-state of

existence". Values are relatively static internalized schemas, which operate like "well-organized structure(s) of cognitions about some social entity such as a person, group, role or event" (Michener and DeLamater, 1998, p.107). Values set boundaries for which sorts of behaviors are considered acceptable (or moral), and frame the ways in which people experience the social world (Hitlin and Piliavin, 2004). In such a way, values act as an moral compass (Joas, 2000), and are called upon to evaluate whether action, events, people and such are perceived as 'good' or 'bad'.

Schwartz and Bilsky (1987, p.551) identify the five most common features of values within varied sociological conceptualizations. Values are "(a) concepts or beliefs, (b) about desirable end states or behaviors, (c) that transcend specific situations, (d) guide selection or evaluation of behavior and events, and (e) are ordered by relative importance". Most conceptualizations of values assume that a common universal set of values which exist within all people, but are of varying quantities and differentially ordered by hierarchical importance (see Schwartz, 1992, 1994; Rokeach, 1973, 1979; Inglehart, 1977, 1995). That is, value constructs are assumed to be relatively universal, holding similar schemas within individuals, but each person may emphasize the expression of one specific value over another. As these values are long lasting dispositions of individuals, they drive interests, beliefs and actions towards or against different social phenomena.

Values have been often, and wrongly, conflated with other areas of sociological interest, such as attitudes and interests. While norms represent the social forces enabling and constraining how an individual is expected to act, values represent the force of what individuals want to be or desire as an end-state. Norms are constraining, forcing an individual to act in a particular manner within social interactions, while values do not share these normative pressures, and act on the individual more as motivations than forces towards practices within an interaction (Hitlin and Piliavin, 2004).

Values are perceptions of individual ideal states, while attitudes refer to the actions and behaviors taken by an individual. Thus the role of values in individual action is much more abstract than attitudes (Rokeach, 1979). There is an empirical connection observed between attitudes and values, in which attitudes can be often be seen as the expression of values towards evaluation

of a particular social object (Kristiansen and Zanna, 1991). Values can serve as the underlying motivation towards an attitudinal goal (Maio and Olson, 2000). But values are more affiliated with understandings of the self than behaviors and attitudes of the individual (Hitlin and Piliavin, 2004). Further, values are found to be more durable than attitudes, and are observed to be transposed across the life of an individual, while attitudes and behaviors are much more dynamic (Konty and Dunham, 1997).

Needs also differ from values, in which they are the effect of biological influences. But, these biological needs can manifest themselves within observable cultural values. Rokeach (1973) identifies how the cultural value of love could be a construction of the biological need for sex. Further, biological need for food could manifest itself in different cultural values, such as security or benevolence. It is important to note that while needs can be manifested and observed through divergent cultural values, these values can provide the motivation for actions but not the actual needs themselves (Hitlin and Piliavin, 2004).

2.3.1 Value Stability and Change

As values are often theorized to be 'relatively' stable and 'enduring', the theoretical and empirical literature on values has often focused on their stability, rather than how and when they change (Hitlin and Piliavin, 2004). The empirical research on values also presents inconsistent results, with some studies finding values to be quite stable over time (e.g. Feather, 1975; Schwartz, 2005), while other more volatility and a comparatively dynamic nature of values (e.g. Kohn and Schooler, 1982; Rokeach, 1973; Sheldon, 2005). Value change can be measured on a macro-level, such as shifts in the means of values within a specific population, or more individually, where the ranked order of values changes internally. Regardless of the type of change, Bardi and Goodwin (2011) suggest multiple facilitators of value change. In terms of external drivers Bardi and Goodwin (2011) note that new life circumstances, especially larger and abrupt ones, can cause values to change through the process of 'adaptation'. These structural changes may take the form of new norms or laws or even external events. For example, populations are more likely to

exhibit higher levels of the need for security after large terrorist attacks, such as the Oklahoma City Bombing in the United States (Frink et al., 2004) or the London underground bombings (Goodwin and Jr, 2009). Even prominent events, that are far away, have the capacity to effect changes. For example, Verkasalo et al. (2006) find greater mean values of security amongst Finnish school children after 9/11, while the importance of stimulation decreased.

Further, values can also change as a result of direct persuasion techniques, either individually or via mass communications, education programs or policies (see Chatard and Selimbegovic, 2007; Saks and Ashforth, 1997). Such attempts at persuasion can have differing effects. When the quantity of a value is relatively weak, or unstable, persuasion techniques can be successful. But, if a value is quite strong within a person, they could react against the attempts of persuasions, resulting in a further strengthening of the 'undesired' value. Bardi and Schwartz (1996) report that value dimensions are more stable and centralized as people age, while they are much more tangible and reflective in childhood and adolescence. This is particularly true in childhood, when individuals are developing a sense of an emerging sense of self, values are continually adjusted and readjusted to meet ones own observed behaviors (Fischer, 2017).

Rokeach (1973) notes that people are motivated to resolve internal inconsistencies between values, attitudes and other self-concepts. This is derived from the concepts of 'cognitive dissonance', where individuals rationalize and become willing to adapt new attitudinal positions to allay their self-dissatisfaction with internal inconsistencies in the concept of their self (see Festinger, 1957; Cooper, 2012). If an attitude is very important to a person, it is very unlikely to change. In such cases, people may change their values to be in line with these attitudes (Krosnick, 1988). Or, if both the attitude and the value share comparable importance for a person, the inconsistency may be resolved by the individual engaging in denial (Abelson, 1959), or simply the attitude and the value may converge over time. As such, there appears that, depending on the circumstances, there can be a reciprocal relationship between values and attitudes (Vecchione et al., 2016). In sum, value change can be driven by multiple factors, and is reflective of experiencing and actions of the individual, as well as internal processes to maintain consistent understandings of their self.

2.3.2 Causal Ordering of Values and Attitudes

As previously noted, values are theorized to be prior to attitudes within causal ordering (Schwartz, 1994; Maio and Olson, 2000), and further, are presumed to be longer lasting and durable than the more dynamic attitudes and behaviors (Konty and Dunham, 1997). Values act as guiding principals in people's lives, acting as the moral compass (Joas, 2000), effective in driving judgements about what is important or desirable standards of behavior, events or people (Rokeach, 1973; Hitlin and Piliavin, 2004; Hitlin, 2008). Individuals are presumed to draw upon these values when making their evaluations of politicians, or political parties (Caprara et al., 2017; Barnea and Schwartz, 1998).

But, recent findings suggest that in the case of highly salient political attitudes, it is possible that political attitudes could change one's underlying value structure. For example, Eisentraut (2019) notes that in the recent European refugee crisis, people may have had values that would broadly dispose them to be supportive of refugees (such as benevolence, universalism, openness to change), but at the same time, hold political attitudes could be aligned with right-of-center parties and political identities (which are generally in opposition to supporting refugees). As the refugee crisis was a highly salient issue, people were more likely to take a particular side, either strongly for or against supporting refugees. Given the need for internal consistency of values and attitudes, people may transform their values to be more aligned with their political attitudes (Krosnick, 1988). Using panel data from Germany, Eisentraut (2019) finds that while values are more stable than attitudes over time, the longitudinal effects of values on attitudes, and of attitudes on values, were quite similar. As such, values were effective in driving changes to attitudes, but in turn, attitudes were similarly transforming an individual's values.

As such, there are several possible scenarios of the causal ordering of human values and political attitudes (see Figure 2.1). The classical theoretical approach places values before attitudes in driving behaviors (Panel A), but in an alternative causal ordering, attitudes could be positioned before values (Panel B). These two propositions could be evaluated from a common counterfactual logic. First, if an individual did not hold a certain set of human values, they would not have

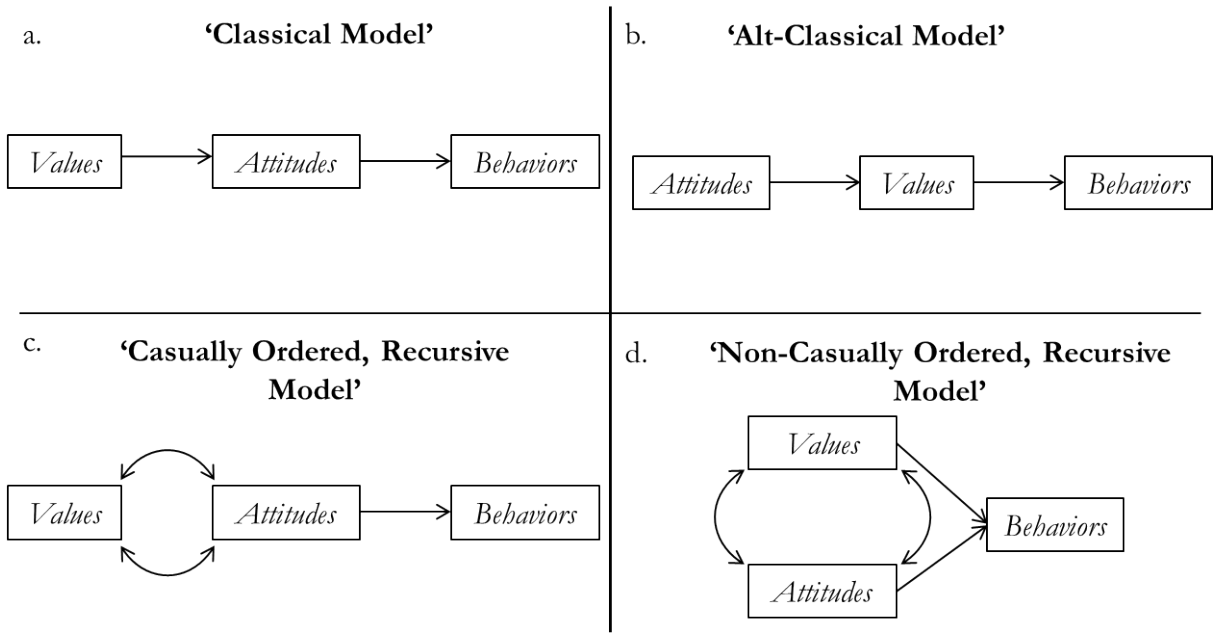


Figure 2.1: Potential Causal Ordering of Values and Attitudes

a specific attitude. This proposition appears to hold with most classical theoretical approaches, for example, self-transcendent values are crucial determinants of welfare state policies (Kulin and Meuleman, 2015). But, the alternative is also plausible, where holding less supportive attitudes towards refugees could transform one's values to be more conservative (Eisentraut, 2019). Neither directional approach appears to be naturally deterministic. Rather, given the context, either direction could appear most appropriate, or more likely, values and attitudes could be perceived as holding a recursive relationship. Therefore, the more conservative bidirectional assumption appears to be more appropriate in the general case.

Therefore, a recursive approach to human values and attitudes should be adopted. But, such an approach can still assume some causal ordering, such as in Panel C, or non-causal ordering, such as in Panel D. Given the recursive nature of this relationship, differentiation between these approaches cannot likely be resolved using such simple simple causal approach as described above. Rather, further empirical attention is required to ascertain which approach is most appropriate (likely adopting panel and experimental designs). As such, the more conservative approach is to adopt the one with the least assumptions, Panel D, where neither human values or attitudes is

assumed to be prior to the other. Rather these are assumed to co-determine each other, through the bidirectional relationship, and interact to influence the behavioral intentions of the individual.

2.3.3 Measuring Human Values

Given the abstract and latent nature of human values, these constructs have been particularly difficult to empirically observe and analyze. Hechter et al. (1993) note four difficulties in the utilization of values in empirical studies: (1) values are not often visible or readily observable, (2) contemporary theories are not satisfactory in causally explaining the connection of values to individual and collective behaviors, (3) the process of how values are generated is largely unexplained, and (4) they are empirically difficult to capture and measure. Hitlin and Piliavin (2004) add two more complexities to this list, in which (5) values have often been falsely conflated with social psychological phenomena and (6) that values are variable due to their historical and cultural contexts.

In order to measure values using quantitative techniques common to the social sciences, one must first have a comprehensive categorization schema for the types of human values. This needs to be transferable across individual situations and cultural contexts to account for the broad range of potential values. Further, one must also have a robust methodology for capturing these values, to be able to make differentiation in the composition of each value construct for an individual. There are multiple proposed schema for human values within the recent literature; such as the foundational Rokeach Value Survey (Rokeach, 1973, 1979) (as well as revised approaches suggested by Feather (1975); Johnston (1995), Hofstede's cultural dimensions (Hofstede, 2001), Inglehart's post-materialist values (Inglehart, 1977, 1995).

Within socio-environmental studies, the most commonly used values schemas are Schwartz's 'Theory of Basic Values' (Schwartz, 1994, 2012), Stern and colleagues 'biospheric' values (Stern et al., 1993; Stern and Dietz, 1994; Stern et al., 1995), and Inglehart's 'post-materialism' (Inglehart and Abramson, 1999). Within this project, I plan to utilize Schwartz's 'Theory of Basic Values' schema (Schwartz, 1992, 1994; Schwartz et al., 2010). Schwartz presents a generalized

value schema, alongside an empirical methodology for measuring these values. As such, this value schema has been widely adopted within the social sciences, with measurement items having been included in each wave of the European Social Survey.

Schwartz Human Values

Schwartz proposes a set of ten, broad, universal human values, which are each defined by the specific motivational goals that they represent (Schwartz, 1992):

i **Power**: Social status and prestige, control or dominance over people and resources

ii **Achievement**: Personal success through demonstrating competence according to social standards

iii **Hedonism**: Pleasure and sensuous gratification for oneself

iv **Stimulation**: Excitement, novelty, and challenge in life

v **Self-direction**: Independent thought and action-choosing, creating, exploring

vi **Universalism**: Understanding, appreciation, tolerance and protection for the welfare of all people and for nature

vii **Benevolence**: Preservation and enhancement of the welfare of people with whom one is in frequent personal contact

viii **Tradition**: Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self

ix **Conformity**: Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms

x **Security**: Safety, harmony and stability of society, of relationships, and of self

These values can be arranged into a circular continuum, see Figure 2.2 below (Schwartz, 2012, 1992). This continuum lists the values in order of their compatibility and conflict. That is, the closer values are to each other, the more compatible they are, while the further away, the more they are in conflict. If certain values are close to each other, it is likely that they can both be expressed within a certain action or evaluation, but this becomes less likely for values that are further away.

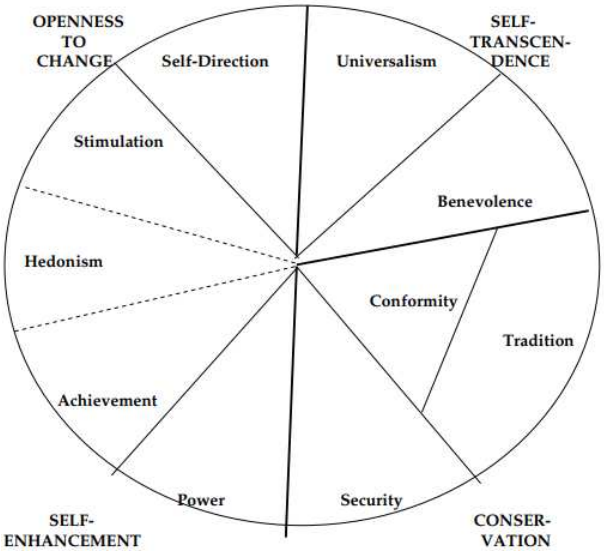


Figure 2.2: Theoretical model of relations among ten motivational types of values

Further, the values can be organized across two higher order dimensions. First, self-enhancement values (power and achievement) that prioritize self-interests versus the self-transcendence values (universalism and benevolence), which are focused on the concern and welfare of others. Second, openness to change values (self-direction and stimulation) encourage change and openness to new ideas versus conservatism values (tradition, conformity and security), which emphasized maintenance of the status quo and stability [2].

The assumption of universality in Schwartz's values has been widely empirically tested cross-nationally, broadly reporting similar results amongst the population groups sampled in over seventy cultures around the world (see Spini, 2003; Schwartz, 1992, 1994). Recently, Schwartz Human values have been included as part of the core module for the biannual European Social Survey (which began in 2002). These values are operationalized using a modified 21-item version of the Portrait Values Questionnaire (PVQ) adapted for the ESS (Schwartz, 2003). To measure the 10 Schwartz values, each item presents a short sentence, a portrait, of a gender-matched person. Then, the respondent is tasked with ranking how much this person is 1 'not like me at all' to 6 'very much like me'. Davidov et al. (2008b) analyzed utilizing the first two waves of the ESS,

[2]Hedonism is situated in between openness and self-enhancement, sharing characteristics of both

identifying the internal validity of these human values across the twenty countries surveyed. As such, the Schwartz basic human values have become widely adopted in cross-national empirical social studies, such as attitudes towards immigrants (Davidov et al., 2008a), political attitudes (Aspelund et al., 2013; Piurko et al., 2011), opinions towards redistribution and welfare states (Kulin and Svallfors, 2013), and willingness to volunteer (Plagnol and Huppert, 2010).

2.3.4 Human Values and Climate Change

Human values have been found to be amongst the strongest predictors of climate change beliefs (Hornsey et al., 2016), and as such, have been the subject of extensive prior research (see Poortinga et al., 2019; Corner et al., 2014; Dietz et al., 2007). Value schemas are relatively internally stable, setting the boundaries for what is considering acceptable, framing how people experience their social world (Hitlin and Piliavin, 2004). They are called upon to help people evaluation whether actions, events, people, attitudes and such are perceived as being normatively 'good' or 'bad' (Joas, 2000). Values are crucial in developing what is considered important in our social world, what our attitudes and beliefs are towards social phenomena, including issues such as climate change (Milfont et al., 2015).

Values are often assumed to effect climate change beliefs and subsequent actions via the values-beliefs-norms (VBN) mechanism, originally proposed by Stern and Dietz (Dietz et al., 2007; Stern et al., 1995; Stern and Dietz, 1994). VBN theory suggests that values directly influence an individual's beliefs regarding a specific construct. In the case of climate change, one's values influence their beliefs about issues such as the severity and risk of climate change. These beliefs in turn norms surrounding when an individual will, or will not, take action. So, for an individual with higher risk perceptions of climate change, they would be more likely to support climate change ameliorative policies, or engage in individual actions to counter the effects of climate change.

Specific values, such as 'altruism', can have an effect on climate change attitudes and behaviors. As climate change, like other environmental issues, is a public good, substantial levels of altruism are necessary for an individual to be willing to engage in individual or collective actions

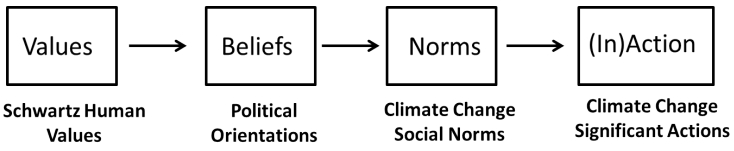


Figure 2.3: VBN Model for Climate Change Significant Actions

(Heberlein, 1972). While alternatively, individuals prioritizing egotistical or self-interest value schemes will respond differently to issues of public good, being less likely to engage in ameliorative actions (Dietz et al. (2005).

Several different values schemes and their respective dimensions have been adopted to explain attitudes and behaviors towards the environment, and climate change in general: such as post-materialism (Inglehart, 1977, 1995), New Environmental Paradigm (NEP) (Dunlap et al., 2000, 2008), and Schwartz basic human values (Schwartz, 1992, 1994). Dietz et al. (2007, 2005) note that 'biospheric altruism' and 'self-interest' (or egotistic) values are the most substantive drivers of climate change and environmental beliefs and concerns. Biospheric altruism is quite closely linked to self-transcendence values (universalism and benevolence), but with a specific focus on the eco-centrism of the individual, and not other concepts of social altruism (such as social welfare). While 'self-interest' is very similar to self-enhancement values (achievement and power) (de Groot and Steg, 2008).

Regardless of whether values are conceptualized along the self-transcendence versus self-enhancement or biospheric altruism versus self-interest axis, previous research has found a positive relationship between self-transcendent values and higher levels of climate change concern (Dietz et al., 2007; Corner et al., 2014). Similarly, self-transcendent values have also linked to decreased likelihood for climate change skepticism (Steg and De Groot, 2012). While, oppositionally, self-enhancement values are related to increased likelihood for climate change skepticism (Poortinga et al., 2011). Openness to change values have also been found to be negatively related to climate change skepticism (Milfont et al., 2015), as well as increased perceptions of the impact of climate change (Poortinga et al., 2019). But, in general, the effect of openness to change values is minimal, in comparison to the other values.

2.4 Cross-national Variations in Attitudes and Behaviors

Of the contemporary literature on climate change views, a disproportionate focus has been paid to the United States, with roughly 75% of all studies focusing on the American citizenry (McCright et al., 2016b). Cross-national differences in climate change attitudes and behaviors have begun to receive increased scholarly attention over the past two decades (Capstick et al., 2015; Hornsey et al., 2016). Within the recent cross-national studies of climate change that have a focus on individual-level determinants, the majority have focused on addressing patterns of concern regarding climate change (i.e. Kvaløy et al., 2012; Lee et al., 2015; Tjernström and Tietenberg, 2008; Mayer and Smith, 2017; Smith and Mayer, 2018a) and to a lesser degree beliefs in climate change (McCright et al., 2016a; Poortinga et al., 2019), climate change behaviors (Broomell et al., 2015; McCright et al., 2016a; Smith and Mayer, 2018b; Mayer and Smith, 2018) and climate change policy support (McCright et al., 2016a; Smith and Mayer, 2018b). This is likely to due to data availability, as until recently, most empirical studies have adopted survey items regarding climate change concern from the ISSP Environmental Modules (2000, 2010), as this was the only major cross-national survey program with climate change questions for a number of years. As of recent, several new cross-national survey data on climate change views has been made publicly available, such as the 2015 Pew Global Attitudes Survey, the 2010 Life in Transition Study II, and most recently, the 2016 European Social Survey.

Within these studies, the greatest attention has been paid the role of affluence shaping climate change views (see Kvaløy et al., 2012; Tjernström and Tietenberg, 2008; Lee et al., 2015; Lo and Chow, 2015). While recent attention has also been paid to the role of values (see Dietz et al., 2007; Poortinga et al., 2004; Steg and De Groot, 2012) and political views (see McCright et al., 2016a; Lewis et al., 2018; Smith and Mayer, 2018a) shaping climate change attitudes and behaviors. Lastly, other constructs, such as socio-demographic indicators, trust, religiosity, risk perceptions, and exposure to extreme weather events have received attention as cross-national drivers of climate change attitudes and beliefs have all been linked to climate change views and actions.

In this following section, I develop an overview of the empirical, cross-national literature into drivers of climate change attitudes and behaviors, focusing on the role of political factors and human values. Then, I examine the relationship between political factors and human values. Lastly, I explore how political factors and human values can interact to shape climate change attitudes and behaviors.

2.4.1 Political Factors

Much of the literature on climate change attitudes and behaviors has focused on the role of political polarization within the context of the United States (McCright et al., 2016b). That is, over recent decades, there have been sharp differences as a result of political views in beliefs, concerns, actions and policy support in relationship to climate change (see McCright and Dunlap, 2003, 2011a; Hamilton, 2011). In general, people with politically conservative orientations are less likely to have pro-climate attitudes and behaviors, while the opposite it true for people on the political left. But such polarization in the US has not always the case, rather political polarization became a phenomenon beginning around the mid- to late-1990s (McCright and Dunlap, 2011b; Dunlap et al., 2016). This change has been attributed to well organized political mobilization by conservative groups in the United States, often with significant funding from the fossil fuel industry (Jacques et al., 2008; McCright and Dunlap, 2003, 2011a). As previously noted, one of the individual-level theoretical explanations for this polarization can be grouped under the 'anti-reflexivity' thesis (McCright and Dunlap, 2010), or processes of solution aversion (Campbell and Kay, 2014).

Political polarization has been examined as a driver of climate change attitudes and behaviors in English, and to a lesser extent, non-English speaking countries. With respect to the former, support for the Conservative Party in the UK has been linked to climate change skepticism, decreased policy support and likelihood to make behavioral changes in response to climate change (Poortinga et al., 2011; Carter and Clements, 2015; Whitmarsh, 2011; Johnston and Deeming, 2016). Similarly, in Canada, Lachapelle et al. (2012, 2014) finds that political conservatives are

less likely to believe in or have be concerns about climate change. Tranter (2011, 2013) also finds that Labor and Green Party supporters are more likely to be concerned about climate change than those that support the cent-right coalition.

Within non-English speaking states, McCright et al. (2016a) reports that people with conservative political ideologies in Western Europe are less likely to be concerned about climate change or engage in pro-climate change behaviors. Furthermore, Lewis et al. (2018) finds that people with left-leaning party identification in Western Europe are more likely to view climate change as a serious problem. Smith and Mayer (2018a) also find that political conservatism is linked with decreased concern for climate change and viewing it as important issue in Western European states, but the polarization is not as amplified as in English-speaking states.

Interestingly, the effect of political polarization appear to be concentrated within English speaking and Western European states. Lewis et al. (2018) report that left/liberal party identification has a very small positive effect in Middle Eastern states, and no effect in Eastern European, Asian, African and Latin American states. McCright et al. (2016a) report similar patterns of polarization, where the effects are greatest in English speaking states, somewhat less so in Western European states, and minimal effects in transition states.

Smith and Mayer (2018a) suggest that the effects of political polarization, while smaller, may be in the opposite direction in transition states. That is, individuals on the political right are more likely to perceive climate change as a danger than those on the left. This suggests that there may be "differing meanings" of political left-right placement in transition states (McCright et al., 2016a). In Western European states, right of center parties often support policies that limit government intrusion into markets and are deregulatory in nature, while the opposite is true in transition states. In transition states, right leaning parties often support economic liberalization and free-market policies, while those on the political left are often more closely associated with previous state socialist policies and regimes.

These findings suggest that political orientation could hold limitations as a predictor in cross-national studies, as the meaning and effect of political left and right varies greatly across

states and political contexts. Other research has proposed using free market ideology as an alternative measure of political orientation. Heath and Gifford (2006) suggest that free market ideologies support a view that environmental degradation and issues are a market failure, one that will be resolved by the invisible hand. As such, there is little need for an individual to have concerns for the environment. McCright and Dunlap (2011b) suggest that free market ideologies and political orientations are deeply connected. Environmental policies and protections required intervention into markets, which is in opposition to conservative and free market ideologies, while environmental protections are more consistent of left-leaning orientations regarding the role of governments in promoting collective welfare of the populous. Thus, it is reasonable to assume that political orientations and free-markets will have similar effects on climate views. Smith and Mayer (2018a) report similar direction and substantive effects of right leaning political orientations and free-market ideologies on perceptions of climate change in English-speaking and Western European states. Similar direction and effect sizes were also found in transition states, but between left leaning political orientations and free market ideologies. This suggests that alternative measures of political ideologies may provide greater validity in cross-national measures.

In sum, political polarization does appear to be an important driver of climate change attitudes and behaviors within English-speaking, and to a slightly lesser degree, Western European states. But, political polarization does not appear to have as strong of an effect in transition states, or in other continental regions. Further, the effect of political orientations may differ depending on the national and political context, where left and right leaning orientations may not have the same meaning, and therefore, could hold oppositional effects on climate change attitudes and behaviors. Therefore, there appears to be substantial variation in the effect of political orientations in cross-national contexts.

2.4.2 Human Values

Comparatively fewer cross-national research has been conducted on the effect of values on climate change attitudes and behaviors. This is also likely due to the lack of international

public survey data. As such, a majority of the climate change specific research has been limited to country-specific case studies. For example, de Groot and Steg (2008) find that altruistic and biospheric values are positively related to willingness to engage in pro-climate actions in the Netherlands. (Poortinga et al., 2004) report that self-transcendent values were positively related to environmental policy support and energy saving actions in the United Kingdom. While (Dietz et al., 2007) finds that altruism is linked to increase support for climate change policies in the United States.

Currently, the only major cross-national social survey program to include full items for climate change attitudes and behaviors, as well as human values dimensions, is the recently released 2016 European Social Survey. Poortinga et al. (2019) uniquely examine the effect of Schwartz values on climate change attitudes cross-nationally in 23 European states, finding self-transcendence to be positively related concerned regarding and the perceived impacts of climate change. Further, people with self transcendent values are less likely to hold climate change skeptical views. Poortinga et al. (2019) also report some preliminary differences between Western and Eastern European states, where the effect of conservatism appears to have a larger negative impact on climate change perceptions in Eastern European states. Self-transcendent values are also reported to have somewhat larger effects on climate change concern in Eastern European states. As these recent results are the first such examination into the cross-national patterning of climate change attitudes and behaviors, further subsequent research is clearly called upon.

As such, values present one of the stronger individual-level effects on climate change attitudes and behaviors (Hornsey et al., 2016), where self-transcendent (or altrustic) values are positively related to climate change views and actions, while the opposite is true for self-enhancement values schemas. Further, research into the cross-national patterning of the effects of human values are relatively limited, but initial analyses suggest substantive differences based upon self-transcendent and conservation values. But, the patterns by which the effects of these values vary by country, or region, remains unclear, where diverse cultural and political contexts can shape the individual attitudes and behaviors towards climate change.

These distinctions are important to illuminate, as even relatively similar countries hold substantive macro-level differences in the expression of certain values over others (Davidov et al., 2008b; Schwartz, 2006). Further, if the effects of specific values or dimensions on climate change attitudes and behaviors differ based upon contexts, this could have substantial effects on climate change communications and public policy within these areas. That is, if a public messaging campaign intending to spur pro-climate behaviors aims to mobilize people by activating a specific value expression, such as benevolence, but this does not have an effect in a particular context, the campaign would be doomed from its start. Even more problematically, it is possible that targeting certain values could have an opposite effect in different context, bringing about an opposite societal action than was intended. Clearly it is important to better understand how and also where certain values shape climate change attitudes and behaviors, and to not assume that these effects are universal.

2.4.3 Human Values Relationship with Political Factors

Political factors and human values do not exist in isolation of each other, but rather are deeply interrelated constructs. Values are central to political orientations and beliefs (Caprara and Zimbardo, 2004; Feldman, 1988), acting as the 'building blocks' of political orientations and dispositions (Rokeach, 1973; Converse, 1964). People draw upon values to organize and prioritize their political beliefs, to make political decisions, and frame the way they communicate about politics (Piurko et al., 2011). Voters are assumed to prefer ideologies, parties and policies that promote prioritized individual values, and to defend these values against perceived threats (Barnea and Schwartz, 1998; Schwartz et al., 2010). Conversely, voters will also reject ideologies or parties that they perceive as threats to their values. For example, people that prioritize openness to change values are more likely to support individual freedoms and civil rights, while those that prioritize self-enhancement values prefer non-egalitarian policies and are against government interventions (Piurko et al., 2011).

Recent literature has engaged with assessing the role of values on political orientation, or 'left-right' political perspectives. Jost et al. (2003) theorize that politically conservative ideologies stress the importance of resistance to change as well as work towards justifying inequalities. While, in contrast, politically liberal ideologies are often characterized by open-mindedness, mental flexibility, and commitment to social and economic equality. As such, values dimensions of conservatism and self-enhancement are theoretically connected with right-leaning political ideologies, while openness to change and self-transcendence are linked to left-leaning ideologies. Caprara et al. (2006) found that voters prioritizing universalism, self-direction and benevolence were more likely to support the Italian center-left party in the 2001 election, while voters prioritizing the values tradition, conformity, security, achievement and power were more likely to be supportive of the minority right-wing party. Further, this analysis found that these values explained 18% of the total variance in voting patterns, while the common demographic variables age, income, education and gender combined to explain only a total of 2% of the remaining variance, noting the potentially strong explanatory power of values in determining attitudes and political preferences.

As such, values have a substantive relationship with political ideologies, where, in general, self-enhancement and conservation value dimensions are related with right-leaning ideologies, while openness to change and self-transcendence values are related with left-leaning ideologies.

Interactive Effects on Climate Change Attitudes and Behaviors

Political factors and human values have substantive impacts on climate change significant actions. Further, human values and political orientations appear to be strongly related. However, as of yet, little research has explored the interrelations between political factors and human values on the likelihood on an individual to engage in climate change significant actions. For example, previous research has noted that i) self-enhancement values are related to climate change skepticism (Dietz et al., 2005; Poortinga et al., 2019), ii) right-leaning political orientation is also linked to climate change skepticism (McCright et al., 2016a; Lewis et al., 2018), and iii) self-enhancement values are associated with right-leaning orientations (Caprara et al., 2006; Schwartz et al., 2010). It would be logical to assume some sort of interrelation exists between human values and political

factors shaping climate change skepticism, given that these relationship between these constructs share similar patterns. Further, given the desire for internal consistency aligning individual values and attitudes (Krosnick, 1988), individuals are likely to bring their values, political and climate change attitudes into cohesion.

Still, it remains unclear how exactly political factors and human values interact to shape climate change attitudes and behaviors. Do liberal political ideologies interact with self-transcendent values to amplify pro-climate change attitudes and behaviors? If political factors are out of alignment with an individual's values, does this dampen the effect on climate change attitudes and behaviors? Or, is there simply no interactive relationship at all, where it is merely incidental that human values, political factors and climate attitudes seem to relate in similar patterns? Clearly, this area of the literature requires greater focus. This leads to my first research question:

Research Question I: How does the interrelation between individual human values and political orientations shape climate change significant attitudes and behaviors?

2.5 Transition States

A notable gap in the literature of environmental or climate change attitudes and behaviors is lack of analysis of post-Communist, transition states. This gap is not surprising given the lack of data available from those nations, as well as the increased logistical difficulties in collecting survey data in these locales. However, understanding the dynamics of public perceptions of climate change in transition states is imperative as the lived experiences of individuals in these states differs greatly from those of democratic, Western European states, in the near and distant pasts. For example, the recent the carbon footprint of many of these nations has actually declined during the transition towards liberal, democratic states. But the decrease in emissions was largely due to economic stagnation over the past decades, and not as a result of a coordinated move towards a sustainable development systems (Brizga et al., 2013; Fagin and Jehličkа, 1998; Lynch, 2000).

Though there are relatively few studies that examine climate change beliefs specifically, there is a small literature on environmental public opinion, environmental policy support, and en-

vironmental behaviors in transition states. The economic hardship, loss of well-being, and general social disorder created by the transition from state socialism to capitalism is well-documented. Perhaps the most striking indicator of the wrenching nature of the transition is the marked decline in life expectancy in Russia in the early 1990s (Notzon et al., 1998; Shkolnikov et al., 2001). Currently, evidence of a disparity towards environmental issues between post-Communist states and others is mixed. Tynkkynen (2010) argues that, in some Russian policy circles, being active in global efforts to address climate change is a way of asserting that the nation is a global power. While state socialist societies often had notoriously terrible environmental records, many socialist states also encouraged the development of environmentalist and conservation organizations that survived the transition process (Carmin and Fagan, 2010). Given this history, it stands to reason that publics in transition states might differ from those in more developed, historically economically liberal states.

Using three waves of data Chaisty and Whitefield (2015) observed stark but dwindling differences in support for environmental policy between post-Communist and EU states. To explain this finding, the authors point to the “stickiness" of environmental attitudes—environmental conditions were a very low priority under communism and this legacy continues to impact public opinion. Similarly, Rohrschneider and Miles (2015) conclude that in Western European states, environmental issues are more robust in the policies of representative parties, meaning they are less likely to supplanted to in favor of economic policies, even in the face of a recession. The same is not true for Central and Eastern European states, where environmental policies are not that dominant of a priority (relative to economic policies), irrespective of environmental preferences of voters.

2.5.1 Human Values, Political Factors and Climate Change in Transition States

A notable gap exists within the literature on political factors and climate change orientations with regards to post-Communist states. Recent studies report comparatively little partisan differ-

ences in climate change attitudes and concerns in transition states (McCright et al., 2016a; Lewis et al., 2018; Smith and Mayer, 2018a). This may be due to a number of factors. First, Chaisty and Whitefield (2015) find decreased support for environmental policies in transition states, in comparison to Western European states. They suggest this could be due to the “stickiness" of environmental attitudes in transition states, as environmental conditions were a very low priority under communism this legacy continues to impact public opinion. Second, within English speaking states, conservative elite actors and think tanks have engaged in a concerted effort to counter climate change policies and promote climate skepticism (McCright and Dunlap, 2003; Jacques et al., 2008; McCright and Dunlap, 2011a). But, there is not a similar history of anti-climate change, denialist movements within transition states. Third, McCright et al. (2016a) suggest that the Western-focused meanings of political orientations and left-right schemes differs in transition states. Generally, right-leaning political parties in Western states typically endorse policy agendas centered on privatization, deregulation, and liberalizing markets. While in transition states, the opposite is often true, with left learning parties endorsing trade liberalization and a stronger role for the market. Smith and Mayer (2018a) suggest that alternative concepts of political ideology, such as a preference for free-market ideology, as a harmonizing solution for cross-national comparison. But, they observe similar effects of political ideologies on climate change attitudes in transition states, regardless of whether they are measured on a left-right scale or based upon free-market ideologies.

The effect of human values on climate change orientations also appears to differ within transition states. Poortinga et al. (2019) find that individuals that prominently express conservation values are more likely to perceive negative effects of climate change in transition states than in non-transition states. Further, people in transition states that express self-transcendent values are more likely to be concerned about the effects of climate change than those in non-transition states, although the effect size is comparatively more moderate.

Further, the relationship between human values and political orientations may be different within transition states. Utilizing data from the European Social Survey, Thorisdottir et al. (2007)

found that the conservation values of traditionalism and conformity are related to right-leaning ideologies, but the relationships between other values and political ideologies differed based upon the socio-political context of the country - in particular, the divide between Western European states and post-communist, transition countries. Individuals that express the value of security are related to right-leaning ideologies in Western European states, but left-leaning ideologies in transition states. While values of openness to change, stimulation and self-direction, were related to left-leaning ideologies in Western Europe and right-leaning ideologies in transition states. Similarly, Aspelund et al. (2013) and Piurko et al. (2011) also utilize data from the ESS, finding that conservation and self-enhancement values are positively related to right-leaning ideologies in Western European states. While, conversely, in transition states conservation values are related to left-leaning ideologies and self-enhancement values had little relation to political orientations. While Caprara et al. (2017) utilize survey data from 15 countries, finding that the values of conformity, tradition and security are most strongly related with right-leaning political ideologies, while universalism is most strongly related to left-leaning political ideologies. Further Caprara et al. (2017) report general similarities across the effects of values on political ideologies in transition states Poland and Ukraine as in Western European states, the United States and Australia.

Therefore, it is unclear whether the relationship between values and political factors are universal, or rather more specific to developed, democratic, Western states. In particular, whether these relationships remain similar within transition states. Nor is it clear how these could differently interact to shape climate change attitudes or behaviors.

In sum, the extant literature suggests that the role of political factors on climate change attitudes appears to be comparatively smaller in transition states, values may also have divergent effects on climate change attitudes in transition states, and the relationship between values and political orientations may vary between transition and non-transition states. As such, the effects of political factors, human values and the subsequent interrelationship between political factors and human values on climate change attitudes and behaviors is an area requiring further scholarship. Therefore, I engage the following second research question for this dissertation:

Research Question II: How do human values and political orientations directly and indirectly shape climate change significant attitudes and behaviors in transition states?

Comparing Western European and Transition States

Further, little is known about the broader drivers of climate change attitudes and behaviors in transition states. Lewis et al. (2018) find that in comparison to Western European states, education, age, and the importance of religion are stronger, positive predictors of climate change risk perceptions for people from Eastern Europe. McCright et al. (2016a) find that the effect of age on climate change beliefs differs between Western European (negative) and former Communist (positive) states. Alternatively, Marquart-Pyatt et al. (2019) find less of an effect of age and education on renewable energy policy preferences in former Communist states than in other groupings of Western European states. But, as of yet, none of these studies have formally tested for such differences, rather just presenting comparable coefficients.

Therefore, it is informative to compare how common drivers (such as trust, education, socio-demographic indicators) shape attitudes and behaviors between people in Western European and transition states. This is particularly notable as supra-national governance structures, such as the European Union, stretch across these states, setting public policy and communicating climate science using common means across these diverse contexts. The European Union is currently developing a climate action plan to ensure Member States meet their nationally-defined Paris targets. Notably, this plan includes over €100 billion in funding, and aiming to direct over €1 trillion in private investments, into 'just transition' mechanisms, which would disproportionately benefit transition Member states. Understanding how publics in these areas view climate change and behave as a response to it is an important component of insuring this massive shift in public policy is successful.

As such, I explore a third research question within this dissertation:

Research Question III: How to do the effects of common determinants of climate change attitudes and behaviors vary between Western European and transition states?

2.6 Climate Change Beliefs, Behaviors and Policy Support

While the empirical literature largely focuses on identifying causes of variance in climate change attitudes and behaviors, it is similarly important to focus on different types of climate change outcome variables. Clearly, there are conceptual differences in whether someone believes climate change is caused by human activity, how concerned they are about climate change, whether they are willing to support public policy to adapt or mitigate climate change and how willing they would be to make individual or collective actions. It is quite possible that someone could be very concerned about climate change, but unwilling to support policies or make changes themselves. Furthermore, research needs to pay close how the effects of key drivers of climate change attitudes and behaviors change depending upon the specific outcome variable. It is possible that political factors may have a larger effect on policy support, but less so directly on individual actions. Or potentially that trust in other members of one's society is associated with someone being more likely to engage in collective actions, but is unrelated to whether they believe that climate change is caused by human activity or not.

Currently, the majority of previous studies on climate change have focused on identifying drivers of either belief in anthropogenic climate change or concerns about the impact of climate change. Table 2.1 presents the results of a comprehensive meta-analysis of all contemporary (2016) survey analyses of climate change beliefs, concerns, policy preferences and behaviors. Very few studies include indicators for policy preferences or behaviors (especially outside of the United States). Also, as previously noted, this was likely due to the absence of policy and behavioral questions on many of the major cross-national survey programs, such as ISSP 2010. But several recent cross-national surveys do include items for policy support and pro-climate behavioral intentions (2015 Pew Global Attitudes Survey, 2016 European Social Survey, 2010 Life in Transition Survey). Even so, within the empirical quantitative literature, there are rarely distinctions made between the types of climate change outcomes.

Therefore, it is important to note the distinctions between forms of climate change attitudes and behaviors, as well as differences in the substantive drivers for each of these constructs. As

Table 2.1: Dependent Variables Used In Climate Change Survey Analyses, by US, Non-US and Crossnational Studies

	United States	Non-US	Cross-national
Belief in Climate Change	29	9	1
Concerns about Climate Change	21	10	5
Policy Preferences	12	3	1
Behaviors	4	1	2

From McCright et al. (2016b)

such, the following section distinguishes between climate change beliefs, concerns, and behaviors, presenting an overview into the literature on these diverse constructs of climate change. Further, this incorporates an understanding of the relationships between climate change beliefs, concerns, and behaviors themselves.

2.6.1 Beliefs

Climate change beliefs are broadly defined as the acceptance (of skepticism) of the scientific consensus of anthroprogenic climate change. This subject has been of great interest to scholars, as the debate about whether climate change is 'real or not' has dominated much of the political space over recent decades, most particularly so in the United States (McCright and Dunlap, 2011a, 2003, see). Further, belief in climate change has a substantial effect on whether people are willing to engage in pro-environmental behaviors or support policies aimed at mitigating climate change (Hornsey et al., 2016).

Beliefs in anthroprogenic climate change has many interrelated antecedents. Knowledge regarding climate change can be separated into objective knowledge, or 'scientific literacy', and subjective knowledge. Objective knowledge is positively related to climate change concerns, that is, that is, individuals with greater scientific literacy are more likely to believe in climate change (Kellstedt et al., 2008; Malka et al., 2009). But, subjective knowledge, or how much one thinks they know about climate change, are not as strong of predictors of climate change views (Guy et al., 2014). Forms of knowledge also appear to be moderated by other social characteristics, such as political orientations, particularly in the United States, where subjective knowledge is much

more effective in driving beliefs amongst Democrats than Republicans (Hamilton et al., 2012). For example, individuals that identify with the Tea Party in the United States have some of the highest forms of subjective knowledge regarding climate change, but the lowest levels of objective scientific literacy (Hamilton, 2015). These findings further emphasize the role of politically motivated reasoning (Kahan, 2015).

General environmental concern has also been found to be linked to climate change beliefs. The logic of this relationship is relatively intuitive, where people with higher levels of general environmental concerns would be more sensitive and attentive to arguments that changes to the climate are a result of human activities. A broad cross-national literature has used the New Environmental Paradigm (NEP), developed by Dunlap and Van Liere (Dunlap and Liere, 1978; Dunlap et al., 2000, 2008), as a predictor of climate change beliefs. Corner et al. (2014) report that the NEP is negatively related to climate change skepticism in the United Kingdom, Kellstedt et al. (2008) find that NEP is positively related to anthroprogenic views of climate change in the United States, while Kroesen (2013) notes similar findings from the Netherlands.

Individual values have also been found to be related to climate change beliefs. Using a sample from the UK, Poortinga et al. (2011) find that traditional values are positively related to climate change skeptical beliefs, while self-transcendent values have a negative effect. While drawing upon responses from New Zealand, Milfont et al. (2015) reports that self-transcendent and openness to change are positively related to belief in the reality and human causation of climate change. While Hornsey et al. (2018) find that people who have egalitarian values are less likely to hold climate skeptical beliefs.

Lastly, McCright et al. (2016a) report that left-leaning political ideologies are positively related to anthroprogenic beliefs regarding climate change. Similarly, Hornsey et al. (2018) find that both liberal-conservative ideologies, as well as left-right political placements, have strong effects on climate skepticism. For both of these studies, they find the pattern of effects to be stronger in English-speaking states than in the rest of the world.

2.6.2 Concerns

Climate change concerns are related to the broader field of environmental risk perceptions. Environmental risk perceptions are resultant from a complex combination of individual experiences and structural forces, such as cultural factors, media framing and political activism (Auyero and Swistun, 2008; Kasperson et al., 1988; Malin, 2015). van der Linden (2015) suggests that climate change risk perceptions are the result of cognitive factors (knowledge), experiential processing (such as emotions and personal experiences), sociocultural influences (norms, value orientations) and socio-demographics. This complexity has lead to considerable variability in the drivers of risk perceptions. For example, theory suggests that heightened individual experiences with negative impacts of climate change, or vulnerability to climate change, would increase climate risk perceptions, but the empirical literature is largely inconsistent (Akerlof et al., 2013; Brody et al., 2008; Zahran et al., 2006). As such, the specific pathways driving climate change risk perceptions are largely underdetermined.

Climate change concerns and risk perceptions can be further divided into separate dimensions. Drawing from the role of religious belief structures and environmental concerns, Smith et al. (2018) find differentiation in current and future concerns for the environment. They suggest that these differences may reflect diverse belief structures, where eschatological views, such as those about the 'end times' prominent among evangelical Protestants, may act to reduce future concerns, as these outcomes are already viewed as 'determined'. Further, Spence et al. (2012) suggest perceptions of climate change differ depending upon their psychological distance. That is, the more people see climate change as affecting them locally (as opposed to in distant areas), or affecting people like themselves (as opposed to those in other countries), the more likely they are to take actions to mitigate climate change.

Within the cross-national survey based literature, a number of key factors have been identified in the development of concerns for climate change. First, and most prominently, has been the role of political factors, where left-leaning ideologies are associated with greater concern for climate change (Kvaløy et al., 2012; Tjernström and Tietenberg, 2008; Tranter, 2013). But, as

previously noted, there may be some cross-national differences in the role of political ideology, particularly in transition states (McCright et al., 2016a; Smith and Mayer, 2018a; Lewis et al., 2018). Values, such as self-transcendence (Poortinga et al., 2019) and post-materialism (Tranter, 2013) has also been found to be positively related to concern. While socio-demographics, such as female gender identification (Kvaløy et al., 2012; McCright et al., 2016a) and higher levels of education (Lee et al., 2015; Tjernström and Tietenberg, 2008) have also been linked to increased climate change concern. Income has been found to have a negative effect on concern for climate change (Tjernström and Tietenberg, 2008; Lewis et al., 2018; Smith and Mayer, 2018a), while the effect of age appears to be more heterogenous, with some studies reporting negative relationships with climate change views (McCright et al., 2016a; Tjernström and Tietenberg, 2008; Tranter and Booth, 2015; Smith and Mayer, 2018a), other reporting positive relationships (Kvaløy et al., 2012; Mayer and Smith, 2017), mixed findings depending on the country (Lewis et al., 2018), or no effect at all (Poortinga et al., 2019).

Religious factors also play a key role in concerns regarding climate change. Utilizing data from 47 countries, Kvaløy et al. (2012) report that religious behaviors (such as frequency of attendance and prayer) as well as belief in the importance of God are positively related to climate change concern. Lewis et al. (2018) take a more nuanced approach to the effect of religiosity, examining differences between regional and continental country groupings. They find that the importance of religion to a person is positively related to concern about climate change, except for people in Western European states (no relationship) and in Anglophone states (negative relationship). These differences, in particular to the English speaking countries, could be due to the comparatively greater influence of evangelical Protestantism. Evangelical Protestants have often, but far from uniformly, found to be more resistant to environmental policies and have lower levels of environmental concern (see White, 1967; Guth et al., 1995; Clements et al., 2014; Arbuckle and Konisky, 2015). But, as Smith et al. (2018) note, it is important to pay attention to the different constructs of evangelical Protestantism, as well as how these differ in their effect on varied forms of environmental attitudes, concerns and behaviors.

Trust is an important factor in understanding attitudes towards societal risks (Gilson, 2003; Lange and Gouldson, 2010). This is especially true when accurate information about the potential risks are unknown, or potentially even unknowable - such as issues of climate change (Paton, 2008; Siegrist and Cvetkovich, 2000). Accordingly, trust in societal institutions, such as climate scientists, has been found to have a positive relationship to climate concerns (Malka et al., 2009).

Lastly, contextual environmental factors, such as increased temperatures and exposure to extreme weather events, have been identified to effect climate change concerns. In general, longer term temperature increases have been found to have relatively small or no effect on climate change concerns (see Zahran et al., 2006; Brody et al., 2008; Marquart-Pyatt et al., 2014). This is analogous to the boiling of a frog, where people do not necessarily notice the small changes in temperature as an early warning sign. Rather, people are more responsive to extreme weather events. Spence et al. (2011) report that people in Britain that were affected by recent flooding were more likely to be concerned for climate change, while Demski et al. (2017) report similar findings from a subsequent series of Winter floods in 2013/2014. Konisky et al. (2016) find that exposure to extreme weather events in the United States, such as heat, droughts, flooding, and hurricanes, is shown to increase concerns regarding climate change. While Carlton et al. (2016) find that droughts in the Midwestern United States did appear to increase climate change concerns, but had no effect on individual adaptations attitudes or support for climate change policies.

2.6.3 Behaviors

Borrowing from the related field of environmental attitudes and behaviors, Stern (2000) defines 'environmentally significant' behaviors as actions that have an impact on the environment, in one form or another. These environmentally significant behaviors can be separated into four different types: environmental activism (participation in social movements), non-activist behaviors in the public sphere (policy support, petitions), private-sphere environmentalism (individual, 'pro-environmental' actions), and other environmentally significant behaviors (actions in the workplace). I simplify adapt this framework to the field of climate change, noting the differences

between individual behaviors (recycling, driving less, using less energy), collective behaviors (activism, participation in social movements), and policy support as key constructs of climate change adaptations.

Further differentiating the types of behaviors, Diekmann and Preisendörfer (2003) distinguish between the likelihood to engage in 'low' and 'high' cost pro-environmental behaviors. Low cost behavioral adaptations are those that require minimal changes, personal or social costs for the individual (such as recycling, using plastic bags, reducing water and energy usage). These are in contrast to higher cost behavioral adaptations, such as not driving one's car to work. Diekmann and Preisendörfer (2003) find that the effect of environmental concern diminishes as the costs increase (acting as a barrier to adaptation). Whitmarsh (2009) finds that certain behavioral adaptations are driven more by beliefs than others. For example, most people were willing to recycle, out of a desire to protect the environment, but other higher cost changes, such as being willing to take public transportation or to walk to work, were more likely to be as result of non-environmentally based causes (such as the individual convenience of travel, or the desire for one to improve their health).

Kollmuss and Agyeman (2002) provide a comprehensive model for pro-environmental behaviors, noting how individual 'internal factors' (such as knowledge, values, attitudes and beliefs) are embedded within external factors (infrastructure, econominic situations, political and socio-cultural factors) which either inhibit or enable the likelihood of engaging in 'pro-environmental' behaviors. Further, this model identifies several potential barriers to 'pro-environmental' behaviors, such as lack of concern, lack of information, lack of incentives, lack of agency to change, and most prominently, previous behavioral patterns. As such, this widely adopted model portrays an interplay between individual and contextual mechanisms for 'pro-environmental' behaviors where individual agency and capacity to make changes, concerns and normative shifts are prominent focal barriers to overcome.

Concern for climate change has also been noted as a key driver of pro-climate change behavioral intentions. Semenza et al. (2008) finds that people with increased concerns about climate change are more likely to engage in several individual, household behaviors (reducing energy us-

age at home, reduce gasoline consumption and recycling). Similarly, O'Connor et al. (1999) find that concern increases willingness to engage in individual voluntary 'pro-environmental' actions. While in a cross-national study, (Smith and Mayer, 2018b) find that individuals with increased risk perceptions from climate change are roughly 10% more likely to be willing to engage in behaviors aimed at mitigating climate change. Further, several studies note the positive relationship between climate change concern and willingness to support climate change mitigation policies: they are more supportive of carbon taxation policies (Leiserowitz, 2006) and measures to improve air quality (Lubell et al., 2006), support renewable energy (Stoutenborough et al., 2015), and are more willing to pay for climate policies (Smith and Mayer, 2018b).

Perceived efficacy, or the ability to make a substantive change, is also a key factor in willingness to engage in climate change behavioral change. Drawing from the theory of planned behavior, (Ajzen, 1985, 1991), notes that multiple factors, such as attitudes social norms, coalesce to influence an individual's decision to engage in certain behaviors. In particular, the perception that a particular behavior has the capacity to enact a desired goal is an important component. That is, people will be more likely to act if they believe they have greater control over the outcome (Ajzen, 1991; Huebner and Lipsey, 1981), or if they believe that their actions will have an impact on a desired goal (Ajzen, 2002). Perceived behavioral control has been found to be a driver of whether an individual is willing to engage in several 'high cost' behavioral modifications, such as using public transportation (Whitmarsh and O'Neill, 2010; Kaiser and Gutscher, 2003), buying an electric car (Peters et al., 2015; Wang et al., 2016), or installing renewable energy systems in their home (Whitmarsh and O'Neill, 2010; Wolske et al., 2017). Alternatively, if a person perceives that they lack efficacy, they are more likely to adopt fatalistic views of climate change - that it is unstoppable, inevitable and potentially outside human potential for mitigation (Lorenzoni et al., 2007; Simonet and Fatorić, 2016). Mayer and Smith (2018) find that people who view climate change as unstoppable are less likely to engage in climate change mitigation behaviors or policy support. Further, they note the effect of fatalistic views is strongest amongst those with higher concerns about climate change, noting the role of perceived efficacy as a barrier to action.

2.6.4 Politics, Values and Types of Climate Change Outcomes

In sum, this diverse literature suggests that values and politics effectively shape climate change beliefs, concerns and policy support, but not in consistent ways. Political factors have a strong role in driving climate change beliefs, concerns and policy support in Western states, but not within developing or transition states. But, the relationship between political factors and climate change behaviors is less clear, as willingness to engage in behaviors depends on a multitude of factors, such as the types and costs of the behavior, as well as the levels of concern and perceived efficacy for the individual.

Further, egalitarian values (such as self-transcendence) have been found to be positively related to climate change anthroprogenic beliefs and concerns. While the opposite is true for more individualistic values (such as conservation). But, little remains known about the effects of these values on different types of climate change behaviors, such as policy support and individual actions.

Given these differences based upon climate change beliefs, concerns and behaviors, I explore this final research question within this dissertation:

Research Question IV: How does the effect of human values and political factors differ based upon the type of climate change attitude or behavior within Western European and transition states?

2.7 Summary

For this first chapter, I have presented a comprehensive literature review into the role of human values and political factors shaping climate change attitudes and behaviors. This chapter initially presented different types of political factors, and their role in shaping climate change attitudes and behaviors. Next, this chapter has identified human values, explored the Schwartz Human Value schema and empirical methodology, as well as how these values relate to climate change attitudes and behaviors. Then, this chapter provided an overview of the cross-national literature, noting how the effects of human values and political factors differ based upon context. Further,

this chapter explored how political factors and human values are interrelated, and proposed further research be conducted to better understanding how these constructs can work together to amplify, or dampen, climate change attitudes and behaviors. Later, this chapter presented the emerging literature on transition states, and called for further research to be conducted to understand the role of human values and political factors shaping climate change attitudes and behaviors in this unique context, as well as for comparative analyses to be made with Western European states. Lastly, this chapter discussed different types of climate change attitudes and behaviors, calling for greater attention to be paid separately to the drivers of each of these constructs, as well as the relationships between them.

As such, this first chapter serves to provide the background for the subsequent three empirical papers in this dissertation. First, a research paper (Chapter 3) aimed at understanding the interactive role of human values and political factors in shaping climate change attitudes and behaviors (RQ1). Second, a research paper (Chapter 4) analyzing how the relationship of political factors and human values within transition states (RQ2). And third, an empirical paper (Chapter 4) comparing the common drivers of climate change attitudes and behaviors between Western European and transition states (RQ3). Lastly, within all three of these empirical chapters, I identify how the effects of human values and political factors may change depending upon the type of climate change attitude and behavior being studied (RQ4). Through these subsequent analyses, I intend to develop a more holistic understanding of the role of values and political factors, particularly in relationship to cross-national differences.

Chapter 3

It All Comes Down to Values? The interactive role of human values and political orientations shaping climate change attitudes and behaviors

3.1 Introduction

Anthropogenic climate change presents one of the greatest challenge facing the global community, necessitating a shift in individual and collective relationships with the environment from one on exploitative of earth systems towards that of stewardship (Steffen et al., 2018). International agreements, such as the 2017 Paris Accords, have set ambitious greenhouse gas reduction targets, largely aimed at limiting global mean temperature growth to under $+2^{\circ}C$. To meet such goals, increased interventions are necessary to rapidly shift social systems away from carbon-based schemes (Farmer et al., 2019). But, public attitudes towards and support for actions aimed at ameliorating climate change are crucial to facilitating the political changes necessary to shift social systems towards post-carbon, or reduced carbon-emissions, states. Increased support for climate change actions can help punctuate previously stable and 'sticky' institutions, enabling substantive policy changes (Baumgartner and Jones, 2010). Further, increased activism and concerns for the effect of climate change can spur new social and political coalitions, or shift the priorities of existing ones (Sabatier, 1988; Weible and Sabatier, 2017a). As such, understanding the mechanisms underlying climate change attitudes, behaviors and policy support is a crucial component in addressing this threat.

An extensive literature has to explored the relationship between political orientations and climate change attitudes and behaviors. These studies have broadly noted that people on the political left are comparatively more likely to be concerned about climate change, believe in anthropogenic climate change, be willing to support climate change policies (McCright et al., 2016b;

Hamilton, 2011). Recently, several papers have noted the effect of political polarization on climate change attitudes and behaviors in Western European states (McCright et al., 2016a; Lewis et al., 2018; Marquart-Pyatt et al., 2019), although this effect appears to be comparatively more moderate than in English-speaking states (Smith and Mayer, 2018a). Further, a separate literature has focused on the role of human values in shaping climate change attitudes and behaviors (Dietz et al., 2007; Poortinga et al., 2011), with some recent findings focusing specifically on Western European states (Poortinga et al., 2019). But, human values and political orientations are deeply interrelated constructs, with values acting as the core building blocks of an person's political attitudes and behaviors (Rokeach, 1973; Converse, 1964; Piurko et al., 2011). As political orientations and human values are core, substantive predictors of climate change attitudes and behaviors, and these two constructs are deeply linked, it is very likely that they could interact to amplify these effects. But, as of yet, there is little understanding of how political orientation and human values interrelate to shape climate change attitudes and behaviors.

In this manuscript, I first address the relevance human values and political orientations on climate change concern, behaviors and policy support. I then explore the ways in which these may interact by adopting standard regression-based approaches to understand forms of moderation between human values and political orientations. This integrated perspective is operationalized with cross-nation survey data from Western European states in the 2016 European Social Survey and multilevel modeling approaches.

By combining the effects of political orientations and human values, this manuscript contributes to the growing body of literature on cross-national climate change attitudes and behaviors, particularly within Western European states (McCright et al., 2016a; Lewis et al., 2018; Marquart-Pyatt et al., 2019; Poortinga et al., 2019; Smith and Mayer, 2018a). In the section that follows, I describe the previous literature on political orientations and human values effecting climate change attitudes and behaviors, as well as develop support for how these two constructs are deeply related and interact.

3.2 Theoretical Background

3.2.1 Cross-national Climate Change Attitudes and Behaviors

Cross-national differences in climate change attitudes and behaviors have begun to receive increased scholarly attention over the past two decades (Capstick et al., 2015; Hornsey et al., 2016). Recent studies into the individual-level drivers of climate change attitudes and behaviors have identified socio-demographic characteristics. Broadly, increased age, male gender identification and lower educational attainment are found to be negatively related to climate change concern, individual willingness to engage actions aimed at mitigating climate change, and supportive of climate change focused policies (Milfont et al., 2015; McCright, 2010; Echavarren, 2017; Poortinga et al., 2011). Social characteristics, such as trust in society and institutions (Smith and Mayer, 2018b; Fairbrother, 2016), trust in climate science (Ding et al., 2011; Lewandowsky et al., 2013b), scientific knowledge (Whitmarsh, 2011; Kahan et al., 2012), vulnerability to the risks posed by climate change (Akerlof et al., 2013; Satterfield et al., 2004), and adaptive capacity (Mayer and Smith, 2018; Feinberg and Willer, 2011) are also found to shape climate change attitudes and behaviors.

At the contextual-level, substantial attention has been paid to the role affluence plays in shaping climate change views (see Kvaløy et al., 2012; Tjernström and Tietenberg, 2008; Lee et al., 2015; Lo and Chow, 2015), yielding largely mixed results. Recent literature suggests this heterogeneous effect is likely dependent upon a multitude of other interrelated, contextual and individual factors (Summers and VanHeuvelen, 2017; Mayer and Smith, 2017). Physical geographical factors have also been found to have a mixed effects. People living near coastlines have been found to have greater concern for climate change (Brody et al., 2008), but at the same time, be less willing to support climate change policies (Zahran et al., 2006). Broadly, longer-term temperature increases have been found to have relatively small positive effects (Hamilton and Keim, 2009; Howe et al., 2013; Shao et al., 2013) - particularly in comparison to other sociopolitical determinants (Shao, 2017) - while other studies report no effect of temperature trends on climate change concerns (Brody et al., 2008; Brulle et al., 2012). Rather, climate change attitudes and behaviors

are more responsive to extreme weather events, such as droughts, floods, and hurricanes (Spence et al., 2011; Demski et al., 2017; Konisky et al., 2016). This is analogous to the boiling of a frog, where people do not necessarily notice the small changes in temperature as an early warning sign. Rather, people are more responsive to extreme weather events.

3.2.2 Human Values

Socio-political determinants, such as human values and political orientations, are found to be some of the more substantial predictors of climate change concern (Hornsey et al., 2016). The role of human values shaping climate change attitudes and behaviors has been the subject of extensive previous research (see Poortinga et al., 2019; Corner et al., 2014; Dietz et al., 2007). Human values are internalized schemas that individuals draw upon to set the boundaries for what they consider acceptable (Hitlin and Piliavin, 2004). Values guide how people interpret and experience their social world, as they are called upon to evaluate whether or not social characteristics (such as actions, events, people, attitudes) are considered to be normatively 'good' or 'bad' (Joas, 2000). Values further shape how an individual prioritizes what is important in their social world and thus, provides a framework for organizing their attitudes and beliefs towards social objects (Milfont et al., 2015).

Prior literature has developed several different constructs of human values and related them to climate change attitudes and behaviors, or the environment more broadly. Post-materialist perspectives suggest that as the socio-economic conditions shift towards greater prosperity, individual values increasingly focus on non-material goals, such as equality or environmentalism (Inglehart, 1977, 1995; Gelissen, 2007). The Values-Beliefs-Norms (VBN) literature has identified the role that altruistic, egoistic, and biospheric values play in shaping environmental attitudes and behaviors (Stern et al., 1999; Dietz et al., 2005).

Schwartz (1992) develops ten, broad, universal human values, which are each defined by the specific motivational goals that they represent. The Schwartz value schema has been broadly utilized within the literature (see Corner et al., 2014; Poortinga et al., 2019), largely due to the

availability of robust measurement items and comparability across socio-cultural settings (Davidov, 2008; Davidov et al., 2008b). These values can be arranged into a circular continuum (see Figure 3.1) (Schwartz, 2012, 1992), in which the values are ordered by their compatibility/conflict. Further, these 10 values can be organized into four higher order dimensions. Self-enhancement values (power and achievement) promotes self-interest, which is in opposition to self-transcendent values (universalism and benevolence), which prioritize the concern and welfare of others. Openness to change values (self-direction and stimulation) encourage change and openness to new ideas are in opposition to conservatism values (tradition, conformity and security), which emphasize maintenance of the status quo and stability [3].

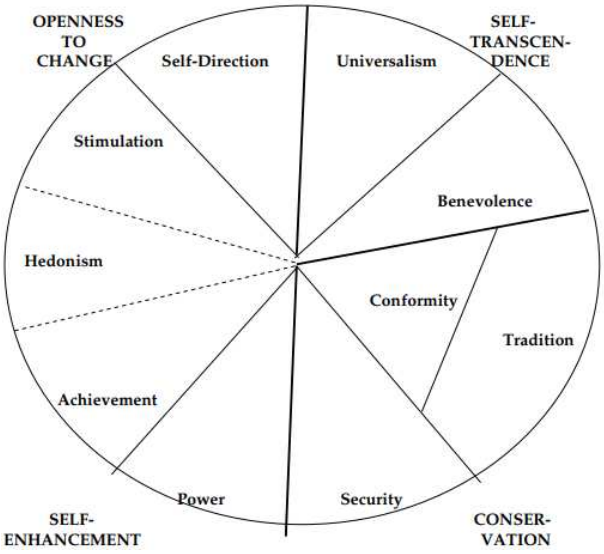


Figure 3.1: Schwartz Human Values Schema with Higher Order Dimension

Previous studies have adopted this framework, reporting that self-transcendent values have a positive relationship climate change concern (Dietz et al., 2007; Corner et al., 2014), and being less likely to have climate change skeptical beliefs (Steg and De Groot, 2012). In contrast, self-enhancement values are positively related to climate change skeptical views (Poortinga et al., 2011), and function to decrease the likelihood that a person will view climate change as danger-

[3]Hedonism is situated in between openness and self-enhancement, sharing characteristics of both

ous (Poortinga et al., 2019). Conservation is also found to be positively related to climate change skeptical beliefs (Poortinga et al., 2011). Alternatively, openness to change values are found to be negatively related to climate change skepticism, and increase the likelihood of negatively viewing the impact of climate change (Poortinga et al., 2019), as well as decrease the likelihood than an individual will hold climate skeptical views (Milfont et al., 2015). The effects of openness to change and conservation, however, appear to be more limited in comparison to self-transcendence and self-enhancement (Milfont et al., 2015; Poortinga et al., 2004).

Drawing upon this previous literature, I expect that:

Hypothesis I: The Schwartz human value dimensions of self-transcendence and openness to change will be positively related to climate change concern (1a), reducing energy usage (1b) and support for increased fossil fuels taxes (1c) in Western European states. While, alternatively, the value dimensions of self-enhancement and conservation will be negatively related.

3.2.3 Political Orientations

Political factors, such as orientation and party identification, have received substantial interest from previous scholarship for the role they play in shaping climate change attitudes, behaviors and policy support (see McCright et al., 2016b). Political factors are broadly found to hold a polarizing effect, where those on the political left are more likely to be concerned about climate change or be willing to support climate change policies than those on the right (McCright and Dunlap, 2011b; Hoffman, 2011; McCright et al., 2016a). The theoretical causes of political polarization appear to be both individual and contextual. On the individual-level, the 'anti-reflexivity' hypothesis posits that individuals, groups, and politically-motivated organizations on the political right are more likely to be supportive of liberal, 'free-market' economic systems (McCright and Dunlap, 2010). Accordingly, those on the political right are more likely to reject the problems caused by the economic system, such as global climate change. While the 'solution aversion' hypothesis similarly suggests that those on the political right may be more likely to resist potential solutions to

climate change, as they are likely to involve undesirable governmental intervention into previously unfettered markets (Campbell and Kay, 2014).

While on the group-level, political party identification can be understood as a form of social identity, setting boundaries for who is 'in' and 'out' of their group (Iyengar et al., 2012; Colvin et al., 2015). People develop a sense of belonging to their 'in-group' (Tajfel, 1978), adopt norms and attitudes that are akin to those of the group (Weisberg and Greene, 2003; Brewer and Brown, 1998) - especially on salient issues (Unsworth and Fielding, 2014). This results in a smoothing-over process, harmonizing individual attitudes within the party. Furthermore, individual political attitudes are often shaped by elite members' cues (Cohen, 2003; Malka and Lelkes, 2010; Tesler, 2017). Elite conservatives and groups, most notably in English-speaking states, have engaged a decades long messaging campaign to shifting public opinion against climate change policies and measures (McCright and Dunlap, 2003, 2011a; Oreskes and Conway, 2011) which has been amplified by conservative-friendly media outlets (Feldman et al., 2012; Hmielowski et al., 2014). Recent studies empirical studies have found a substantive effect of elite cues driving attitudes towards climate change in the US (Brulle et al., 2012; Farrell, 2016). People are responsive to elite cues from party elites and shape their attitudes to be in line with the in-group, a process that has been called "identity protective cognition" Kahan (2015, 2017).

As the climate change denialist counter-movement has been largely based in English-speaking states, recent literature has began to question whether political polarization of climate change attitudes and behaviors is a global phenomenon, or rather one relegated to Anglophone states where processes of political polarization and elite mobilization against climate change measures are more pronounced. While there does appear to be political polarization in climate change concerns and policy support in Western European states, the substantive effect is comparatively lower than in English-speaking states Smith and Mayer (2018a); Lewis et al. (2018). Similarly, McCright et al. (2016a) finds that political ideology is a significant predictor of climate change beliefs, concerns and policy support in Western European states. While using the 2016 European Social Survey, Marquart-Pyatt et al. (2019) also reports that political factors have a strong influ-

ence on climate-relevant energy policy support and behaviors in Western European states. Based upon these recent findings, I expect that:

Hypothesis II: People in Western European states with left-leaning political orientations will be more likely than those with politically right-leaning orientations to be concerned about climate change (2a), willing to reduce their energy usage (2b) and support increased fossil fuels taxes (2c) (see McCright et al., 2016a; Smith and Mayer, 2018a).

3.2.4 Human Values and Political Orientations

Human values play a central role in shaping an individual's political orientations and beliefs (Caprara and Zimbardo, 2004; Feldman, 1988). Values act as the building blocks of political orientations and dispositions (Rokeach, 1973; Converse, 1964), where they are drawn upon to organize and prioritize political beliefs and decisions (Piurko et al., 2011). People prefer political ideologies, parties and policies that align with their values, as well as those that protect their values against perceived threats (Barnea and Schwartz, 1998; Schwartz et al., 2010). For example, people that prioritize openness to change values are found to be more supportive of individual freedoms and civil rights, while those that prioritize self-enhancement values prefer non-egalitarian policies and are against government interventions (Piurko et al., 2011). As such, political factors and human values are thought not to exist in isolation of each other, but rather to be deeply interrelated constructs.

Self-transcendence values (namely universalism) are associated with political left orientations, while conservation values (security and tradition) are closely linked with right orientations (Caprara et al., 2017). Politically left ideologies can be characterized by open-mindedness, mental flexibility, and commitment to social and economic equality, while politically right ideologies commonly stress the importance of resistance to change as well as work towards justifying inequalities (Jost et al., 2003). Using data from the European Social Survey, Aspelund et al. (2013) and Piurko et al. (2011) confirm that conservation and self-enhancement values are positively related to right-leaning ideologies in Western European states, while self-transcendence is closely linked to

politically left orientations. But, the relationship between openness to change values and specific political orientations is less clear. Using cross-national data from 15 states, (Caprara et al., 2017) report a similar pattern in the relationship between human values and political orientations.

A key reason why political orientations and human values are thought to align is out of the strong desire for individuals to have internal consistency in their attitudes and beliefs (Krosnick, 1988). As such, it is likely that when an individual's values and political attitudes are in alignment towards a specific social object, they interact to amplify the person's attitude or response. For example, self-enhancement values have a positive relationship with climate change skeptical views (Dietz et al., 2005; Poortinga et al., 2019), as well as with right leaning political orientations (Caprara et al., 2006; Schwartz et al., 2010), while further, right leaning political orientations is also positively related to climate change skepticism (Smith and Leiserowitz, 2012; McCrea et al., 2016). In this exemplary case, a person's values and politics would be in alignment with their climate change skeptic belief, and through this self-reinforcement could interact to amplify their beliefs. Alternatively, if a person's values and politics are in misalignment towards a social object, they could act as a dampening effect.

I therefore expect that:

Hypothesis III: when the Schwartz human value dimensions are in alignment with a person's political orientations, an amplification effect will be observed on their concerns for climate change (3a), willingness to reduce energy usage (3b) and support for increased fossil fuels taxes (3c)

3.3 Data

For this analysis, I adopt recent survey data from the 2016 European Social Survey (ESS), Wave 8 (European Social Survey, 2016b). This wave includes a special module on public attitudes towards climate change. Further, the ESS contains the Portrait Values Questionnaire (PVQ) indicators as part of its core module indicators, capturing the Schwartz Values Schema. As such, the 2016 ESS presents an entirely unique data set, allowing for cross-national comparisons to be made of the effect of values on climate change attitudes.

Data was collected in the latter half of 2016, primarily using CAPI and face-to-face interviews. The 2016 ESS covers the following 17 Western European states: Austria, Belgium, Finland, France, Germany, Great Britain, Iceland, Ireland, Israel, Italy, Netherlands, Norway, Portugal, Sweden, Spain, Switzerland. Within country response rates ranged from 30.6% in Germany to 73.4% (Israel). The smallest number of completions was 880, in Iceland, while for most nations over 1,500 respondents completed the survey (European Social Survey, 2016a). The 2016 ESS contains as special module, 'Public Attitudes to Climate Change, Energy Security, and Energy Preferences' including several items assessing components related to climate change.

3.3.1 Outcome Variables

For this analysis, I adopt a multiple indicator approach, to best capture the different dimensions of climate change attitudes and dispositions. First, I include an indicator of *Climate Change Concern*, where respondents rank their worry for climate change from 1 'not at all worried' to 4 'very/extremely worried'. This item is originally coded from 1 to 5, but I collapsed values 4 'very' and 5 'extremely' together due to concerns about data sparsity for the 'extremely worried' response (5% of responses) [4].

Climate change concern is among the common indicators utilized within the empirical literature, with roughly half of all studies including a measure of person worry about, perceived seriousness of or perceived risk of climate change (McCright et al., 2016a). While other indicators such as individual actions and policy support are have received comparatively less attention.

Stern (2000) propose the terminology 'environmentally significant' behaviors as human actions that have an impact on the broader environment, in one form or another. As such, this limits actions to those that are directly related to the natural environment. Further, Stern (2000) proposes a schema of four types of environmentally significant behaviors: environmental activism (participation in social movements), non-activist behaviors in the public sphere (policy support,

[4]Supplementary analyses were performed with a 4- and 5-item coding, yielding substantively similar results

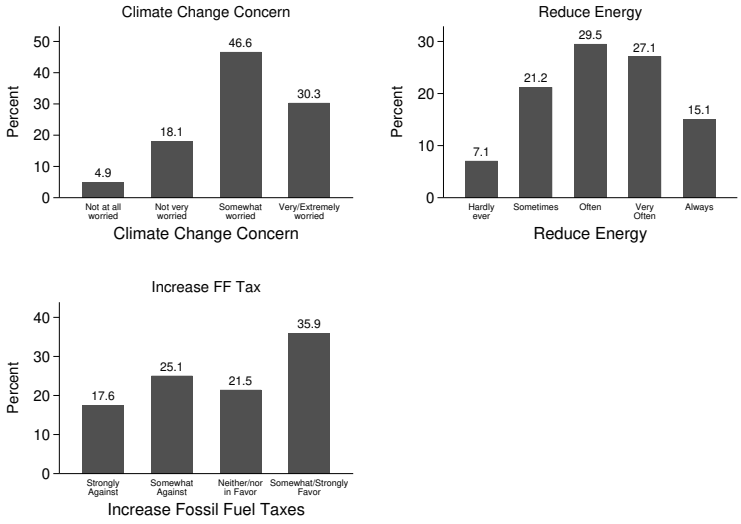


Figure 3.2: Distribution of Responses for Dependent Variables

petitions), private-sphere environmentalism (individual, 'pro-environmental' actions), and other environmentally significant behaviors (actions in the workplace).

Therefore, I adopt two indicators of 'climate change significant' behaviors for this subsequent analysis. An indicator of individual environmental action, *reduce energy*, which measures how often the respondent does things to reduce energy usage, from 1 'never' to 6 'always'. And lastly, and indicator of climate change policy support, *increase fossil fuel taxes*, where the respondent rates their favor of increase taxes on fossil fuels to reduce climate change from 1 'strongly against' to 4 'somewhat/strongly favor'. This item is originally coded from 1 to 5, but I collapsed values 4 'somewhat' and 5 'strongly' together due to concerns about data sparsity for the 'strongly favour' response (8% of responses)[5]. Accordingly, this analysis adopts three separate indicators of climate change concern, behavior and policy support. Distributions for these variables are displayed in Figure **??**.

[5]Supplementary analyses again were performed with a 4- and 5-item coding, yielding substantively similar results

3.3.2 Predictor Variables

This analysis focuses on identifying the independent and interactive effect of *human values* and *political orientation* on the three components of climate change concern, behavior and policy support. First, *human values* are identified using the modified 21-item version of the Portrait Values Questionnaire (PVQ) adapted for the ESS (Schwartz, 2003). To measure the 10 Schwartz values, each item presents a short sentence, a portrait, of a gender-matched person. Then, the respondent is tasked with ranking how much this person is 1 'not like me at all' to 6 'very much like me'. Due to concerns of multicollinearity and parsimony, these 10 values are collapsed into scales[6] representing the 4 higher order dimensions. The items for universalism, benevolence are combined into the 'self-transcendence' dimension ($\alpha = 0.75$), while the items for power and achievement are included in the scale for 'self-enhancement' ($\alpha = 0.74$). Next, 'conservation' is derived from the items for conformity, tradition and security ($\alpha = 0.71$) and lastly, stimulation and self-direction are combined into the dimension 'openness to change' ($\alpha = 0.66$).

Next, *political orientation* is captured through an self-placement of a political right to left scale. Respondents are ranked from holding view that range from 1 'strong right' to 3 'moderate' to 5 'strong left'. Political orientation is adopted over other alternative measures, such as party identification, to allow for better cross-national comparability of political beliefs. Lastly, I include interactions terms between political orientation and each of the four higher-order value dimensions to test for moderation.

3.3.3 Control Variables

Prior cross-national research has noted multiple correlates of climate change attitudes and behaviors on the individual and contextual-level, which I accordingly adopt as control variables for this analysis. Recent literature suggests that climate change attitudes and behaviors are affected by different constructs of trust (Smith and Mayer, 2018b; Fairbrother, 2016; Harring, 2014). For this analysis, I include two constructs of trust, *social trust* and a scale for *political trust* ($\alpha = 0.88$).

[6]Supplementary Appendix A displays the items and Crombach's α for all scales

Beliefs in adaptive capacity, that is the likelihood that individuals or groups will work to resolve climate change, is also noted as an important predictor of climate change behaviors and policy support (Mayer and Smith, 2018; Feinberg and Willer, 2011). I therefore include indicators for *Individual Efficacy* and *Group Efficacy*. Further, religious belonging has been found to be related to cross-national climate change attitudes (Lee et al., 2015), and therefore I include indicators for *religious belonging* and *religious service attendance*. Lastly, I include indicators for socio-demographic variables common to studies of climate change, *gender*, *age*, *educational attainment* and *household income*.

On the contextual-level, I include *GNI per capita* (World Bank, Atlas method 2016) to measure country wealth. Next, I include a measure for *freedom of expression*, adapted from the Varieties of Democracy Index. Lastly, I include an indicator for coal as a percentage of the total primary energy supply for each country (International Energy Agency, 2016).

The descriptive statistics, original items, and variable coding for all of the variables are presented in Table 3.1. Potential forms of multicollinearity were investigated in supplementary analyses, with all key predictors and control variables having a VIF of under 1.6.

3.4 Methods

Given the ordered nature of the three dependent variables, I adopt an ordered logistic regression approach appropriate to these indicators. Further, the data is structured where individuals are nested within 15 diverse countries. As these observations are not considered to be independent, traditional regression approaches are not appropriate. As such, I adopt multi-level logistic modelling techniques which allow the intercepts to randomly vary across the countries (also known as random effect or mixed models). For each of the dependent variables, I estimate two regression models. First, with the 'main effects' of the higher-order value dimensions and political orientation, and second with the interaction product term included.

Coefficients on the logistic scale are notoriously difficult to interpret. Further, focusing solely on statistical significance can lead to false conclusions or misinterpretation of results (Am-

rhein et al., 2019). An approach that places greater focus on substantive effects, rather than mere p-values, is adopted within this analysis. As such, I adopt an approach focusing on predicted probabilities (Long and Freese, 2014; Mood, 2010). For the 'main effects' models, I calculate predicted probabilities for the effects human values and political orientations holding control variables at their observed values and averaging the probabilities for each score of the focal predictor variables (Hypotheses 1 and 2). For each of the human values, I predict probabilities for 'low', 'medium' and 'high' values. Given that human values are continuous scales with non-inherently substantive quantities, I predicted values at the 5th percentile ('low'), median ('moderate') and 95th percentile ('high') for each of the four human value dimensions. While for political orientation, predicted probabilities are calculated for all five ordered values of this item. To identify patterns of moderation, the identical values are used to calculate the human values*political orientation predictions in the 'interaction models' (Hypothesis 3). All probabilities predict the highest outcome for each of the dependent variables.

Lastly, I am further interested in how the effects of political orientation can be moderated by the human values dimensions (Hypothesis 3). The interaction analyses focuses on identifying potential moderating effect, which investigates if the effect of x on y changes due to a third variable z. In order to understand the effect of an interaction term with non-linear outcomes, coefficients of the product term do not provide sufficient information on the significance, magnitude of direction of this interaction (Mize, 2019). As such, I again adopt predicted probabilities to determine the nature of these interactive effects (Brambor et al., 2006).

While the mediation analyses aims understand how of the effect of x on y is due to the effects of z itself. Within mediation analyses, the 'total effects' of x on y is commonly decomposed into the 'indirect effects' of x on y via z, to see how much of the effect is directly and indirectly attributable to each variable. Due to scaling issues, standard mediation techniques cannot be directly translated to non-linear regression models. A relatively new approach, commonly known as *khb*, resolves many of these issues, allowing for decomposition of direct and indirect effects in logistic regression models (Karlson et al., 2012; Breen et al., 2013, 2018). Performance analyses of the

khb method suggest that the khb routine produces a reasonable approximation of mediation effects under almost all conditions (Smith et al., 2019). Therefore, I investigate for mediating effects by decomposing the direct and indirect effects separately for political orientation by human values on each of the three dependent variables as a robustness check.

Table 3.1: Descriptive Statistics and Variable Coding

Variable	*Original Item*	*Coding*	*Mean*	*Std. Dev.*
Dependent Variables				
Climate Change Concern	*wrclmch*	1 'Not at all' to 4 'Very/Extremely Worried'	3.02	0.83
Reduce Energy	*rdcenr*	1 'Never' to 6 'Always'	3.22	1.15
Increase Fossil Fuel Taxes	*inctxff*	1 'Strongly against' to 4 'Somewhat/Strongly favour'	2.76	1.12
Independent Variables				
Self Transcendence	*see A.1*[7]	1 'Not at all like me' to 6 'Very much like me'	4.92	0.67
Self Enhancement			3.69	0.87
Openness			4.14	0.89
Conservation			4.29	0.83
Political Orientation	*lrscale*	1 'Strong Right' to 5 'Strong Left'	2.95	1.22
Individual Level Control Variables				
Social Trust	*ppltrst*	0 'Lowest Trust' to 10 'Highest'	5.47	2.32
Political Trust	*see A.1*	0 'Lowest Trust' to 10 'Highest'	4.94	2.00
Individual Efficacy	*ownrdcc*	0 'Not at all likely' to 10 'Extremely Likely'	4.54	2.64
Group Efficacy	*lkredcc*	0 'Not at all likely' to 10 'Extremely Likely'	5.83	2.26
Female	*gndr*	0 'Male' 1 'Female'	0.51	0.50
Age	*age*	15-100	49.5	18.7
Educational Attainment	*edulvlb*	1 'Primary or less' to 8 'PhD'	3.73	1.93
Household income, Country Deciles	*hinctnta*	1 '1st decile' to 10 '10 decile'	5.20	2.74
Religious Belonging	*rlgblg*	0 'Does not belong' 1 'Belongs to religious group'	0.61	0.49
Religious Service Attendance	*rlgatnd*	1 'Never' to 6 '> Weekly'	2.46	1.52
Country Level Control Variables				
GNI per capita, in 1000s	*World Bank 2016*	9,200 to 81,100	45.0	14.2
Freedom of Expression	*2016 V-Dem V.10*		0.94	0.042
Coal as % of TPES	*IEA (2016)*		0.11	0.075

3.5 Results

The following sections presents the results from the multilevel ordered logistic regression analysis separately for the effects of human values dimensions and political orientations on climate change concern, reducing energy and increase fossil taxes. I first test for the effects of human values dimensions and political orientations on climate change concern, reducing energy and increase fossil taxes, where I anticipate that dimensions of self-transcendence and openness to change will be positively related to these outcomes, while, oppositionally, the value dimensions of self-enhancement and conservation will be negatively related (Hypothesis 1). Further, people with politically left orientations will be more likely to have greater climate change concern, reduce energy for climate change and being supportive of increasing fossil fuel taxes than those on the political right (Hypothesis 2). The regression results for these analysis are presented in Table 3.2, while the predicted probabilities for the main effects of the key predictors are displayed in Table 3.3.

Next, I investigate whether the human values dimension potentially moderate the effect of political orientation on climate change concern, reducing energy and increase fossil taxes. In order to investigate for moderation, I adopt an interaction product term approach, with the predicted probabilities for the interaction plotted in Figure 3.3.

3.5.1 Climate Change Concern

Main Effects

The regression coefficients of the multilevel ordinal logistic regression are displayed in Table 3.2. The four human values dimensions all have significant effects on climate change concern. Self-transcendence *(b=0.63,*$p \leq 0.05$*)* and openness to change values *(b=0.06,*$p \leq 0.05$*)* have a positive significant effect on climate change concern, while self-enhancement *(b=-0.12,*$p \leq 0.05$*)* and conservation *(b=-0.12,*$p \leq 0.05$*)* have significant, negative effects. While political orientation *(b=0.13,*$p \leq 0.05$*)* also has a significant, positive effect, meaning that people become more con-

Table 3.2: Multilevel Ordered Logistic Regression Results

	Climate Change Concern		**Reduce Energy**		**Increase Fossil Fuel Taxes**	
	Base	*Int.*	*Base*	*Int.*	*Base*	*Int.*
Self Transcendence	0.63**	0.39**	0.53**	0.51**	0.13**	-0.04
	(0.03)	(0.06)	(0.02)	(0.06)	(0.02)	(0.06)
Self Enhancement	-0.12**	0.00	-0.27**	-0.26**	0.02	0.05
	(0.02)	(0.05)	(0.02)	(0.05)	(0.02)	(0.05)
Openness	0.06**	-0.03	0.16**	0.04	0.00	-0.07
	(0.02)	(0.05)	(0.02)	(0.05)	(0.02)	(0.05)
Conservation	-0.12**	0.08	0.06**	0.07	-0.20**	0.07
	(0.02)	(0.05)	(0.02)	(0.05)	(0.02)	(0.05)
Political Orientation	0.13**	0.00	0.03**	-0.15	0.14**	0.16
	(0.01)	(0.10)	(0.01)	(0.09)	(0.01)	(0.09)
Social Trust	-0.04**	-0.04**	-0.03**	-0.03**	0.03**	0.03**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Political Trust	-0.01	-0.01	-0.03**	-0.03**	0.14**	0.14**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Individual Efficacy	0.10**	0.10**	0.04**	0.04**	0.09**	0.09**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Group Efficacy	0.17**	0.17**	0.06**	0.06**	0.10**	0.10**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Female	0.09**	0.09**	0.05*	0.05*	0.04	0.04
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age	-0.00**	-0.00**	0.01**	0.01**	-0.00**	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Educational Attainment	0.07**	0.07**	0.08**	0.08**	0.11**	0.10**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Household income, Country Deciles	0.01	0.01	-0.02**	-0.02**	0.03**	0.03**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Religious Belonging	-0.06	-0.06	-0.05	-0.05	-0.15**	-0.14**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Religious Service Attendance	0.01	0.01	-0.00	-0.01	0.05**	0.05**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GNI per capita, in 1000s	-0.02**	-0.02**	-0.01*	-0.01*	0.01*	0.01*
	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
Freedom of Expression 2016	4.89	4.96	4.67**	4.74**	-0.81	-0.78
	(2.89)	(2.86)	(1.41)	(1.40)	(2.15)	(2.19)
Coal as % of TPES	-0.25	-0.25	0.87	0.87	0.00	-0.01
	(1.67)	(1.66)	(0.81)	(0.80)	(1.24)	(1.27)
Self Transcendence × Political Orientation		0.08**		0.01		0.06**
		(0.02)		(0.02)		(0.02)
Self Enhancement × Political Orientation		-0.04**		-0.00		-0.01
		(0.02)		(0.01)		(0.02)
Openness × Political Orientation		0.03*		0.04**		0.02
		(0.02)		(0.01)		(0.02)
Conservation × Political Orientation		-0.06**		-0.00		-0.09**
		(0.02)		(0.01)		(0.01)
Variance Component	0.15**	0.15**	0.03**	0.03*	0.08**	0.09**
Observations	21,337	21,337	21,305	21,305	21,182	21,182
AIC	44078.5	44041.2	61117.4	61112.9	52463.5	52424.5
BIC	44253.8	44248.3	61300.7	61328.0	52638.6	52631.5

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

Table 3.3: Predicted Probabilities of Value Dimensions and Political Orientation, main effects

	Climate Change Concern	**Reduce Energy**	**Increase Fossil Fuel Taxes**
Self-transcendence			
Low	0.19	0.08	0.35
Moderate	0.31	0.14	0.39
High	0.45	0.21	0.42
Self-enhancement			
Low	0.35	0.19	0.38
Moderate	0.32	0.14	0.39
High	0.29	0.10	0.39
Openness			
Low	0.30	0.12	0.39
Moderate	0.32	0.14	0.39
High	0.33	0.17	0.39
Conservation			
Low	0.35	0.13	0.45
Moderate	0.31	0.14	0.38
High	0.29	0.15	0.33
Political Orientation			
Right	0.27	0.13	0.33
Moderate	0.31	0.14	0.39
Left	0.36	0.15	0.45
Observations	21,337	21,182	21,305

Predicted probability calculated at highest value of dependent variables.

Fixed effects only, calculated holding all other predictors in Table 3.2 at their means.

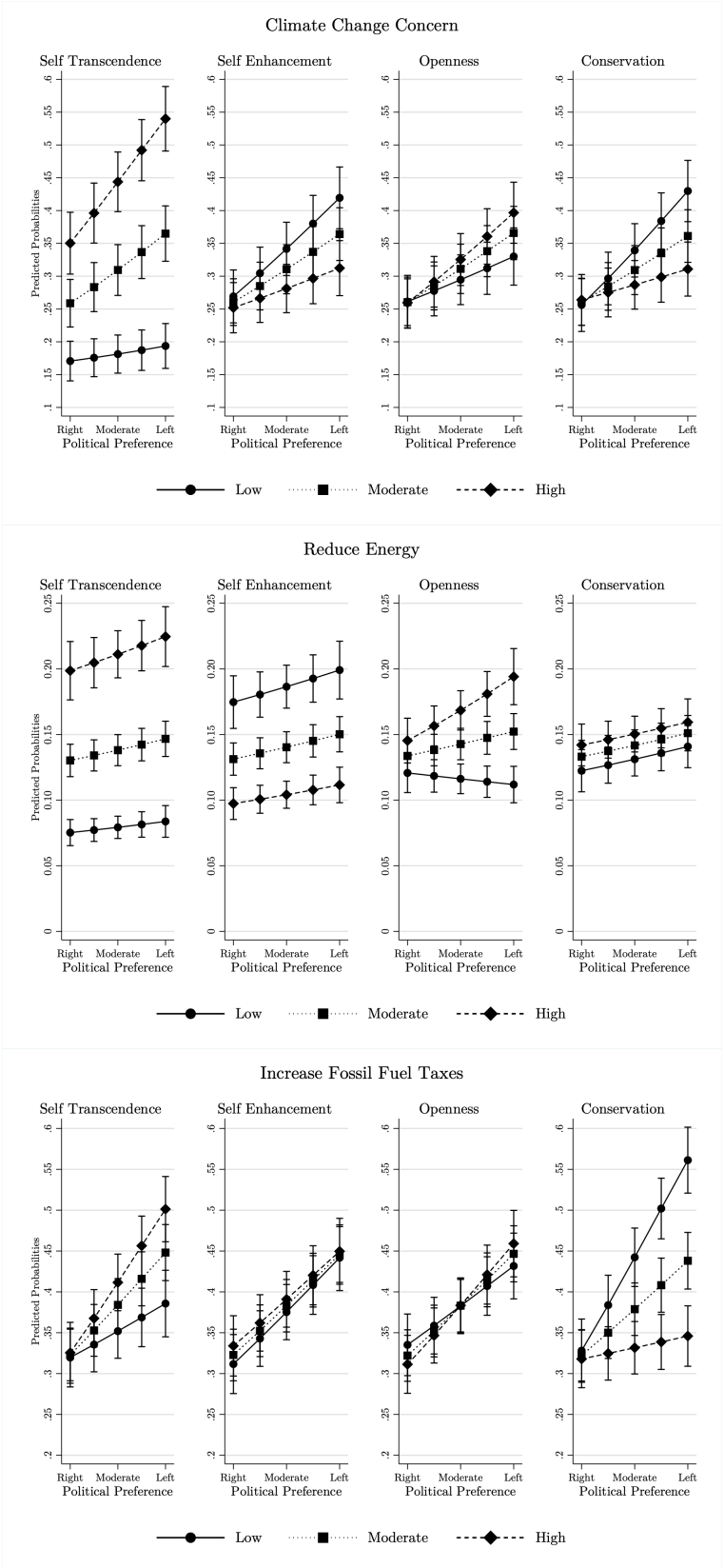


Figure 3.3: Predicted Probabilities of Climate Change Concern by Values * Political Orientation Interaction

cerned about climate change as they move from the political right to left. All of these results are in the expected directions, providing support for Hypotheses 1a and 2a.

Table 3.3 displays the predicted probabilities of people being extremely worried about climate change. Self-transcendence appears to have the largest substantive effect. People at the lowest levels of self-transcendence values have a predicted probability of 0.19 of being extremely worried about climate change, while this increases to 0.45 for people at the highest levels of self-transcendence. Self-enhancement and conservation also appear to have moderate, negative effects. Political orientation also appears to be a substantive predictor of climate change concern, with people on the right having a predicted probability of being extremely worried, compared to a predicted probability of 0.36 for those on the political left.

Moderation Analyses

To identify forms of moderation for the human values dimensions by political orientation, we turn to Figure 3.3. The effect of the four human values dimensions all appear to by political orientation. The greatest moderation appears to be for self-transcendence, where the effect of this value is greatly amplified as people move from the political right to left. These findings appear to indicate that when self-transcendence values are in alignment with left leaning political ideologies, there is an amplification effect in the levels of climate change concern. Similar patterns are also evident for openness to change, but the effect size appears to be comparatively smaller. For self-enhancement and conservation, the amplification effect appears to be most noticeable at *lower* levels of the values. Given that these value dimensions are generally in opposition to political left leaning preferences, this finding means that for people who have lower levels of self-enhancement and conservation there is an amplifying effect. I therefore find evidence in support of Hypothesis 3a.

3.5.2 Reduce Energy

Main Effects

Next turning to the frequency that an individual reduces their energy usage, all four of the human values dimensions are found to have significant effects (again see Table 3.2). The coefficients of self-transcendence *(b=0.53,$p \leq 0.05$)*, self-enhancement *(b=-0.27,$p \leq 0.05$)* and openness to change *(b=0.16,$p \leq 0.05$)* are all in the expected direction, providing evidence in support of Hypothesis 1b. But, the coefficient for conservation values is positive *(b=0.06,$p \leq 0.05$)*, a surprising finding as these values are theorized to be in opposition to openness to change (which also has a positive coefficient). Lastly, the effect of political orientation is significant and positive *(b=0.03,$p \leq 0.05$)*, providing evidence in support of Hypothesis 2b.

While all of the effects of these key predictors are significant, not all of them appear to have substantive effects (see Table 3.3 for predicted probabilities). The largest substantive effect again appears to be a result of self-transcendent values, where there is a 0.13 difference in the predicted probability of an person always reducing their energy usage between high (0.21) and low (0.08) levels of this value. Self-enhancement also appears to have a moderate substantive effect, where people with high quantities of this value have a 0.10 predicted probability of always reducing their energy usage, compared to 0.19 for those with lower quantities of self-enhancement values. But, while conservation and political orientation both have significant coefficients, the substantive effect of these predictors on an individual always reducing their energy use appears to be limited.

Moderation Analyses

Figure 3.3 displays the interactions between human values dimensions and political orientation. Of these interactions, only the effect of openness to change appears to be moderated by political orientations on a person always reducing their energy usage. There are minimal differences between people on the political right, but these differences increase substantially as people more politically left leaning. This provides evidence of an amplifying effect when political orientations are in alignment with openness to change values. There is little visual evidence of an

moderating effect for the other human values dimensions. Therefore, I find limited evidence in support of Hypothesis 3b.

3.5.3 Increase Fossil Fuel Tax

Main Effects

Returning to the regression coefficients of the multilevel ordinal logistic regression in Table 3.2, I find that self-transcendence has a positive, significant effect on support for increased fossil fuel taxes *(b=0.13,*$p \leq 0.05$*)*, while conservation has a negative effect *(b=-0.20,*$p \leq 0.05$*)*. But neither self-enhancement *(b=0.02,n.s.)* or openness to change *(b=0.00,n.s.)* have a significant effect. As such, I find limited evidence in support of Hypothesis 1c. Political preference was again found to have a positive, significant on support for increased fossil fuel taxes *(b=0.14,*$p \leq 0.05$*)*, and I therefore find support for Hypothesis 2c.

The most substantive predictors of a person somewhat or strongly supporting increasing fossil fuel taxes appear to be political orientation and conservation. People on the political left have a 0.45 predicted probability of strongly supporting increasing fossil fuel taxes, compared to 0.33 for those on the right. While people with high quantities of conservation values have a 0.45 predicted probability, compared with 0.33 for those with low quantities. Self-transcendence values also appear to have positive effect, albeit comparatively more moderate. Lastly, neither self-enhancement nor openness to change appear to have a substantive effect on a person somewhat or strongly supporting increasing fossil fuel taxes.

Moderation Analyses

Figure 3.3 provides visual evidence of a moderating effect of political orientation for self-transcendence and conservation values. For conservation values, there are no differences in the likelihood of somewhat or strongly favouring increased fossil fuels taxes between people on the political right, but this substantively increases as people move to the political left, particularly for those with small quantities of conservation values. Similarly for self-transcendence values, there are greater differences for people on the political left than on the political right, providing

evidence of an amplifying effect when values and political orientations are in alignment. As such, I find some evidence in support of Hypothesis 3c.

3.5.4 Robustness Checks

To test for potential mediation of human values dimensions by political orientation, I adopt a *khb*-based analysis, displayed in Table 3.5. Overall, there is very minimal evidence of a mediating effect of any of the human values dimensions by political orientation on climate change concern. The most substantial effect appears to be for openness, where 22% of the direct effect is confounded by political orientation, but this is largely due to the relatively small size of the effect of openness, where the difference in coefficients before and after the inclusion of political orientation is minimal *(b=-0.01,n.s.)*. Furthermore, I find little evidence of a mediating effect of any of the human values dimensions by political orientation for reducing energy. Lastly, I find limited evidence of political orientation as a mediator of self-transcendence values on support for increased fossil fuel taxes. Roughly 28% of the effect of self-transcendence is mediated by political orientation, a substantive amount, but the difference in coefficients is not significant *(b=0.05,n.s.)*. Accordingly, I find little evidence that values are mediated by political orientations. Rather, the effect of values appears to be direct on climate change attitudes and behaviors.

Next, as a robustness check against potential forms of bias, I adopt a methodology developed by Frank (2000); Frank et al. (2013) to estimate how much bias is required in the estimate of a coefficient to invalidate an inference, displayed in Table 3.4. For these analyses, I will only focus on the robustness of significant indicators. For example, to render the effect of self-transcendence on climate change concern non-significant roughly 92% of the cases would have to be replaced with a case of no effect. As such, the ESS would have to contain an enormous amount of measurement error for this effect to be erroneous.

While alternatively, the comparatively smaller effect of openness to change values on climate change concern would have to have roughly 41% of the cases replaced with no effect to become non-significant. This finding suggests, the effect of openness is comparatively more vul-

nerable to measurement error. This also matches with the findings of comparatively diminished substantive effect openness to change values as well, where there are minor differences between low and high quantities of this value on climate change concern.

In sum, the larger substantive effects all appear to be very robust, while some of the smaller substantive effect may be more vulnerable. As such, caution should be taken when making inferences about the comparatively smaller effects.

Furthermore, as a robustness check on the interaction product term for the relationship between the four human values dimensions and political orientations, I performed supplementary analyses included models where the the four values dimension were further interacted by all control variables (Hastings and Roeser, 2020, see). In all of these supplementary models, the substantive effect of the interactions remains unchanged, providing evidence that these are not the product of another moderation. Therefore, I find evidence of robustness in these effects.

Table 3.4: Impact of a Confounding Variable on Key Predictors

	Climate Change Concern	Reduce Energy	Increase Fossil Fuels Tax
Self-transcendence	92.7%*	91.5%*	71.6%*
Self-enhancement	53.6%*	89.2%*	34.9%
Openness	41.1%*	75.9%*	32.8%
Conservation	74.8%*	62.6%*	82.4%*
Political Orientation	68.6%*	28.9%*	83.9%*

*Regression coefficient has $p < 0.05$ (see Table 3.2)

3.6 Conclusion

This paper explores how human values and political orientations combine to pattern climate change attitudes and behaviors in Western European states. I build upon the long-standing literature of cross-national climate change attitudes and behaviors to develop an richer understanding of the direct effects of human values and political orientations (McCright et al., 2016a; Lewis et al., 2018; Poortinga et al., 2019; Smith and Mayer, 2018a; Marquart-Pyatt et al., 2019). Further, I

Table 3.5: Decomposition of Value Dimensions by Political Orientation

	Climate Change Concern	**Reduce Energy**	**Increase Fossil Fuel Taxes**
Self-Transcendence			
Reduced	0.68**	0.54**	0.19**
	(0.03)	(0.02)	(0.02)
Full	0.63**	0.53**	0.13**
	(0.03)	(0.02)	(0.02)
Difference	0.05	0.01	0.05
	(0.04)	(0.01)	(0.04)
Self-Enhancement			
Reduced	-0.12**	-0.27**	0.02
	(0.02)	(0.02)	(0.02)
Full	-0.12**	-0.27**	0.02
	(0.02)	(0.02)	(0.02)
Difference	-0.00	-0.00	-0.00
	(0.03)	(0.01)	(0.04)
Openness			
Reduced	0.05*	0.16**	-0.01
	(0.02)	(0.02)	(0.02)
Full	0.06**	0.16**	0.00
	(0.02)	(0.02)	(0.02)
Difference	-0.01	-0.00	-0.01
	(0.03)	(0.01)	(0.04)
Conservation			
Reduced	-0.14**	0.05**	-0.23**
	(0.02)	(0.02)	(0.02)
Full	-0.12**	0.06**	-0.20**
	(0.02)	(0.02)	(0.02)
Difference	-0.03	-0.01	-0.03
	(0.04)	(0.01)	(0.04)
Confounding Percentage			
Self-Transcendence	7.1	2.5	27.8
Self-Enhancement	2.4	0.3	-17.6
Openness	-22.5	-1.9	115.5
Conservation	18.2	-13.7	12.1

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

uniquely contribute an analysis of the interactive role of human values and political orientations shaping climate change attitudes and behaviors, exploring patterns of moderation. These findings demonstrate the importance of understanding the deeply interrelated nature of human values and politics, and how their alignment can amplify individual perceptions and actions in relation to climate change.

I show that human values dimensions have a direct effect on climate change concern, behaviors and policy support. Self-transcendence values have the most substantive (positive) effect on climate change concern and energy reducing behaviors, while being comparatively less effective in shaping support for increased fossil fuel taxes. Rather, conservation values appear to be stronger substantive (negative) drivers of this measure of policy support. These findings are consistent with the prior literature (Poortinga et al., 2019; Dietz et al., 2007). Furthermore, I find that political orientation (moving from right to left) has a substantive positive effect on climate change policy support and concern, but not on individual energy behaviors. These findings provide further evidence for differences based upon political orientation (McCright et al., 2016a; Lewis et al., 2018; Smith and Mayer, 2018a), but that the effect varies substantially across types of climate change attitudes and behaviors in Western European states.

The primary contribution of this analysis is the inclusion of a interrelated framework for human values and political factors. Given that human values and political factors are both substantive predictors of climate change attitudes and behaviors (Hornsey et al., 2016), and are themselves deeply related constructs (Caprara and Zimbardo, 2004; Feldman, 2003), these factors likely interact. I posit that when an important value aligns with a persons political orientation, this will act as a self-reinforcing mechanism and have an amplifying effect on climate change attitudes and behaviors. In contrast, when values and political orientations are not in alignment, or are in opposition, political orientations will work to dampen the effect of human values.

I find strong evidence of an interactive, amplifying effect of human values and political orientation in this analysis. Self-transcendence dimension values are found to interact with political left orientation to greatly increase the likelihood of a person being concerned about climate change,

or support climate change policies. As such, it appears that when aligned, the effects human values and political factors can be internally-reinforcing, acting as an amplifying effect on climate change attitudes and behaviors.

These findings have implications for climate change advocates and policy stakeholders. Left-leaning political stakeholders could frame their climate change efforts directly in relation the self-transcendence value dimensions. By bringing values, political ideologies and climate change attitudes and behaviors into alignment, there is great potential to shift attitudes and behaviors towards climate change, via amplification. Political actors are responsive to shifting public opinions Soroka and Wlezien (2010), and substantive, rapid shifts in attitudes have the potential to punctuate sticky institutions,, resulting in shift to policy regimes (Baumgartner and Jones, 2010). Furthermore, in times where climate change becomes a salient political issues, these shifting public opinion dynamics presents an opportunity to open a "policy window", where climate policy entrepreneurs are provided the opportunity to promote their preferred policy instruments (Kingdon, 1995). Accordingly, the individual-level amplification of climate change attitudes carry the potential to shift policy structures.

Recent literature has identified social tipping processes as a potentially key mechanism in generating rapid social transformation relevant for climate change Otto et al. (2020a); Farmer et al. (2019). Generally, these perspectives note that under certain conditions, a system becomes more vulnerable to change such that a small change within the system, or it's environment, has the potential to cause rapid shifts into a qualitatively different state, largely via positive feedback mechanisms (Milkoreit et al., 2018; Tàbara et al., 2018; Kopp et al., 2016). Sociologists have long noted potential thresholds for behavioral adaptation (see Granovetter, 1978; Schelling, 1971), whereby a once a certain proportion (critical threshold) of the population becomes willing to engage in a behavioral or normative change, a larger percentage of the population will engage in these actions. Broadly, this threshold is often assumed to be relatively low, where around 20-30% of the population would need to engage in climate change actions or normative shifts (Rockström et al., 2017; Centola et al., 2018). Accordingly, under certain conditions, comparatively smaller

changes have the capacity to shift entire systems. As such, even motivating 5% of the population towards climate attitudes or behaviors carries the potential for large changes (well within the range of such amplification effects identified in this study).

Furthermore, these findings also emphasize the importance of adopting multiple measures approach towards understanding different forms of climate change attitudes and behaviors (Stern, 2000). The effect of human values dimensions and political factors varies substantially across the three dimensions included in this analysis. Political orientation appears to be most effective in shaping support for climate change policies, where people on the political left have a 0.12 higher predicted probability of supporting increases to fossil fuel taxes than those on the left. This effect does appear to be more moderate for climate change concerns (a difference in predicted probability of 0.09) and substantively null for energy reducing behaviors. These results suggest that, while there are differences as a result of political orientations, these factors are more closely related to matters of policy, and not for an individual's actions. Also using the 2016 ESS, but relying upon different indicators, Marquart-Pyatt et al. (2019) similarly report differences in energy policy support but in energy behavioral intentions. Therefore, future research needs to pay close attention to not only the effects of key predictors, but also how these vary across different forms of climate change attitudes and behaviors (Smith et al., 2018).

These findings also have substance relevance for policy makers and climate change stakeholders. The political relevance and implications of these findings are discussed comprehensively in Chapter 6.

The results of this study are limited by the regionality of data from Western European states. The 2016 ESS presents a unique, cross-national dataset, allowing for such comparisons to be made within these states. In order to better understand the interrelationship between human values and political factors, items for human values should be included in other major cross-national surveys to validate these findings. These results should also be compared to other regions, such as English-speaking states, there a strong effect of political factors have been identified, but also in states where political factors have been noted as not being as effective, such as post-Communist,

transition states. Further, the role of other contextual factors, such as media influence, climate vulnerability, socio-political histories, should be included in subsequent analysis.

Chapter 4

Values, political orientation and Climate Change within post-communist, Transition States

4.1 Introduction

Climate change presents an enormous challenge for current and future generations, necessitating large changes to individual behaviors, modes of production, and regulatory policies (Steffen et al., 2018; Farmer et al., 2019). While ambitious target have been set to meet the Paris Agreement, these would require foundational changes to many existing social structures and behaviors. Understanding individual willingness to engage in ameliorative actions in response to climate change is an important component, as increasing environmental activism and concerns about the risks posed by climate change can initiate new social and political coalitions and shift the priorities of existing ones (Sabatier, 1988; Weible and Sabatier, 2017a). Perceptions about the risks posed by climate change and willingness to support climate change policies are crucial to facilitating the political changes necessary to shift social systems towards post-carbon states. Substantive shifts in climate change policy support can punctuate previously stable and 'sticky' institutions, effecting substantive policy changes (Baumgartner and Jones, 2010). Accordingly, climate change attitudes and behaviors have received substantial academic interest over recent decades (Capstick et al., 2015; McCright et al., 2016a).

Within the cross-national literature, political polarization and human values have emerged as two of the most substantive predictors of climate change concerns (Hornsey et al., 2016). Broadly, people on the political left have been found to be more concerned about climate change, more willing to support climate change policies, and more likely to engage in behaviors aimed at fighting climate change than people on the political right (McCright et al., 2016b; McCright and Dunlap, 2011a). As for values, self-transcendence (altruism) is found to be positively related to

anthroprogenic beliefs about climate change and increased risk perceptions (Poortinga et al., 2019; Corner et al., 2014), while the opposite is generally true for more egotistical and traditional values (Steg and De Groot, 2012). To date, the literature has treated human values and political factors independently, then they are likely deeply embedded constructs, particularly as values act as building blocks of political attitudes and behaviors (Rokeach, 1973; Converse, 1964; Piurko et al., 2011). As such, it is likely that these factors interrelate to shape climate change attitudes and behaviors, but as of yet, very little is known about this relationship.

Furthermore, while the majority of the previous literature has largely focused on the US or other English-speaking states (McCright et al., 2016b), an emerging literature provides suggestive evidence that the effects of human values and political factors may differ between Western European and post-communist, transition state. Broadly, political factors appear to be less effective in driving climate change attitudes and behaviors in transition states, (McCright et al., 2016a; Lewis et al., 2018; Smith and Mayer, 2018a) while the effects of human values appears to differ as well (Poortinga et al., 2019). However, there remains little understanding of the processes and mechanisms though which human values and political factors shape climate change attitudes and behaviors within transition states.

This manuscript considers the independent and interactive effects of human values and political orientations on climate change concern, behaviors and policy support within transition states. Using data on 7 transition states from the 2016 European Social Survey, I adopt multi-level regression-based approaches to understand how these factors shape climate change attitudes and behaviors. Accordingly, this analysis contributes to the emerging literature on climate change, and more broadly environmental, attitudes and behaviors in transition states (Chaisty and Whitefield, 2015; Marquart-Pyatt, 2012; Hadler and Wohlkonig, 2012; Haller and Hadler, 2008) as well as the cross-national literature focusing on political factors and human values (McCright et al., 2016a; Lewis et al., 2018; Marquart-Pyatt et al., 2019; Poortinga et al., 2019; Smith and Mayer, 2018a). In the following section, I overview the unique context of transition states, exploring how the divergent historical and political history has manifested into contrasting levels and patterning

of concern, behaviors and policy support for climate change. Then, I explore the cross-national literature on human values and political factors to motivate the analyses of climate change attitudes and behaviors within transition states below.

4.2 Theoretical Background

4.2.1 Environmental Histories in the East and West

Since the end of the Cold War, much has been made of the environmental history of former communist states. While, on sum, communist states had comparatively worse environmental records than their Western counterparts, these differences cannot be simply reduced to a protective West and exploitative East framework. Rather, there is great diversity in the types of environmental protectionism engaged by communist and non-communist states, as well as the reasons for the measures, or lack thereof.

Broadly, most Western and Eastern European states were concerned about the environment, and fought against potentially negative impacts. One particular case is the need to provide clean water in the post-WWII era (Coumel, 2019; Cetkauskaite and Laakkonen, 2019). Protection of clean water sources was necessary, as a basic form of public health, but also politically, as the negative effects of unclean water are quickly observed, and people are able to attenuate direct causality in these problems. As such, both sides of the Iron Curtain actively engaged to ensure clean water to their citizenry.

Further, agricultural policies in Western and communist states remained focused on avoiding Malthusian fears of overpopulation and lacking food supplies. Western Germany, like many other capitalist states, began environmentally deteriorative programs such as heavy chemicalized industrialized farming to avoid political and social consequences of food shortages (Glassheim, 2019). Communist states engaged rapid transitions from traditional small-scale agricultural production techniques towards collectivization. Such attempts frequently resulted in mass environmental and public tragedies, with notorious famines and mass dispossession of lands. As such,

neither agricultural approach promoted environmental stewardship, but in a relative comparison, communist states were broadly more deleterious.

By contrast, Eastern and Western states diverged in their response to maintaining clean air. Like maintaining access to clean water, keeping the air clean from pollutants also has clear health benefits. But, unlike water where the negative health effects can be perceived relatively quickly, the effects of polluted air may not manifest for decades. As such, maintaining clear air was seen as less of an immediate political liability in Eastern states, and as a result, these states were more likely to prioritize economic development over protecting against air pollution (von Hardenberg, 2019; Mosley, 2014). Eastern states also were more reliant upon brown coal as a primary energy source, lacking other sources (such as oil and natural gas).

Ideologies also created marked differences in environmental policies. Following WWII, industrialization was promoted in many Eastern European states (Berend and Berend, 1996), which generated further demand for coal-based energy resources. Rapid industrialization was supported by the idealization of industry and factory workers within communist countries (Siegelbaum, 1986). A factory worker was considered an archetypal proletariat, holding a sacred position not only within the party's ideological propaganda, but also as part of the social identity of Eastern Europeans. Rapid, mass industrialization meant progress, it meant strength, but in these cases, it also meant substantial amounts of coal-based air pollution (Shahgedanova and Burt, 1994).

Further, the ideologies underlying capitalism and communism manifested in environmentally relevant differences. Take for example the diversified development of post-WWII motorized travel. Within Western European states, transportation was more likely to be oriented around automobiles, a very individualized mode of travel. Mass usage of automobiles required the individual to have enough surplus income to afford such a luxury, but at the same time, also required the economic and political institutions of the state to produce mass amounts of fuel, steel, roads and other infrastructure supporting these vehicles. Further, cities were designed in a much more sprawling fashion, where people could drive their cars further and further out to their large, single-family suburban homes.

Alternatively, within communist states, the primary form of motorized transportation was railway based, trains and subways, which is far more collectively focused. This necessitated a much more urbanized city structure, and greater forms of collectivity.

In his seminal article, Dominick (1998) compares the environmental approaches of Western and Eastern Germany. Dominick (1998) argues that while, on sum, the environmental records of communist states were comparatively disastrous, the reasons for the differences are not as simple as free market approaches being inherently more environmentally protective than planned economies. Rather, there are a multitude of interrelated forces that separate Eastern from Western German approaches to the environment (demographics, technological capacities, affluence, geography, access to natural resources, economic decision-making, and political structures). In particular, Dominick (1998) notes that these differences are more likely associated with democratic political forces (civil liberties, free press and speech, multi-party/power-sharing political systems) rather than market forces. As such, the differences in environmental records between Eastern and Western Germany appear to be more related to political institutional forms than economic ideologies. More specifically, Kirchhof and McNeill (2019, p.13) argue that after comparing former communist and Western states, "freedom of speech seems to be a necessary condition for the protection of environment".

Clearly, Eastern and Western Europe have unique environmental histories. But, this pattern is quite complex, divergent upon the specific locales and forms of environmental degradation. Political actors on both sides of the iron curtain were faced with decisions on how to protect the environment, while also strengthening their economic and political power, manifesting in a complex array of divergent environmental outcomes. The following section develops how these diverse histories have manifested into contemporary differences in climate change attitudes and behaviors within transition states.

4.2.2 Climate Change Attitudes and Behaviors in Transition States

A core focus of the decades-long cross-national literature into environmental attitudes has been on the role of national-level economic development. Generally, these literatures have focused around three dominant, but largely contradictory, theoretical approaches to the role of economic development: postmaterialism, affluence hypothesis, and global environmentalism.

The 'postmaterialist' perspective focuses on the role of economic development in predicting environmental concern. As societies develop, basic, subsistence needs are met, and they transition from materialist-focused priorities towards becoming more deeply engaged in postmaterialist issues, such as human rights, freedom of speech, and environmental quality (Inglehart, 1977). This theory was later appended to include a focus on "objective problems" (Inglehart, 1995), that is if a country is experiencing environmental problems, this is likely to increase the concern for these problems, regardless of economic development. This approach was also further amended as the objective problems-subject values approach (Brechin, 1999), where contextual differences in environmental concern cannot be solely attributed to economic development or exposure to environmental problems, rather it is a particularly complex phenomenon resulting from multiple intersecting forces.

Next, the 'affluence hypothesis' is similarly focused on economic developing. From a classical economic approach, this hypothesis notes that increased wealth and personal income shift demand for environmental quality upwards, resulting in greater environmental concern (Franzen and Vogl, 2013; Franzen, 2003).

This is in direct contrast with the expectations of the 'global environmentalism' approach which notes that environmental concern is an international phenomenon, a product of multiple factors that are exacerbated by an increasingly globalized system of trade, which cannot be simply reduced or explained by economic development (O'Brien et al., 2004; Dunlap and York, 2008; Fairbrother, 2013). Recent literature has noted large heterogeneity in the relationship between environmental concern and economic development, where absolute differences in country wealth have limited effect (Summers and VanHeuvelen, 2017; Mayer and Smith, 2017). Rather, other forces,

such as short-term economic development and individual economic experiences are more explanatory of environmental attitudes. Therefore, it is difficult to reduce the differences in country-level environmental attitudes to a single indicator (on the individual- or contextual-level). Rather, it is the sum collective of multiple, intersecting forces that may relate differently based upon the context and environmental phenomenon of interest.

Further, a number of studies have observed substantial variation in environmental attitudes between Western European and transition states. Using data from the 2000 ISSP, Both Marquart-Pyatt (2008) and Haller and Hadler (2008) report that willingness to sacrifice for the environment is comparatively lower in transition states. While adopting a more longitudinal approach, Hadler and Wohlkonig (2012) report that public and private environmental behaviors were less prominent in Czech Republic and in Eastern Germany, but that the gap between Western European and transition states has diminished over time. Using also three waves of data Chaisty and Whitefield (2015) notes stark but dwindling differences between post-Communist and EU states in environmental policy support. The authors explain this finding by noting the “stickiness" of environmental attitudes—as environmental conditions were a very low priority under communism this legacy continues to negatively impact public opinion.

Several recent papers have started to disentangle differing effects within transition states, with a particular focus on climate change attitudes and behaviors. Using the 2015 Pew Global Attitudes Survey, Lewis et al. (2018) compares determinants of climate change concern between seven country groupings, including Western European and transition states. Lewis and colleagues report that, in comparison to Western European states, political factors are non-significant predictors of climate change concern in transition states. But, religious importance and age have a positive effect on climate change concern in transition states, while being non-significant predictors in Western European states. While other determinants, such as gender, income and commitment to democratic principles appear to have similar effects in both sets of states.

Similarly, Marquart-Pyatt et al. (2019) utilizes the 2016 European Social Survey to identify patterns of individual determinants of climate change relevant energy policy preferences and

energy efficient behaviors, comparing European states by four welfare regime types, including transition states. Marquart-Pyatt and colleagues find noticeable differences between transition states and other European countries, where political ideology, educational attainment and age are non-significant predictors of energy policy preferences in transition states. But, for energy behaviors, a diverse pattern of differences in determinants emerges, where political factors are positive significant predictors in transition states, but not in other Western European states, while gender is found to be not significant in transition states.

These two recent studies note that, while there are noticeable differences between Western European and transition states, the overall patterning of effects is still largely unclear. For example, the effect of educational attainment is found to be comparatively more positive in transition states for climate change concern, more negative for energy preferences, and relatively similar for energy behaviors. Given the differences in these effects, it remains largely unclear whether these diverse patterns are due to the divergent outcomes being studied, or even to the separate survey programs and sampled countries [8]. But, distinct patterns have been noted for a few determinants, in particular political factors and human values.

4.2.3 Political Polarization of Climate Change Attitudes and Behaviors

Political factors are amoung the the strongest predictors of climate change concern (Hornsey et al., 2016), and have received comparatively large attention from the scholarly community (see McCright et al., 2016b), most notably on case studies based in the US McCright and Dunlap (2003); Leiserowitz (2006); McCright and Dunlap (2011a), the UK (Poortinga et al., 2011; Carter and Clements, 2015; Whitmarsh, 2011) and Australia (Heath and Gifford, 2006; Tranter, 2011, 2013). Broadly, these studies find that comparatively, people on the political left or those who support left-leaning political parties are more likely to accept anthroprogenic climate change as a scientific fact, be concerned about climate change and support policies aimed at mitigating climate change.

[8] Lewis et al. (2018) include data from Poland, Russia and Ukraine, while Marquart-Pyatt et al. (2019) include data from Czech Republic, Estonia, Poland, Russia and Slovenia

Several theories have developed to explain this polarization. The 'anti-reflexivity' thesis (McCright and Dunlap, 2010) contends that individuals, groups, and politically-motivated organizations on the political right are more likely to be supportive of free market and capitalist systems of production. Therefore, they are also more likely to reject the problems that the economic system causes, such as climate change, than those on the political left. Similarly, those on the political right may be more likely to resist solutions to climate change, as these likely involve governmental intervention into previously unfettered markets, a phenomenon called 'solution aversion' (Campbell and Kay, 2014).

The group-level political differences in climate change attitudes and behaviors have also been notably shaped by elite members' cues and attitudes. People do not hold entirely internally consistent policy preferences, but are assumed to be responsive to messaging from elite in-group members and shape their preferences accordingly (Cohen, 2003; Malka and Lelkes, 2010; Tesler, 2017). Elite conservatives and groups, most notably in English-speaking states, have engaged a decades long campaign to shifting public opinion against climate change policies and measures (Oreskes and Conway, 2011). A network of conservative think tanks and media relations firms, often with significant funding from the fossil fuels industry, have played a prominent role shaping public discourse (Jacques et al., 2008; McCright and Dunlap, 2003), which was further amplified by conservative-friendly media outlets (Feldman et al., 2012; Hmielowski et al., 2014). Empirical analyses have found a substantive effect of elite cues driving attitudes towards climate change in the US (Brulle et al., 2012; Farrell, 2016). Individuals are responsive to these cues, and shape their attitudes and beliefs to be in line with the in-group. This is a process that Kahan (2015, 2017) calls "identity protective cognition", as individuals adjust their beliefs to preserve status within the in-group.

However, recent literature have begun to question the generalizability of political orientations as a determinant of climate change attitudes and behaviors to settings outside of the English-speaking world. Smith and Mayer (2018a), for example, report that political orientation has a large substantial effect on risk perceptions of climate change, as well as the likelihood to view climate

change as an important issue, in English-speaking states. But, these effects are more moderate in Western European, and largely null in transition states. Similarly, McCright et al. (2016a) compare the effect of political orientation in Western European and transition states. They find that political ideology is a significant predictor of climate change beliefs, concern, and policy support in Western European states, but not in transition states. Lewis et al. (2018) and Marquart-Pyatt et al. (2019) also find difference effects of political factors between Western European and transition states for climate change concerns and energy policy preferences.

Further, Smith and Mayer (2018a) findings suggest that the effects of political orientation may be in the opposite direction in transition states. That is, people on the political right in transition states may be more likely to be concerned about climate change than those on the left. Possible reasons for this contrary finding may be that there are "differing meanings" of political left-right placement within transition states (McCright et al., 2016a). Within Western European states, right of center parties traditionally are supportive of policies limiting governmental intrusion, while the opposite is often true in transition states. In transition states, right leaning parties are more likely to support economic liberalization and promote the free-market, while left leaning parties are broadly more associated with previous state socialist policies and regimes.

It is therefore unclear what, if any, effect political factors have within transition states. It is not entirely clear which direction these effects will be, or how they may differ across different constructs of climate change attitudes and behaviors.

Hypothesis I: The effect of political partisanship on climate change attitudes and behaviors in transition states is relatively limited.

4.2.4 Role of Human Values

Like political factors, human values are among some of the strongest predictors of climate change beliefs (Hornsey et al., 2016), and have been the subject of extensive previous research (see Poortinga et al., 2019; Corner et al., 2014; Dietz et al., 2007). Values are internalized schemas drawn upon by individuals to set the boundaries for what is considered acceptable (Hitlin and Pil-

iavin, 2004). As such, values are an important component framing how individuals experience their social world. Individuals call upon values to evaluate whether social characteristics (such as actions, events, people, attitudes) are considered to be normatively 'good' or 'bad' (Joas, 2000). Therefore, values play a crucial role in an individual's understanding of what is considered important in their social world, as well as their attitudes and behaviors towards social objects, such as climate change (Milfont et al., 2015).

The literature on the relationship between values and climate change attitudes and behaviors often adopts a values-beliefs-norms (VBN) mechanism based approach (Dietz et al., 2007; Stern et al., 1995; Stern and Dietz, 1994). VBN theory suggests that an individuals values influence their beliefs regarding a specific construct, which in turn, shape their norms and whether or not an individual will, or will not, take action. As such, an individual's values shape their climate change, such as the perceived severity and risk. Subsequently, an individual with greater perceived risk of climate change would therefore be more likely to adopt a climate change "friendly" normative framework, and be more likely to support climate change mitigation policies or engage in individual actions to counter the effects of climate change. Schwartz (1992) proposes a set of ten, broad, universal human values, which are each defined by the specific motivational goals that they represent. These values can be arranged into a circular continuum (see Figure 4.1) (Schwartz, 2012, 1992), in which the values are ordered by their compatibility/conflict.

Further, the values can be organized into four higher order dimensions. Self-enhancement values (power and achievement) promotes self-interest, which is in opposition to self-transcendent values (universalism and benevolence), which prioritize the concern and welfare of others. Openness to change values (self-direction and stimulation) encourage change and openness to new ideas are in opposition to conservatism values (tradition, conformity and security), which emphasize maintenance of the status quo and stability [9].

Self-transcendent values have been found to have a positive relationship with higher levels of climate change concern (Dietz et al., 2007; Corner et al., 2014), while also being linked to

[9]Hedonism is situated in between openness and self-enhancement, sharing characteristics of both

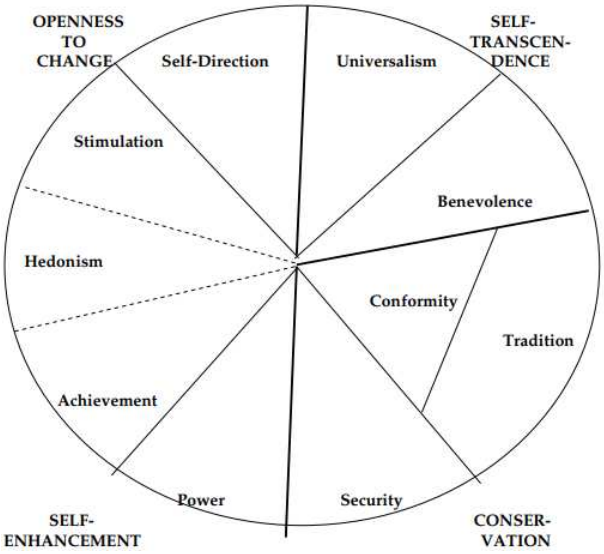


Figure 4.1: Schwartz Human Values Schema with Higher Order Dimension

decreased likelihood for climate change skepticism (Steg and De Groot, 2012). Alternatively, self-enhancement values have been found to be positively related to climate change skeptical views (Poortinga et al., 2011), and to decrease the likelihood of than an individual perceives negative impacts of climate change (Poortinga et al., 2019). Openness to change values have also been found to be positively related to increased perceptions of the impact of climate change (Poortinga et al., 2019), as well as decrease the likelihood than an individual will hold climate skeptical views (Milfont et al., 2015). But, in comparison to the other value dimensions, the effects of openness to change and conservation appear to be more limited.

Similarly, Dietz et al. (2007, 2005) report that 'biospheric altruism' and 'self-interest' (or egotistic) values are amongst the most substantive predictors of climate change beliefs and concerns. Biospheric altruism is quite closely linked to self-transcendence values (universalism and benevolence), but with a specific focus on the eco-centrism of the individual, while 'self-interest' is very similar to self-enhancement values (achievement and power) (de Groot and Steg, 2008).

Multiple studies have explored the relationship between human values and climate change attitudes and behaviors in English-speaking and Western European states. To date, however, little is known about the role of human values in shaping climate change attitudes and behaviors within transition states. Poortinga et al. (2019) present an interactive analysis comparing the effect of

the four higher order value dimensions on climate change beliefs, concerns and perceived impacts between Western European and transition states. They find that the effect of self-transcendent values is comparatively weaker in transition states, while conservation values are more likely to be associated with fewer perceived impacts on climate change. Given this previous literature, I can cautiously hold the following expectations:

Hypothesis II: Self-transcendent values will increase the likelihood of an individual being concerned about climate change and being willing to engage in behaviors aimed at mitigating climate change, while conservation values will decrease the likelihood.

4.2.5 Human Values and Political Orientations

Political factors and human values are deeply interrelated constructs. Values act as building blocks of political orientations and dispositions (Rokeach, 1973; Converse, 1964), as they are drawn upon by individuals to prioritize their political beliefs, to make political decisions, and frame the way they communicate about politics (Piurko et al., 2011). People prefer political beliefs and orientation that are aligned with their values, and those that defend their values against perceived threats (Barnea and Schwartz, 1998; Schwartz et al., 2010). Caprara et al. (2006) report that voters prioritizing self-transcendence values were more likely to support center-left parties, while those with conservation values were more likely to be supportive of right-wing parties.

Why is alignment necessary? Krosnick (1988) maintains that individuals have a strong desire for internal consistency and this requires alignment of their values and attitudes. As such it is likely that when an individual's values and politics are aligned, this could have an amplifying (moderating) effect on a specific attitude. While if values and politics are in misalignment for a specific issue, political factors could act as a dampening effect.

Within context of climate change attitudes and behaviors, both political factors and human values are found to have substantive impacts. For example, self-enhancement values are found to have a positive relationship with climate change skeptical views (Dietz et al., 2005; Poortinga et al., 2019), as well as with right leaning political orientations (Caprara et al., 2006; Schwartz et al.,

2010), while further, right leaning political orientations is also positively related to climate change skepticism. By and large, however, values and political orientations are treated as independent predictors. Their interaction remains largely unexplored in the literature in the broader literature on climate change attitudes and behaviors, and have received no attention within the context of transition states. In the previous chapter, I find substantial evidence of this interaction in Western European states, particular for self-transcendence values. That is, as the self-transcendence values of an individual become in alignment with left-leaning political orientations, there is an amplifying effect, increasing climate change concerns, as well as willingness to engage in climate friendly behaviors and support policies.

Given the assumed universal nature of human values (Schwartz, 1992), I hypothesize that the same pattern could exist in transition states. As human values and political factors appear to be strongly related, and can align towards a particular issue, it is likely that there is an interactive relationship between these two constructs. In such as case, values, politics and climate change attitudes would be in alignment, and one could reasonably expect an amplifying effect of this interaction term. While alternatively, if these were misaligned, the effect of a value could be diminished.

Furthermore, as the meaning of political left and right may be opposite in transition states (see Smith and Mayer, 2018a; McCright et al., 2016a), it is possible that alignment and the subsequent interactive effect may also be in the reverse directions. For example, the effect self-transcendence values could be amplified by right-leaning political orientations in transition states, and not by left-leaning orientations as observed in Western European stats. Regardless of potential differences in contextual meanings of politically "left" and "right", the potential still remains for a substantive interactive effect on climate change attitudes and behaviors in transition states, as human values and political factors come into alignment.

Given these limited previous findings, I hold the following expectations:

Hypothesis III: When values and politics are substantive predictors, and are in alignment with each other, they will interact to amplify the effect of climate change attitudes and behaviors. But, when they are in misalignment, political values will dampen this effect.

4.3 Data

I adopt data from the 2016 European Social Survey(ESS) for this analysis. The ESS is a cross-national survey program, which has been conducted biannually since 2002. The 2016 ESS contains representative data from 7 transition states (Czech Republic, Estonia, Hungary, Lithuania, Poland, Russia, Slovenia). Data for the ESS was collected using CAPI and face-to-face interviews. The within-country response rates ranged from 42.8% in Hungary to 69.6% in Poland, while the smallest number of completions was n=1,307 in Slovenia, ranging up to 2,430 respondents in Russia (European Social Survey, 2016a).

There are two primary reasons for that the 2016 ESS is uniquely suited dataset for this analysis. First, the 2016 ESS contains as special module, 'Public Attitudes to Climate Change, Energy Security, and Energy Preferences' including several items related to climate change. This is the first round of the ESS that has contained questions on climate change, or environmental, attitudes or behaviors. Second, as part of the core module, the ESS contains the modified 21-item version of the Portrait Values Questionnaire (PVQ) to measure Schwartz Basic Human Values (Schwartz, 2003).

4.3.1 Outcome Variables

With the related field of environmental attitudes and behaviors, Stern (2000) defines 'environmentally significant' behaviors as actions that have an impact on the environment, in one form or another. This is an important boundary setting, limiting the potential objects of interest. These significant behaviors can be separated into four different types: activist behaviors (participation in social movements), non-activist behaviors in the public sphere (policy support, petitions), private-sphere environmentalism (individual, 'pro-environmental' actions), and other environmentally significant behaviors (actions in the workplace).

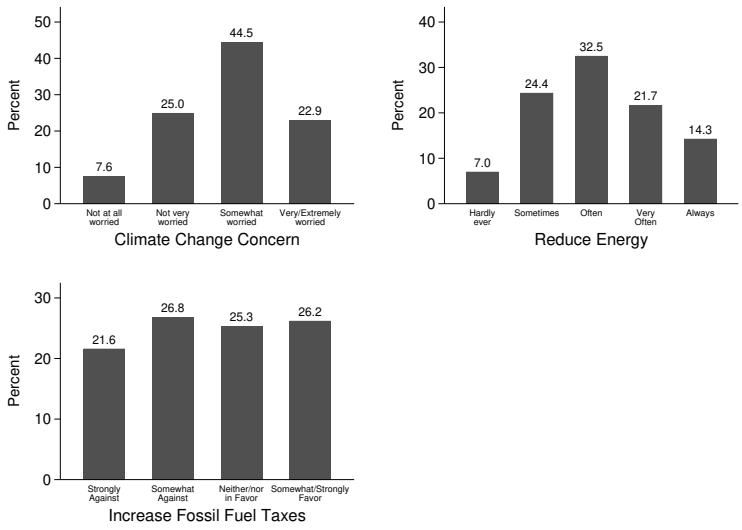


Figure 4.2: Distribution of Responses for Dependent Variables

For this analysis, I adapt this framework to the field of climate change, taking a multiple measures approach to understand potential differences in three separate constructs: risk perceptions (*Climate Change Concerns*), individual actions (*Reduce Energy*) and policy support (*Increase Fossil Fuel Taxes*). The first indicator, *Climate Change Concern*, asks respondents to rate how worried they are about climate change from "not at all" to "extremely". Due to concerns about sparsity, the small number of respondents selecting "extremely" worried (less than 4% of total sample) these responses were collapsed alongside "very" worried, thus resulting in a scale ranging from 1 "not at all" to 4 "very/extremely" worried[10]. The second outcome variable, *Reduce Energy*, asks respondents how often they do things to their reduce energy usage, ranging from 1 "never" to 6 "always". The third outcome variable, *Increase Fossil Fuel Tax*, is a measure of policy support, asking respondents how much they favor increasing taxes on fossil fuels. Again, due to concerns about data sparsity the high category "strongly favor" (with roughly 5% of the total sample) was collapsed with "somewhat in favor" to create a scale ranging from 1 to 4[10]. The distribution of outcome is presented in Figure 4.2.

[10]Supplementary analyses were performed with 4 and 5 outcome codings for these outcome variables, yielding substantively similar results

4.3.2 Predictor Variables

The analysis focuses on identifying the independent and interactive effect of *Human Values* and *Political Orientation* on the three components of climate change concern, behavior and policy support. First, *Human Values* are identified using the modified PVQ, adapted for the ESS (Schwartz, 2003). To measure the 10 Schwartz values, each item presents a short sentence - a portrait - of a gender-matched person. Then, the respondent is tasked with ranking how much this person is 1 'not like me at all' to 6 'very much like me'. Due to concerns of multicollinearity and parsimony, these 10 values are collapsed into scales[11] representing the 4 higher order dimensions: self-transcendence, self-enhancement, openness to change and conservation.

Next, *political orientation* is captured through a self-placement of a political right to left scale. Respondents ranked their political views on a range from 1 'strong right' to 3 'moderate' to 5 'strong left'. Political orientation is adopted over other alternative measures, such as party identification, to allow for better cross-national comparability of political beliefs. Lastly, I include an interaction product term between political orientation and each of the four higher-order value dimensions to test for moderation.

4.3.3 Control Variables

Cross-national literature identifies several covariates of climate change attitudes and behaviors on the individual and contextual-level, which I accordingly adopt as control variables for this analysis. Recent literature further suggests that climate change attitudes and behaviors are affected by different constructs of trust (Smith and Mayer, 2018b; Fairbrother, 2016; Harring, 2014). For this analysis, I include two constructs of trust, *social trust* and a scale for *political trust*[12]. Perceptions of adaptive capacity, that is the likelihood that individuals or groups can work to resolve climate change, is an important predictor of climate change behaviors and policy support (Mayer and Smith, 2018; Feinberg and Willer, 2011). I therefore include indicators for *Individual Efficacy*

[11] Supplementary Appendix A.2 displays the items and Crombach's α for all scales

[12] Please see Table A.2 in the Supplemental Information appendix for information of all scales

and *Group Efficacy*. Measures of religious belonging has been found to be related to cross-national climate change attitudes (Lee et al., 2015), and therefore I include items for *religious belonging* and *religious service attendance*. Lastly, I include indicators for socio-demographic variables common to studies of climate change, *gender*, *age*, *educational attainment* and *household income*.

On the contextual-level, I include *GNI per capita* (World Bank, Atlas method 2016) to measure country wealth. Next, I include a measure for *Freedom of Expression*, adapted from the Varieties of Democracy Index. Lastly, I include an indicator for coal as a percentage of the total primary energy suppluy for each country (International Energy Agency, 2016).

The descriptive statistics, original items, and variable coding for all of the variables are presented in Table 4.1.Potential forms of multicollinearity were investigated in supplementary analyses, with all key predictors and control variables having a VIF of under 2.0.

Table 4.1: Descriptive Statistics and Variable Coding

Variable	*Original Item*	*Coding*	*Mean*	*Std. Dev.*
Dependent Variables				
Climate Change Concern	*wrclmch*	1 'Not at all' to 4 'Very/Extremely Worried'	2.83	0.87
Reduce Energy	*rdcenr*	1 'Never' to 6 'Always'	3.12	1.14
Increase Fossil Fuel Taxes	*inctxff*	1 'Strongly against' to 4 'Somewhat/Strongly favour'	2.56	1.10
Independent Variables				
Self Transcendence	*see A.2*[13]	1 'Not at all like me' to 6 'Very much like me'	4.66	0.76
Self Enhancement			3.81	0.91
Openness			4.03	0.91
Conservation			4.42	0.78
Political Orientation	*lrscale*	1 'Strong Right' to 5 'Strong Left'	2.82	1.18
Individual Level Control Variables				
Social Trust	*ppltrst*	0 'Lowest Trust' to 10 'Highest'	4.97	2.32
Political Trust	*see S1*	0 'Lowest Trust' to 10 'Highest'	4.45	1.99
Individual Efficacy	*ownrdcc*	0 'Not at all likely' to 10 'Extremely Likely'	3.89	2.63
Group Efficacy	*lkredcc*	0 'Not at all likely' to 10 'Extremely Likely'	5.15	2.32
Female	*gndr*	0 'Male' 1 'Female'	0.53	0.50
Age	*age*	15-100	48.8	17.6
Educational Attainment	*edulvlb*	1 'Primary or less' to 8 'PhD'	4.82	13.8
Household income, Country Deciles	*hinctnta*	1 '1st decile' to 10 '10 decile'	5.37	2.70
Religious Belonging	*rlgblg*	0 'Does not belong' 1 'Belongs to religious group'	0.53	0.50
Religious Service Attendance	*rlgatnd*	1 'Never' to 6 '> Weekly'	2.62	1.43
Country Level Control Variables				
GNI per capita, in 1000s	*World Bank 2016*	9,200 to 81,100	15.8	3.93
Freedom of Expression	*2016 V-Dem V.10*		0.85	0.20
Coal as % of TPES	*IEA (2016)*		0.35	0.25

4.4 Methods

Due to the data structure of the ESS, where persons are nested within countries, I adopt a multi-level random effects approach (also known as mixed model), allowing for intercepts to randomly vary across countries for this analysis. Further, given the coding of the three dependent variable items, I adopt an ordinal logistic regression modelling based approach for all of these regression models.

For each of the outcome variables I estimate two sets of models. First a base model, which only includes the direct effects of all of predictor and control variables. Then, I estimate an interaction model, which includes the interaction product term for political orientation by the four higher order value dimensions.

Coefficients on a logistic scale are notoriously difficult to interpret, particularly to in identifying substantive effects across multiple predictors (Mood, 2010). Further, focusing only on statistical significance can lead to false conclusions or misinterpretation of results (Amrhein et al., 2019). As such, I adopt and approach that places greater focus on substantive effects, rather than mere p-values, in this analysis.

For each of the 'main effects' models, I calculate predicted probabilities for the effect of human values and political orientations, holding all control variables at their observed values and averaging the probabilities for each score of the focal predictor variables (marginal effects). For each of the human values, I predict probabilities for 'low', 'medium' and 'high' values. Given that human values are continuous scales with non-naturally substantive quantities, I predicted values at the 5th percentile ('low'), median ('moderate') and 95th percentile ('high') for each of the four human value dimensions. While for political orientation, predicted probabilities are calculated for all five ordered values of this item.

I am further interested in how the effects of political orientation are moderated by the human values dimensions. The interaction analyses focuses on identifying potential moderating effects, which investigates whether the magnitude and/or the direction of the effect of x on y changes due to a third variable z. For interaction terms with non-linear outcomes, coefficients of the product term

do not provide sufficient information on the significance, magnitude or direction of this interaction (Mize, 2019). Therefore, I adopt an approach that focuses using on predicted probabilities to make practical sense of these interaction models (Long and Freese, 2014; Brambor et al., 2006). In order to identify patterns of moderation, the identical values are used to calculate the human values*political orientation predictions in the 'interaction models'. All probabilities predict the highest outcome for each of the dependent variables.

Lastly, as a robustness check, I am interested in potential cases of mediation. Classical forms of mediation analyses aim to understand how much of the effect of x on y is due to the effects of z itself (Baron and Kenny, 1986). Within mediation analyses, the 'direct effects' of x on y is commonly decomposed into the 'indirect effects' of x on y via z, to see how much of the effect is directly and indirectly attributable to each variable. Due to scaling issues, standard mediation techniques cannot be directly translated to non-linear regression models. A relatively new approach, commonly known as *khb*, resolves many of these issues, allowing for decomposition of direct and indirect effects in logistic regression models (Karlson et al., 2012; Breen et al., 2013, 2018). Performance analyses of the khb method suggest that the khb routine produces a reasonable approximation of mediation effects under almost all conditions (Smith et al., 2019). As such, I investigate mediating effects by decomposing the direct and indirect effects separately for political orientation by human values on each of the three dependent variables.

4.5 Results

The results for climate change concern, reduce energy and increased fossil fuel taxes are discussed individually below. For each of these three outcomes, I first discuss the regression coefficients (Table 4.2) and substantive effects (Table 4.3) of the human values dimensions and political orientation using predicted probabilities. Then, I explore forms of moderation using the plotted interactions (Figure 4.3.

Table 4.2: Multilevel Ordered Logistic Regression Results

	Climate Change Concern		**Reduce Energy**		**Increase Fossil Fuel Taxes**	
	Base	*Int.*	*Base*	*Int.*	*Base*	*Int.*
Self Transcendence	0.36**	0.11	0.31**	0.10	0.02	-0.06
	(0.04)	(0.11)	(0.04)	(0.10)	(0.04)	(0.10)
Self Enhancement	-0.03	-0.02	-0.26**	-0.26**	-0.06	0.02
	(0.03)	(0.08)	(0.03)	(0.08)	(0.03)	(0.08)
Openness	0.06	0.06	0.15**	0.26**	0.08*	-0.09
	(0.03)	(0.09)	(0.03)	(0.08)	(0.03)	(0.09)
Conservation	-0.09*	-0.11	0.24**	0.31**	-0.17**	-0.20*
	(0.04)	(0.10)	(0.04)	(0.10)	(0.04)	(0.10)
Political Orientation	0.12**	-0.31*	0.04*	-0.04	0.08**	-0.21
	(0.02)	(0.14)	(0.02)	(0.13)	(0.02)	(0.14)
Social Trust	-0.02	-0.02	-0.01	-0.01	-0.02	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Political Trust	-0.04**	-0.04**	-0.01	-0.01	0.10**	0.10**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Individual Efficacy	0.11**	0.12**	0.03**	0.03**	0.09**	0.09**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Group Efficacy	0.18**	0.18**	0.04**	0.04**	0.05**	0.05**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Female	0.25**	0.25**	0.11*	0.11**	0.19**	0.19**
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Age	0.00	0.00	0.01**	0.01**	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Educational Attainment	0.00	0.00	0.00*	0.00*	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Household income, Country Deciles	0.00	-0.00	-0.01	-0.02	0.03**	0.03**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Religious Belonging	0.05	0.05	-0.01	-0.02	-0.20**	-0.21**
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Religious Service Attendance	0.09**	0.10**	-0.02	-0.02	0.07**	0.07**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
GNI per capita, in 1000s	0.05*	0.05*	0.02	0.02	0.05**	0.07**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)
Freedom of Expression	-0.26	-0.26	1.16**	1.16**	-0.88**	-1.13**
	(0.38)	(0.38)	(0.36)	(0.36)	(0.16)	(0.21)
Coal as % of TPES	-1.08**	-1.07**	-0.64*	-0.63*	-0.29**	-0.19
	(0.30)	(0.30)	(0.28)	(0.28)	(0.11)	(0.12)
Self Transcendence × Political Orientation		0.09**		0.07*		0.03
		(0.03)		(0.03)		(0.03)
Self Enhancement × Political Orientation		-0.00		-0.00		-0.03
		(0.03)		(0.03)		(0.03)
Openness × Political Orientation		-0.00		-0.04		0.06*
		(0.03)		(0.03)		(0.03)
Conservation × Political Orientation		0.01		-0.03		0.01
		(0.03)		(0.03)		(0.03)
Variance Component	0.02	0.02	0.02	0.02	0.05	0.01
Observations	7,302	7,302	7,270	7,270	7,122	7,122
AIC	16822.54	16817.38	21050.43	21051.72	19232.85	
BIC	16974.15	16996.57	21208.84	21237.67	19383.93	

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

Table 4.3: Predicted Probabilities of Value Dimensions and Political Orientation, main effects

	Climate Change Concern	**Reduce Energy**	**Increase Fossil Fuel Taxes**
Self-transcendence			
Low	0.15	0.17	0.26
Moderate	0.23	0.22	0.26
High	0.29	0.25	0.27
Self-enhancement			
Low	0.23	0.25	0.28
Moderate	0.23	0.21	0.26
High	0.22	0.17	0.24
Openness			
Low	0.21	0.19	0.24
Moderate	0.23	0.21	0.26
High	0.24	0.24	0.29
Conservation			
Low	0.25	0.18	0.31
Moderate	0.23	0.22	0.26
High	0.21	0.24	0.22
Political Orientation			
Right	0.19	0.21	0.24
Moderate	0.23	0.21	0.26
Left	0.27	0.22	0.29
Observations	7302	7270	7122

Predicted probability calculated at highest value of dependent variables.

Fixed effects only, calculated holding all other predictors in Table 4.2 at their means.

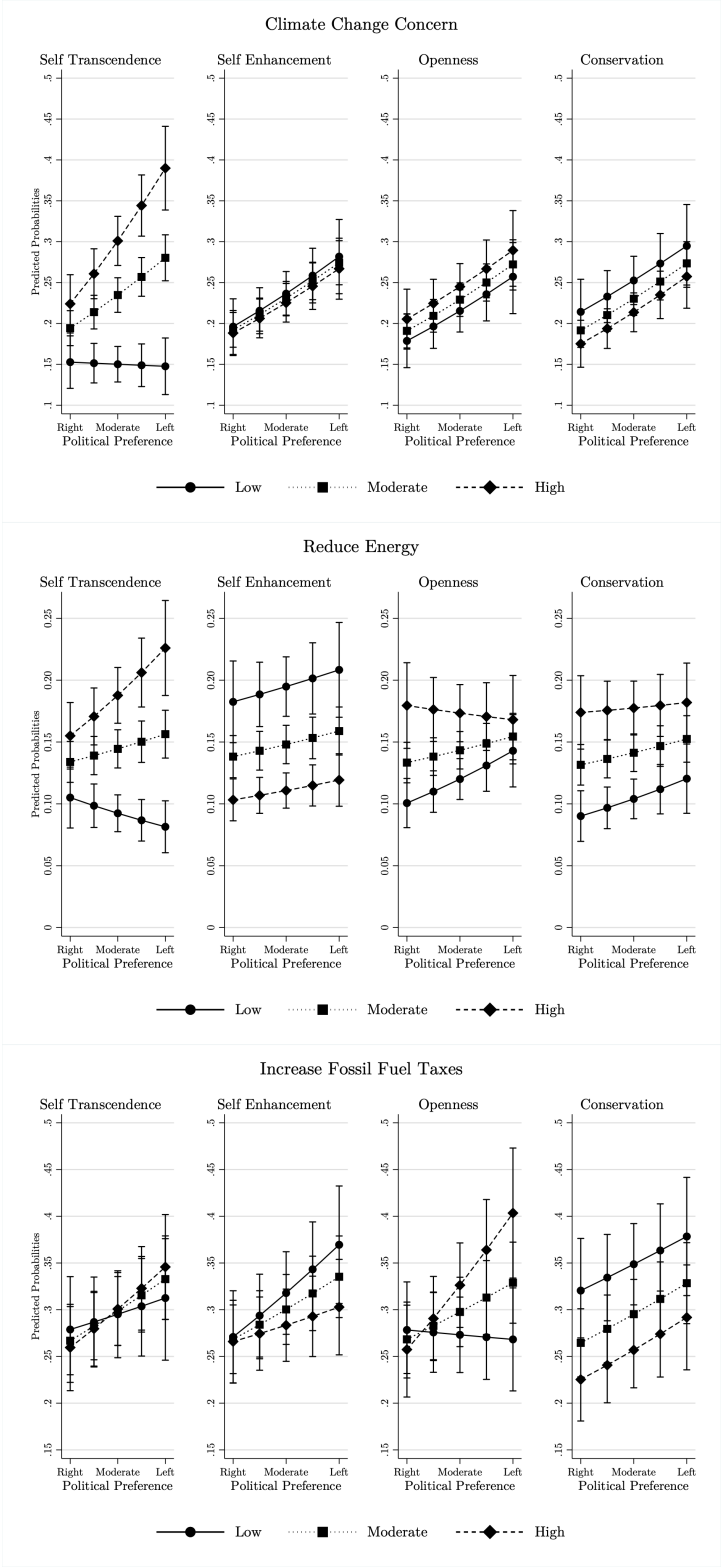


Figure 4.3: Predicted Probabilities of Climate Change Concern by Values * Political Orientation Interaction

4.5.1 Climate Change Concern

Main Effects

The regression coefficients of the multilevel ordinal logistic regression are displayed in Table 4.2. Self-transcendence values have a positive significant effect on climate change concern *(b=0.36,$p \leq 0.05$)*, while conservation values have a negative, significant effect *(b=-0.09,$p \leq 0.05$)*. Both of these two findings are in alignment with Hypothesis 2. But, political orientation is found to have a positive effect *(b=0.12,$p \leq 0.05$)*, a surprising finding. That is, as an individual's political orientation moves from right of center to left of center, they become more likely to be concerned about climate change. This is counter to my expectations in Hypothesis 1.

To better understand the substantive effects of these findings, we turn to the predicted probabilities displayed in Table 4.3. People with lower levels of self-transcendence values are found to have a predicted probability of 0.15 of being very or extremely worried, while this increases substantively up to 0.29 for people who have high levels of self-transcendence values. The effect of conservation is substantively smaller, with a difference of a predicted probability of 0.25 for lower levels versus 0.21 for higher levels. While there appears to be minimal substantive effect of either self-enhancement or openness to change values on climate change concern.

Lastly, people with political right orientations are found to have a predicted probability of 0.19 of being very or extremely worried about climate change, which increases to 0.27 for those on the political left. This is a moderately sized substantive effect.

Moderation Analyses

To identify potential forms of moderation for the human values dimensions by political orientation, we turn to Figure 4.3. Self-transcendence values appear to be greatly moderated by political orientations. For people on the political right, there are relatively minimal differences between high and low levels of self-transcendence values. But, at high levels of self-transcendence values, there are substantial differences in people on the political left (roughly a difference in predicted probabilities of 0.25). These findings indicate that when self-transcendence values are

in alignment with left leaning political ideologies, there is an amplification effect in the levels of climate change concern. For all other human values dimensions, there does not appear to be any moderating effects. I therefore find some evidence in support for Hypothesis 3.

4.5.2 Reduce Energy

Main Effects

The regression coefficients of the multilevel ordinal logistic regression are again displayed in Table 4.2. All of the human values dimensions have significant effects on reducing energy. Self-transcendence *(b=0.31,*$p \leq 0.05$*)*, conservation *(b=0.24,*$p \leq 0.05$*)* and openness to change *(b=0.15,*$p \leq 0.05$*)* all have positive effects, while self-enhancement has a negative effect *(b=-0.26,*$p \leq 0.05$*)*. This is somewhat of a surprising finding, particularly given that openness to change and conservation, which are considered oppositional values, have the same direction in their effects (positive). Political orientation again is also found to have a significant positive effect as well *(b=0.04,*$p \leq 0.05$*)*. Therefore, I again find support for Hypothesis 1, but not for Hypothesis 2.

The substantive effects of these findings are analyzed using the predicted probabilities displayed in Table 4.3. For the human values dimensions, the greatest total effects (the difference in predicted probabilities between the lowest and highest quantities of these values) appears to be for self-transcendence (0.08) and self-enhancement values (-0.08), albeit in opposite direction. While openness to change and conservation appear to have a slightly smaller, positive effect. Lastly, while the effect of political orientation was significant, it does not appear to have much of a substantive effect on an individual responding that they always reduce their energy.

Moderation Analyses

To identify forms of moderation for the human values dimensions by political orientation on individual likelihood to reduce their energy consumption, we turn to Figure 4.3. We find visual evidence of a moderating effect for both self-transcendence and openness to change values. For self-transcendence values, the effect appears to be amplified when aligned with left leaning polit-

ical preferences. But, for openness to change, there is no difference for those on the political left, but greater differences for those on the political right.

4.5.3 Increase Fossil Fuel Taxes

Main Effects

Returning to the regression coefficients of the multilevel ordinal logistic regression in Table 4.2, we find that openness to change has a positive, significant effect on support for increased fossil fuel taxes *(b=0.08,$p \leq 0.05$)*, while conservation has a negative effect *(b=-0.17,$p \leq 0.05$)*. But neither self-transcendence or self-enhancement had a significant effect. Political preference was again found to have a positive, significant effect on support for increased fossil fuel taxes *(b=0.08,$p \leq 0.05$)*. As such, I find some evidence in support of Hypothesis 1, and no evidence in support of Hypothesis 2.

Next we turn to the predicted probabilities again displayed in Table 4.3. Conservation values appears to have the greatest substantive effect. People with low levels of conservation have a 0.31 predicted probability of somewhat/strongly supporting increased taxes on fossil fuels, compared to 0.22 for those with the highest levels. While for openness to change, the predicted probability increases from 0.24 to 0.29 as people go from low to high levels. Similarly for political orientation, people on the right are predicted to have a 0.24 predicted probability of somewhat/strongly supporting increased taxes on fossil fuels, compared to 0.29 on the political left.

Moderation Analyses

Lastly, we find evidence of a moderating effect of self-enhancement and openness to change values by political orientation on support for increased fossil fuel taxes (see Figure 4.3). In both cases, there are small differences for those on the political right, but substantive differences for people on the political left. These differences are comparatively larger for openness to change than for self-enhancement.

4.5.4 Robustness Checks

To test for potential mediation of human values dimensions by political orientation, I adopt a *khb*-based analysis, displayed in Table 4.5. Overall, there is very minimal evidence of a mediating effect of any of the human values dimensions by political orientation on climate change concern. The most substantial effect appears to be for self-enhancement, where 22% of the direct effect is confounded by political orientation, but this is largely due to the relatively small size of the effect of self-enhancement, where the difference in coefficients before and after the inclusion of political orientation is minimal *(b=-0.01,n.s.)*. Further, I again find minimal evidence of political factors mediating the effect of human values on support for increased fossil fuel taxes. Therefore, I find some evidence in support of Hypothesis 3. Lastly, I again find no evidence of mediating effects from the *khb* analyses presented in Table 4.5. Accordingly, I find little evidence that values are mediated by political orientations. Rather, the effect of values appears to be direct on climate change attitudes and behaviors.

Further, I adopt a methodology developed by Frank (2000); Frank et al. (2013) to estimate how much bias is required in the estimate of a coefficient to invalidate an inference, displayed in Table 4.4. I only focus on the robustness of significant indicators, noting, for example, that to render the effect of self-transcendence on climate change non-significant, roughly 80% of the cases would need to be replaced with a case of no effect. As such, the ESS would have to contain substantial error for this to be a false inference, and therefore find support for a robust finding in this case. But for some other cases, such as the effect of political orientation on reducing energy and increase fossil fuel taxes, the percentages required are far lower, roughly 25% and 33% respectively. Therefore, these effects may not be as robust, and greater caution should be made when making inferences. These findings can be interpreted alongside substantive findings from the predicted probabilities (Table 4.3), to note potential cases where caution should be made when making inferences regarding a significant coefficient. Given the large *n* of this cross-national data set (over 7,000 cases) even small coefficients can be found to be significant, but this does not necessarily mean that this finding is substantive or should be inferred with great confidence. In

sum, I do find that for most of the key predictors, such as self-transcendence and self-enhancement, the substantive effects also have considerable robustness against forms of bias.

Lastly, as a robustness check for the moderation analyses, I adopt an approach suggested by Hastings and Roeser (2020) where the four human values dimensions are further interacted by all controls for the these models. For these analyses, I find that the substantive effects of the interactions remains largely unchanged. Therefore, these results suggest that the moderation effects presented in this analysis are not the product of a separate interactive effect with one of control variables, providing further evidence of robustness in these findings.

Table 4.4: Impact of a Confounding Variable on Key Predictors

	Climate Change Concern	Reduce Energy	Increase Fossil Fuels Tax
Self-transcendence	80.1%*	75.4%*	24.8%
Self-enhancement	33.2%	79.9%*	11.6%
Openness	13.0%	34.4%*	72.2%*
Conservation	31.8%*	76.7%*	50.7%*
Political Orientation	68.6%*	25.1%*	32.8%*

*Regression coefficient has $p < 0.05$ (see Table 4.2)

4.6 Discussion

This paper explores the patterning of climate change attitudes and behaviors in post-communist, transition states. In particular, it focuses on the role of human values and political orientations, first as direct, independent predictors, and second understanding their interrelated effects. The paper builds upon an emerging literature of environmental and climate change attitudes in transition states (Chaisty and Whitefield, 2015; Hadler and Wohlkonig, 2012), in particular the differing role of political factors (McCright et al., 2016a; Smith and Mayer, 2018a; Lewis et al., 2018; Marquart-Pyatt et al., 2019) and human values (Poortinga et al., 2019). These studies provide suggestive evidence of the importance of transition state status as a contextual factor, effecting substantive differences in the patterning of key predictors on climate change attitudes and behaviors.

Table 4.5: Decomposition of Value Dimensions by Political Orientation

	Climate Change Concern	**Reduce Energy**	**Increase Fossil Fuel Taxes**
Self-Transcendence			
Reduced	0.36**	0.32**	0.02
	(0.04)	(0.04)	(0.04)
Full	0.36**	0.31**	0.02
	(0.04)	(0.04)	(0.04)
Difference	0.01	0.00	0.01
	(0.02)	(0.01)	(0.01)
Self-Enhancement			
Reduced	-0.03	-0.26**	-0.07*
	(0.03)	(0.03)	(0.03)
Full	-0.03	-0.26**	-0.06
	(0.03)	(0.03)	(0.03)
Difference	-0.01	-0.00	-0.00
	(0.02)	(0.01)	(0.01)
Openness			
Reduced	0.05	0.15**	0.08*
	(0.03)	(0.03)	(0.03)
Full	0.06	0.15**	0.08*
	(0.03)	(0.03)	(0.03)
Difference	-0.00	-0.00	-0.00
	(0.02)	(0.01)	(0.01)
Conservation			
Reduced	-0.10*	0.24**	-0.18**
	(0.04)	(0.04)	(0.04)
Full	-0.09*	0.24**	-0.17**
	(0.04)	(0.04)	(0.04)
Difference	-0.01	-0.00	-0.01
	(0.02)	(0.01)	(0.01)
Confounding Percentage			
Self-Transcendence	1.4	0.5	25.6
Self-Enhancement	22.4	0.9	7.0
Openness	-6.9	-0.7	-2.1
Conservation	6.5	-0.8	3.0

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

I find that human values are substantive predictors of climate change concerns, willingness to reduce personal energy usage, and support for increasing fossil fuels taxes. In particular, it appears that self-transcendence values are the comparatively the strongest (positive) predictor of concerns and reducing energy in transition states. These findings are in line with the broader literature on the relationship between self-transcendence (or altruism) and climate change concern (Corner et al., 2014), as well as specifically within transition states (Poortinga et al., 2019) and are similar to findings reported in Chapter 3. But, surprisingly, I find little evidence that self-transcendence values affect policy support for fossil fuels taxes in transition state.

Why does the relationship between self-transcendence values and climate change diverge when applied to policy support? In a US-based study, Dietz et al. (2007) find that the similar value altruism is not a significant predictor of climate change policy support, but only after the inclusion of other measures of environmental concern and multiple forms of trust. Accordingly, it is possible that self-transcendence interrelates with trust or concern to affect climate change policy support, but this relationship requires further investigation. Further, conservation dimension values are substantive (negative) predictors of willingness to support increased fossil fuel taxes. Conservative values (such as tradition and security) have been found to be negatively related to concerns climate change (Poortinga et al., 2019) or the environment more broadly (Stern et al., 1998; Schultz and Zelezny, 1999), as well as climate change policy support(Dietz et al., 2007)[14]. But, at the same time, this analysis also reports that conservation values are positively related to energy reducing behaviors and null predictors of climate change concern. These contradictory findings again emphasize the importance of taking multiple indicator approaches to understanding climate change attitudes and behaviors, as the effects of key predictors can vary greatly across outcomes of interest (Smith et al., 2018).

Political orientation was also addressed in the models and found to be a positive, significant predictor of climate change concerns, willingness to reduce personal energy usage, and support for increasing fossil fuels taxes. This finding was largely against previous expectations, given that re-

[14]Again, only before measures of environmental concern and trust are included

cent literature has found minimal political polarization of climate change attitudes and behaviors in transition states (see McCright et al., 2016a; Lewis et al., 2018; Marquart-Pyatt et al., 2019). But, while these coefficients of political orientation are significant, they are substantively small in total effect size. The greatest disparity between people on the political right and left was for climate change concern, with a total difference in predicted probabilities of 0.08. This finding is largely in line with the results for perceived climate change danger in transition states reported by Smith and Mayer (2018a, Fig. 1), where political orientation has a small effect in concern. Further, it appears that the effect of political orientation is even smaller for policy support and substantively null for energy reducing behaviors. Accordingly, these findings again support the need for adopting multiple measure approaches to climate change attitudes and behaviors. Furthermore, these results emphasize the need for analyses to include measures of substantive effects to supplement classical hypothesis tests of regression coefficients, as focusing solely on statistical significance (especially of sample with such a large n) may lead researchers to false conclusions or misinterpretation of results (Amrhein et al., 2019). For a greater discussion of the effect of political orientation, robustness checks, and comparisons with previous literature, please see Supplementary Appendix A.1.

Most importantly, the analysis supports previous findings from Chapter 3 on the interrelated role of human values and political orientation in shaping climate change attitudes and behaviors. These results are consistent with the argument that when human values are in alignment with political orientations, these can act to amplify climate change concerns, willingness to reduce personal energy usage, and support for increasing fossil fuels taxes via self-reinforcing mechanisms. Of particular note, self-transcendence values appears to interact with left leaning political orientations, with the greatest amplification of effects being observed for climate change concern and energy reduction behaviors. Furthermore, openness to change is found to interact with political orientations for both energy reduction behaviors and policy support but in substantively opposite directions. This is an interesting result, further complicated by previous findings noting that openness to change has not been found to be particularly strongly related to either political left

or right ideologies (Caprara et al., 2017). Openness to change values, such as stimulation and self-direction, appear to be at odds with governmental restrictions, but in this case, higher values of openness to change are associated with greater support for fossil fuels taxes. It is possible that is a product of other factors, and is not generalizable to other forms of policy support. But these preliminary findings require further investigation.

These findings are limited by the number of transition states available in the 2016 ESS, a total of 7 states. Furthermore, there is the possibility for great discrepancies between transition states, as the political and economic trajectories of these states has varied substantially since the end of the Cold War. Supplementary analyses were performed independently for each of these seven countries, and while there was variation in the size of the coefficients across these states, none of the effects of the key predictors were in the opposite direction. This lends supports for grouping these seven countries together into a transition state cohort.

Furthermore, there does not appear to be any clear patterning of more developed versus less developed transition states. For example, political orientation is more substantive, positive predictor of climate change concern in the Czech Republic, Estonia and Poland, but less to in Hungary, Lithuania and Slovenia. These findings are a bit confounding, as Czech Republic, Hungary and Poland share similar political circumstances, while Estonia and Lithuania can be grouped as Baltic states as well. Furthermore, Czech Republic, Estonia and Slovenia are comparatively wealthier states, but again, the groupings do no align along these axis as well. Rather, these findings suggest that complex factors are at play here. As this is still largely an emerging field, much further study is needed into the difference of climate change attitudes and behaviors within these states, as well as between transitions states and other historical, political country groupings (such as Western European, English-speaking and other emerging democratic states).

These findings have further implications outside of the transition state context. Human values are found to be substantive predictors of climate change attitudes and behaviors within these states, adding to the cross-national literature in this area, and confirming the generalizability of some of these effects across different contexts, in particular the role of self-transcendence dimen-

sion values. Further, these findings accentuate the importance of including interactive analyses of human values and political factors. When in alignment human values and political factors can amplify individual climate change attitudes and behaviors, a confirmation of this phenomenon within a substantively different historical and political context from previous research (see Chapter 3's reporting findings on this effect in Western European states). Lastly, these findings also have substance relevance for policy makers and climate change stakeholders. The political relevance and implications of these findings are discussed comprehensively in Chapter 6.

Chapter 5

Stickiness of State Socialist Policies? Exploring the differences in climate change attitudes and behaviors between Western European and transition states

5.1 Introduction

Anthroprogenic climate change presents a potentially existential threat, necessitating significant changes in societal structures and individual actions (Steffen et al., 2018). There is near unanimous scientific consensus on the causes of climate change (Cook et al., 2016; IPCC Working Group, 2014), and extensive research into the varied effects of climate change. However, why people act in relation to climate change, and more importantly, how to get people to act in a way that mitigates climate change remains an unsolved puzzle (Overland and Sovacool, 2020; Creutzig et al., 2018; Sovacool, 2014).

Cross-national research on climate change attitudes and behaviors has noted several key individual-level determinants. Political orientations and human values are amongst the most robust and strongest predictors of climate change beliefs (Hornsey et al., 2016). People on the political right have been found to be less likely to be concerned about climate change, to support climate change policies, to engage in climate change ameliorative actions and are more likely to have climate change skeptical views (McCright and Dunlap, 2003; McCright, 2011; Poortinga et al., 2011; McCright et al., 2016a; Lewis et al., 2018). While self-transcendent, benevolent (altruistic) and biospheric values have been found to be positively related to climate change actions and policy support (Poortinga et al., 2019; Corner et al., 2014; Poortinga et al., 2004; de Groot and Steg, 2008; Dietz et al., 2007).

But, there is currently less known about how the effect of these determinants vary within different contexts - in particular between Western European and post-communist, transition Eastern

European states. Only a handful of studies have considered climate change attitudes and behaviors within transition states, yet there are reasons to expect patterns to diverge. In comparison to Western democratic states, previous state socialist governments had notoriously poor environmental records, although many did also encourage the development of conservation organizations, some of which have survived the transition process (Carmin and Fagan, 2010). Recent studies have found comparatively lower levels of anthroprogenic climate change beliefs, concerns for climate change and energy policies focused on mitigating climate change within transition states (Poortinga et al., 2019; Marquart-Pyatt et al., 2019). Further, within the related field of environmental attitudes and behaviors, willingness to sacrifice for the environment (Hadler and Wohlkonig, 2012; Haller and Hadler, 2008; Marquart-Pyatt, 2012) and environmental policy support is comparatively lower in transition states (Chaisty and Whitefield, 2015).

Given these contextual differences, this study presents a first of it's kind study directly comparing the effects of key predictors of climate change attitudes and behaviors between Western European and transition states. In particular, this has four primary research foci: investigating for comparative differences in the effect of political factors, human values, the moderation of human values by political factors, and other key predictors of climate change attitudes and behaviors (such as trust, perceived efficacy and sociodemographics). As such, this paper intends to provide an initial exploration into these contextual differences, providing an empirical background for future research comparing climate change attitudes and behaviors in Western European and transition states.

First, recent studies have also noted that political factors may be less effective in transition states, where political orientation does not appear to substantively affect a range of beliefs, attitudes and behaviors (McCright et al., 2016a; Lewis et al., 2018; Marquart-Pyatt et al., 2019). Further, the meaning of political factors may be different in transition states, where left-leaning political orientations may be associated with free-market, liberal economic policy preferences, and as such, the effect of political factors may be "flipped" in transition states (Smith and Mayer, 2018a). In Western European states, right-leaning parties are associated with support for policies limiting

government intrusion into markets and are deregulatory in nature, while the opposite is true in transition states. Furthermore, left leaning parties in transition states are often more supportive of economic liberalization and free-market policies, while right leaning parties are more closely associated with previous state socialist policies and regimes. But, in the previous Chapter, I found that political orientation does have an effect on climate change concerns and support for fossil fuel taxes, but not on individual behaviors - a surprising finding. While the coefficients of political orientation were found to be significant, they were substantively small in total effect size. Furtheremore, there is evidence from previous findings that the effect of political orientation may differ across forms of climate change attitudes and behaviors (McCright et al., 2016a; Marquart-Pyatt et al., 2019), having found to be alternatingly positively, negatively, or non associated with a wide array measures and items. Accordingly, prior assumptions regarding the assumed null effect of political orientation in transition states driving climate change attitudes and behaviors may not be true for all cases.

Second, literature also suggests effects of human values may diverge as well within transition states. In particular, Poortinga et al. (2019) find that self-transcendent values were a comparatively less substantive driver of climate change attitudes and behaviors in transition states, while conservation has a comparatively stronger, negative effect on climate change perceptions. Given the unique histories and experiences of individuals within transition states, as well as observation of comparatively lower levels of trust within these states (Delhey and Newton, 2005; Raiser et al., 2008; Stickley et al., 2009), Smith and Mayer (2018b) argue that the role of trust could substantially vary. Age and education appear to have smaller of an effect on climate change attitudes and policy support in transition states (Marquart-Pyatt et al., 2019; Poortinga et al., 2019), yet it is unclear whether these effects are in the same, or in the opposite, direction as in Western European states. However, little is currently known about other potential differences in other effects, such as perceived efficacy or religious factors.

Third, political factors and human values are deeply related constructs (Caprara et al., 2006), as values act as building blocks of political attitudes and behaviors (Rokeach, 1973; Con-

verse, 1964). Furthermore, as both of these constructs are substantive predictors of climate change attitudes and behaviors, it is likely to that they hold an interactive relationship. In the previous two chapters, I hypothesize that when values and political factors are in alignment, they can interact to have an amplifying effect. When they are not in alignment, political factors can moderate human values to have a dampening effect. Broadly, I find support for this hypothesis in both Western European and transition states, most notably when self-transcendence values is moderated by political orientation, amplifying climate change concern, behaviors and policy support. But, given these initial findings, it is unclear whether this effect is similar and generalizable across Western European and transition states, or if there are substantive differences in these moderation effects.

Lastly, trust in society and institutions (Smith and Mayer, 2018b; Fairbrother, 2016) and perceptions of adaptive capacity (Mayer and Smith, 2018; Feinberg and Willer, 2011) have all been found to shape climate change attitudes and behaviors. Further, climate change attitudes and behaviors have been found to vary across socio-demographic characteristics. Broadly, increasing age, male gender identification and lower educational attainment have found to be negatively related to climate change concern and willingness to change behaviors to mitigate climate change (Milfont et al., 2015; McCright, 2010; Echavarren, 2017; Poortinga et al., 2011). But it is currently unclear how these factors may be similar or different between Western European and transition state contexts.

5.2 Methods

5.2.1 Data

The European Social Survey (ESS) is a cross-national European survey that has been conducted every two years since 2002. Each round of the ESS contains two special modules focused on social themes. The recent 2016 (Round 8) of the ESS includes a module on climate change and energy, including a wide array of available items. The 2016 ESS includes responses from 23 countries, including 16 Western European (Austria, Belgium, Finland, France, Germany, Great Britain, Iceland, Ireland, Israel, Italy, Netherlands, Norway, Portugal, Sweden, Spain, Switzerland) and 7

transition (Czech Republic, Estonia, Hungary, Lithuania, Poland, Russia, Slovenia) states. Data was collected using CAPI and face-to-face interviews. The within-country response rates ranged from 30.6% in Germany to 73.4% in Israel, while the smallest number of completions was n=880, in Iceland, while for most nations, over 1500 respondents completed the survey (European Social Survey, 2016a).

5.2.2 Variables

Outcomes

The 2016 ESS contains a special rotating module, 'Public Attitudes to Climate Change, Energy Security, and Energy Preferences" including several items assessing climate change constructs. For this analysis, I adopt a multiple indicator approach, focusing on three core constructs of climate change; concern, behaviors and policy support. The first outcome indicator, *Climate Change Concern*, ask respondents to rate how worried they are about climate change from "not at all" to "extremely". Due to concerns about sparsity, the small number of respondents selecting "extremely" worried (less than 5% of total sample) these responses were collapsed alongside "very" worried, thus resulting in a scale ranging from 1 "not at all" to 4 "very/extremely" worried[15]. The second outcome variable, *Reduce Energy*, asks respondents how often they do things to their reduce energy usage, ranging from 1 "never" to 6 "always". The third outcome variable, *Increase Fossil Fuel Tax*, is a measure of policy support, asking respondents how much they favor increasing taxes on fossil fuels. Again, due to concerns about data sparsity the high category "strongly favor" (with roughly 7% of the total sample) was collapsed with "somewhat in favor" to create a scale ranging from 1 to 4[15]. The distribution of outcome responses for Western European and transition states is presented in Figure 5.1 below.

[15]Supplementary analyses were performed with 4 and 5 outcome codings for these outcome variables, yielding substantively similar results

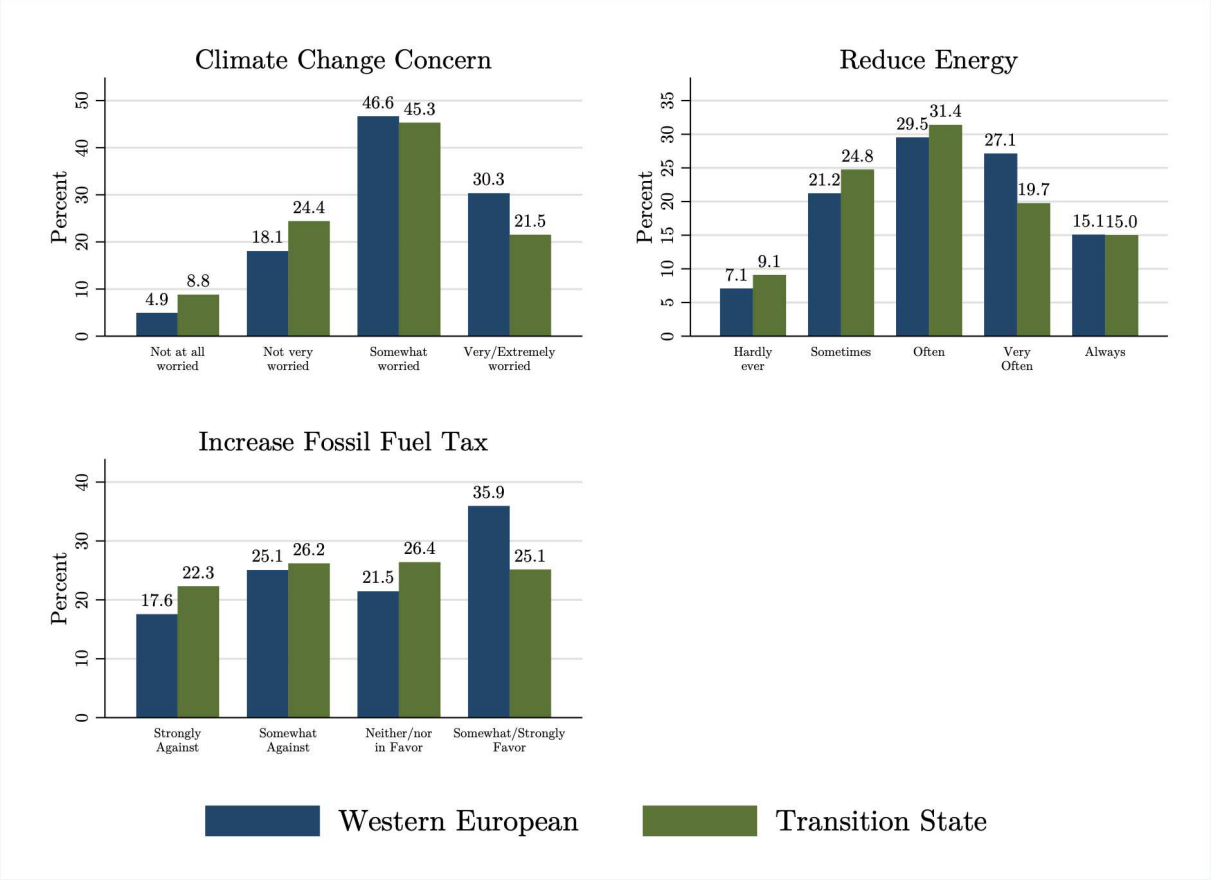


Figure 5.1: Distribution of Responses for Outcome Variables, by Western European and Transition States

Predictors

This analysis includes a wide-array of predictor variables, fifteen in total, to help capture the divergences in determinants between Western European and transition states. First, I include measures for human values. The 2016 ESS contains a modified 21-item version of the Portrait Values Questionnaire (PVQ) (Schwartz, 2003). To measure the 10 Schwartz values, each item presents a short sentence, a portrait, of a gender-matched person. Then, the respondent is tasked with ranking how much this person is 1 'not like me at all' to 6 'very much like me'. Due to concerns of multicollinearity and parsimony, these 10 values are collapsed into scales[16] representing the 4 higher order dimensions (self-transcendence, self-enhancement, openness, conservation) (Schwartz, 1992, 1994). Next, *political orientation* is captured through an self-placement of a political right to left scale. Respondents are ranked from holding view that range from 1 'strong right' to 3 'moderate' to 5 'strong left'. Lastly, I include interactions terms between political orientation and each of the four higher-order human value dimensions to test for moderation.

Next, I also include two separate measures for trust, *social trust* and a scale for *political trust*[17]. I also include indicators for how likely the respondent perceives that *individual efficacy* or *group efficacy* can reduce the impact of climate change. Further, I include indicators for *religious belonging* and *religious service attendance*. Lastly, I include indicators for socio-demographic variables common to studies of climate change, *gender*, *age*, *educational attainment* and *household income*. The descriptive statistics, original items, and variable coding for all of the variables by Western European and transition State are displayed in Table 5.2.2

[16]Supplementary Appendix A.3 displays the items and Cronbach's α for all scales by Western European and transition state

[17]Again, see Supplementary Appendix A.3 for the Cronbach's α

Table 5.1: Descriptive Statistics and Variable Coding

Variable	*Original Item*	*Coding*	Western European		Transition State	
			Mean	*SD*	*Mean*	*SD*
Dependent Variables						
Climate Change Concern	*wrclmch*	1 'Not at all' to 5 'Extremely Worried'	3.02	0.83	2.80	0.88
Reduce Energy	*rdcenr*	1 'Never' to 6 'Always'	3.22	1.15	3.07	1.19
Increase Fossil Fuel Taxes	*inctxff*	1 'Strongly against' to 5 'Strongly favour'	2.76	1.12	2.54	1.09
Independent Variables						
Self Transcendence	*see S1*[18]	1 'Not at all like me' to 6 'Very much like me'	4.92	0.67	4.60	0.79
Self Enhancement			3.69	0.87	3.85	0.94
Openness			4.14	0.89	4.01	0.95
Conservation			4.29	0.83	4.42	0.80
Political Orientation	*lrscale*	1 'Strong Right' to 5 'Strong Left'	2.95	1.22	2.79	1.18
Individual Level Control Variables						
Individual Social Trust	*ppltrst*	0 'Lowest Trust' to 10 'Highest'	5.47	2.32	4.80	2.40
Individual Political Trust	*see S1*	0 'Lowest Trust' to 10 'Highest'	4.94	2.00	4.26	2.07
Individual Efficacy	*ownrdcc*	0 'Not at all likely' to 10 'Extremely Likely'	4.54	2.64	3.89	2.61
Group Efficacy	*lkredcc*	0 'Not at all likely' to 10 'Extremely Likely'	4.19	2.12	3.87	2.21
Female	*gndr*	0 'Male' 1 'Female'	0.51	0.50	0.55	0.50
Age	*age*	15-100	49.5	18.7	48.3	18.3
Educational Attainment	*edulvlb*	1 'Primary or less' to 8 'PhD'	3.73	1.93	3.88	1.74
Household income, Country Deciles	*hinctnta*	1 '1st decile' to 10 '10 decile'	5.20	2.74	5.15	2.73
Religious Belonging	*rlgblg*	0 'Does not belong' 1 'Belongs to religious group'	0.61	0.49	0.56	0.50
Religious Service Attendance	*rlgatnd*	1 'Never' to 6 '> Weekly'	2.46	1.52	2.60	1.42
Country Level Control Variables						
GNI per capita, in 1000s	*World Bank 2016*	9,200 to 81,100	32.2	3.46	31.6	4.84
Freedom of Expression	*2016 V-Dem V.10*		0.94	0.042	0.79	0.25
Coal as % of TPES	*IEA (2016)*	0.11	0.075	0.30	0.23	

. Potential forms of multicollinearity were investigated in supplementary analyses, with all key predictors and control variables having a VIF of under 1.6.

5.2.3 Methods

Due to the nested data structure of the ESS, persons within countries, I adopt a multi-level random effects approach (also known as mixed model) that allows for intercepts to randomly vary across countries for this analysis. Further, given the coding of the three dependent variable items, I adopt an ordinal logistic regression modelling based approach.

For each of the dependent variables I estimate two sets of models. First, to identify the comparative effect of each predictor between Western European and transition states, I interact each variable by a dummy variable for transition state status (a total of 15 separate two-way interactions for each dependent variable). Second, to identify differences in the interactive role of political orientation and human values, I run a subsequent set of models that interacts this relationship with a dummy indicator for transition state status. As there are four human value dimensions utilized in this study, this analysis therefore includes four three-way interactions for each dependent variable to mode these relationships.

Coefficients on the logistic scale are notoriously difficult to interpret. Further, for interaction terms with non-linear outcomes, coefficients of the product term do not provide sufficient information on the significance, magnitude of direction of this interaction (Mize, 2019). Therefore, I adopt an approach that focuses using on predicted probabilities to make practical sense of these interaction models (Long and Freese, 2014; Mood, 2010). Further, this approach has the benefit of focusing on substantive effects, and not focusing solely on statistical significance, which can lead to false conclusions or misinterpretation of results (Amrhein et al., 2019).

For the first set of two-way interaction models, I adopt an average marginal effects (AMEs) approach (Williams, 2012). AMEs have the benefit of calculating the difference between the predicted probability of a key predictor in Western European and transition states. Further, AMEs allow for significance testing of these differences, where a hypothesis test of a difference not equal

to zero indicates that there is a difference between the predicted effects. Second, for the three-way interaction models, I plot the interaction of political factors by human values independently for Western European and transition states. These plots are displayed side-by-side, and compared for visual and substantive differences.

The predicted probabilities were calculated by holding control variables at their observed values and averaging the probabilities for specified values of the key predictor variables across all observations (marginal effects). For predictor variables with intuitive and substantive coding, i.e. ordered and binary response predictors, each of their outcome value was specified while calculating predicted probabilities. But for predictor variables on a continuous scale, i.e. values and trust scales, I predict values at 10 equal intervals ranging from the 5^{th} percentile to the 95^{th} percentile of the continuous scale. Lastly, for all models, I predict the highest outcome for each dependent variable (fixed portion).

5.3 Results

This section initially presents results comparing the effects of each predictor between Western European and transition states separately for each of the three dependent variables: climate change concern, individual energy reducing behaviors and support for increased fossil fuel taxes. Then, this section compares the effects of the political orientation by human values interaction in Western European and transition states, again across these three dependent variables.

5.3.1 Differences Between Effects in Western European and Transition States

Climate Change Concern

The AMEs between Western European and transition states for all predictors on climate change concern are plotted in Figure 5.2. If an AME is below zero, this can be interpreted as the effect is less in transition states than in Western European states for the given value, while if it is above zero, this means that the effect is larger in transition states. If the confident interval bound-

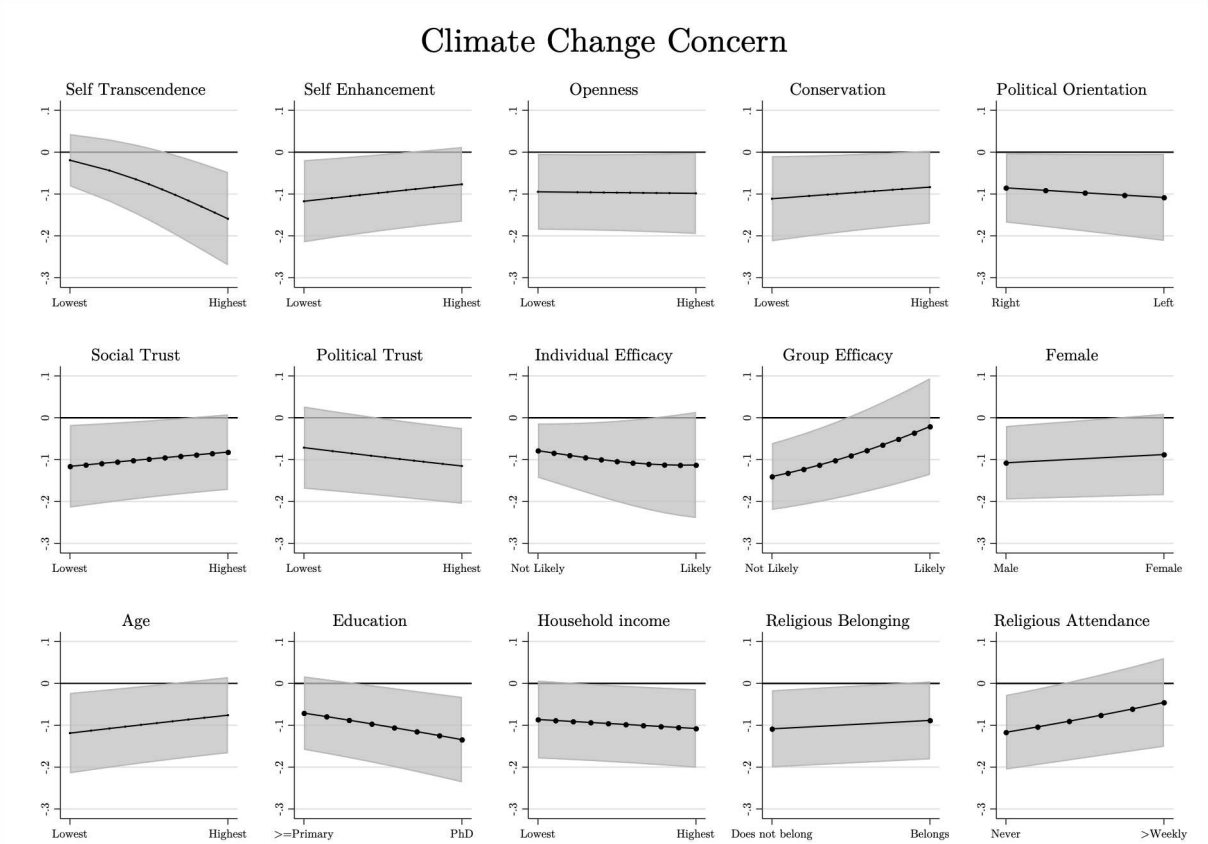
ary is above or below zero, this indicates that there is a significant difference between Western European and transition states at this given value.

In almost all cases, people in transition states are predicted to have higher levels of concern for climate change than in Western states. But, these differences vary substantially as a result of a number of individual-level determinants. Of the human values dimensions, the greatest differences are observed in the relationships for self-transcendence. At the lowest levels of self-transcendence, there is very little difference in climate change concern between people in Western European and transition states. But, at higher levels of self-transcendence, people in Western European states are roughly 15% more likely to be very concerned about climate change than those in transition states.

Turning to measures of perceived efficacy, at the highest levels of group efficacy there are limited differences between people in Western European and transition states, while there are around 15% differences for people who believe that group-level changes are not likely to have an effect. This is an important distinction, as people in transition states are less likely to perceive that large numbers of people limiting their energy usage can reduce the effects of climate change, but for those that do, there are little differences to people from Western European states in their levels of concern.

Further, there do appear to be some comparatively smaller differences based upon socio-demographic characteristics. The differences in concern is less for older people than for younger people, while these differences appear to increase at higher levels of education. Further, religious attendance appears to have an effect as well, as there are smaller differences between people who frequently attend services in Western European and transition states than for those who never attend.

Notably, there does not appear to be substantial differences based upon political orientation or forms of trust. Rather, people are less likely to be concerned about climate change at all values for each of these variables, with little change across values.



Predicting highest value outcome for Climate Change Concern "Very" or "Extremely" Worried. Predicted probabilities are plotted in black, while confidence intervals are plotted in dark grey.

Figure 5.2: Average Marginal Effects for all Predictors between Western European and Transition States, Climate Concern

Reduce Energy

In comparison to climate change concern, there are fewer differences in the likelihood of people from Western European and transition states to reduce their energy usage. Figure 5.3 displays the outcomes for energy reduction by Western European and transition state country groupings, where 15% of people in both sets of states respond that they "always" do things to reduce their energy usage.

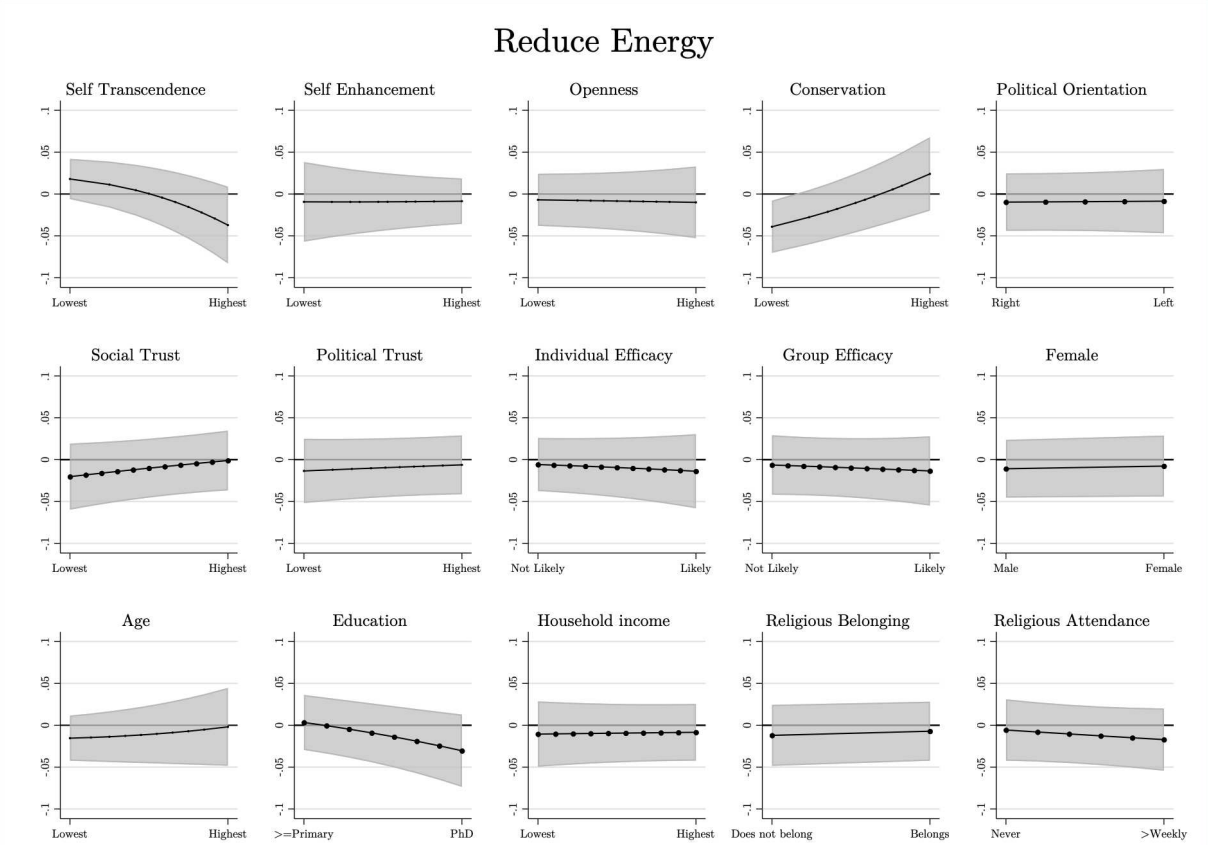
There are some smaller differences based upon individual drivers of energy usage, in particular, the role of human values. At lower levels of self-transcendence, people in transition states are more likely to reduce their energy usage than those from Western European states, but the opposite is true at higher levels of self-transcendence. Alternatively, at lower levels of conservation, people in transition states are less likely to reduce their energy, while they are slightly more likely than those in Western European states reduce their energy at higher levels of conservation. Still, these effects appear to be comparatively small (never appearing to be more than a 5% difference), and the difference in effect size is rarely significant.

Therefore, it appears that there are little differences in the likelihood of people in transition states to reduce their energy usage, a finding that does not vary substantially across different individual determinants of energy usage.

Increased Fossil Fuel Taxes

On average, people from Western European states appear to be more likely than those from transition states to support increasing taxes on fossil fuels (see Figure 5.4). Roughly 36% of people from Western European states either "somewhat" or "strongly" support increasing fossil fuel taxes, compared to 25% from transition states. Further, 22% of people in transition states are "strongly against" increasing fossil fuel taxes, slightly more than the 17% of people from Western European states.

Again, it appears that human values present some of the greatest differences as drivers of support for increased fossil fuel taxes. At lower levels of both self-transcendence and self-enhancement, people in transition states are more likely to support increasing fossil fuel taxes,



Predicting highest value outcome for Reduce Energy "Always". Predicted probabilities are plotted in black, while confidence intervals are plotted in dark grey.

Figure 5.3: Average Marginal Effects for all Predictors between Western European and Transition States, Reduce Energy

but there are smaller differences at higher levels of these values. There also appears to be some differences, albeit substantively smaller, based upon different quantities of openness.

More notably is the effect of social trust. At lower levels of social trust, people are roughly 8% more likely to support increasing fossil fuel taxes in transition states than in Western European states, but this difference diminishes as social trust increases. But, there appears to be little differences across different values of political trust.

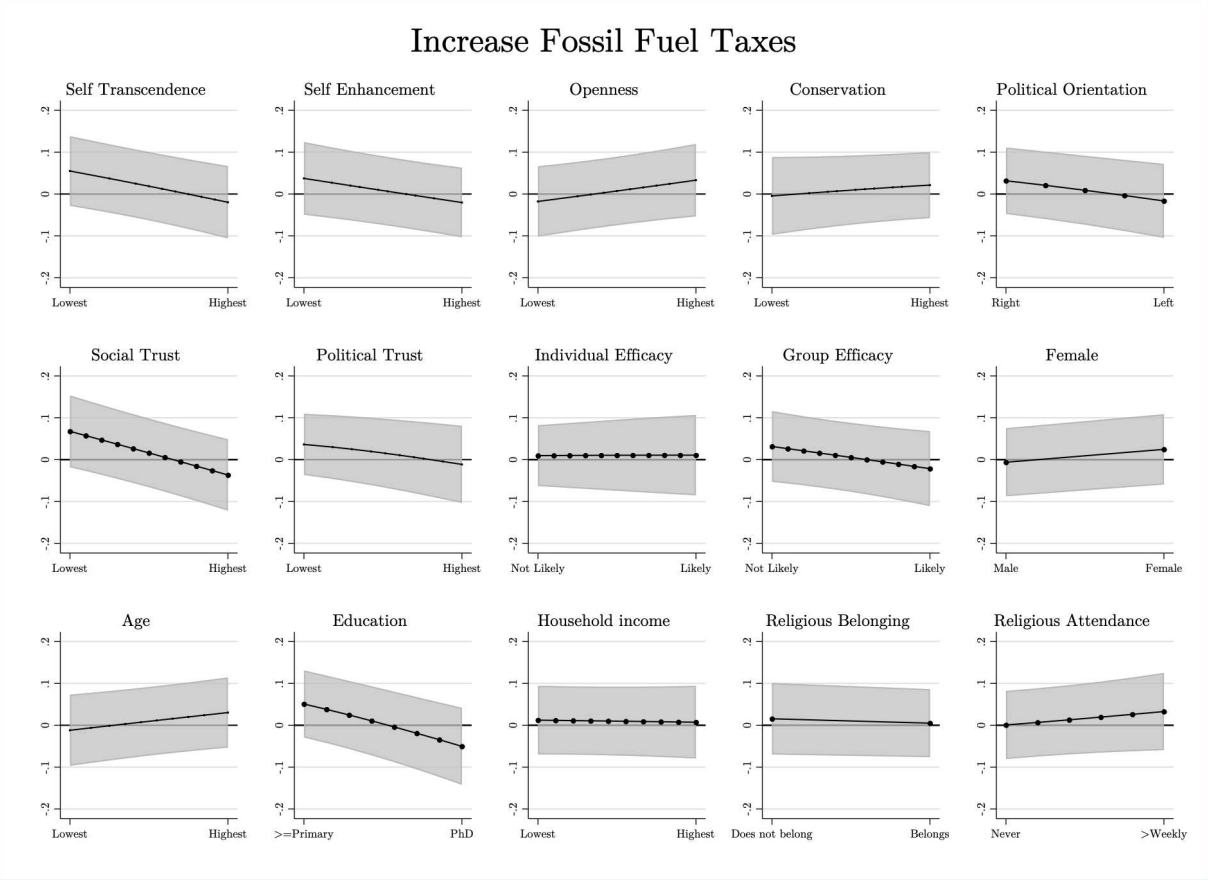
Further, education appears to hold differing effects in Western European and transition states. People with the lowest levels of education are more likely to support increasing fossil fuel taxes in transition states, while those at the highest levels of education are comparatively less likely. Still, while there appears to be some substantive differences in the effects of these determinants between Western European and transition states, none of these differences were found to be significant. As such, these observed differences should be treated with some caution.

5.3.2 Political Orientation by Human Values Interaction

For each of these interactions, the predicted probability of the value dimension is plotted at different values (10^{th}, 30^{th}, 50^{th}, 70^{th}, 90^{th} percentile) as it moves from right-leaning to left-leaning political orientations. The interaction of political orientation by human values is plotted for each of the four values dimensions by Western European and transition state on climate change concern in Figure 5.5.

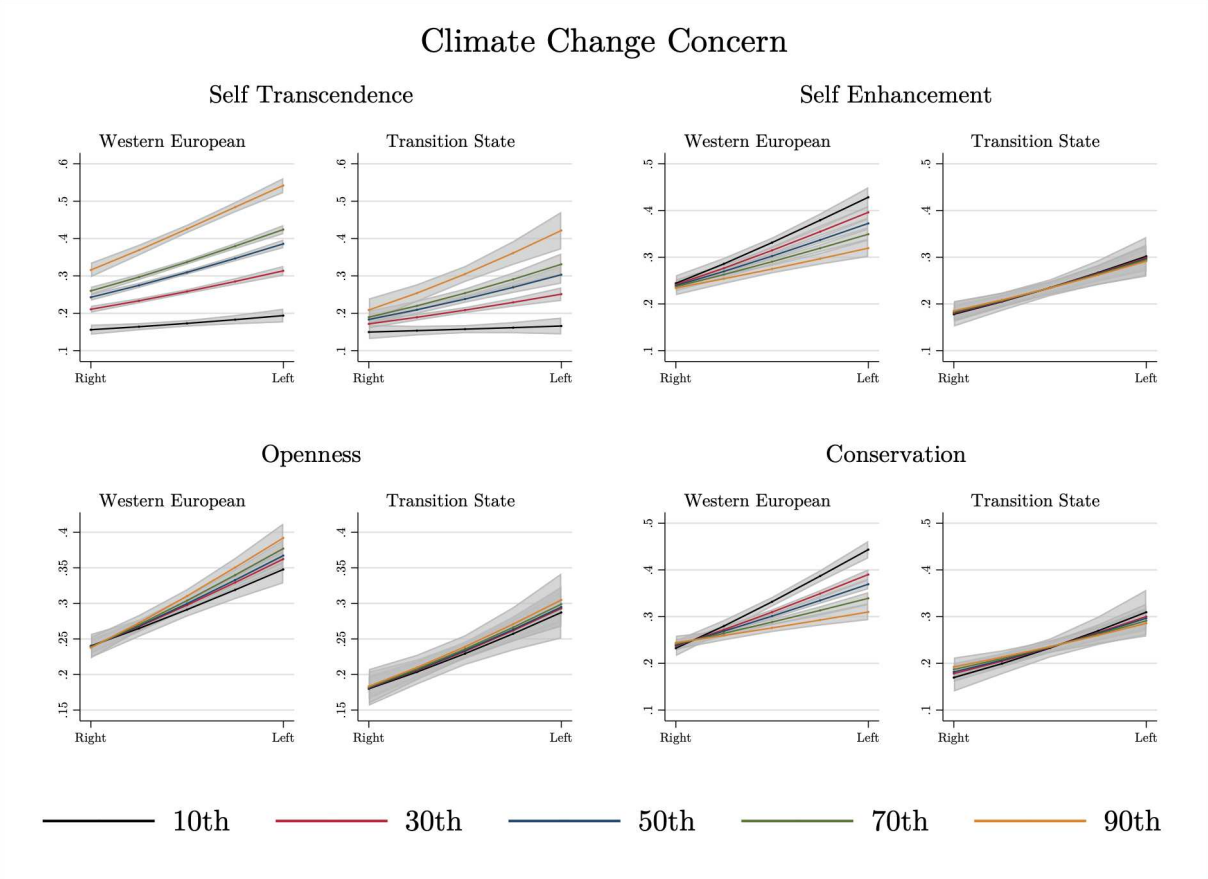
Climate Change Concern

In both Western European and transition states self-transcendence appears to interact similarly with political orientations (Figure 5.5). At the highest levels of self-transcendence, the effect is amplified as individuals move from politically right to left (for a total increase in predicted probability of roughly 20%), where there is difference in the effect of lower levels of self-transcendence across political orientations. But, there does appear to be substantive differences in the interactive effects for self-enhancement and conservation. In Western European states, there are little differences in climate change concern based upon self-enhancement or conservation for people with



Predicting highest value outcome for Increased Fossil Fuel Taxes "Somewhat" or "Strongly" Favor. Predicted probabilities are plotted in black, while confidence intervals are plotted in dark grey.

Figure 5.4: Average Marginal Effects for all Predictors between Western European and Transition States, Reduce Energy



Predicting highest value outcome for Climate Change Concern "Very" or "Extremely" Worried. Predicted probabilities of human values dimension are plotted by 10^{th}, 30^{th}, 50^{th}, 70^{th} , 90^{th} percentile values. Confidence intervals are plotted in dark grey.

Figure 5.5: Interaction of Political Orientation by Human Values on Climate Change Concern

politically right orientations, but there are substantive differences for those on the political left. There appears to be no substantive differences in the effect of self-enhancement or conservation on climate change concern as people move from the political right to left in transition states, however. As such, these findings suggest that while there is an interactive, amplifying effect for all values dimensions on climate change concern in Western European states, this effect is only present in self-transcendence values in transition states.

Reduce Energy

For individual willing to reduce their energy (Figure 5.6), there does appear some substantive difference in the interactive effects of political orientations and human values between Western

European and transition states. For self-transcendence, there appears to be an amplification effect as people move from the political right to left in transition states. That is, at higher levels of self-transcendence, people become more likely to be willing to reduce their energy as they move to the political left, but are less likely to reduce their energy at lower levels of self-transcendence. But, within Western European states, the effect of self-transcendence does not appear to change across political orientations.

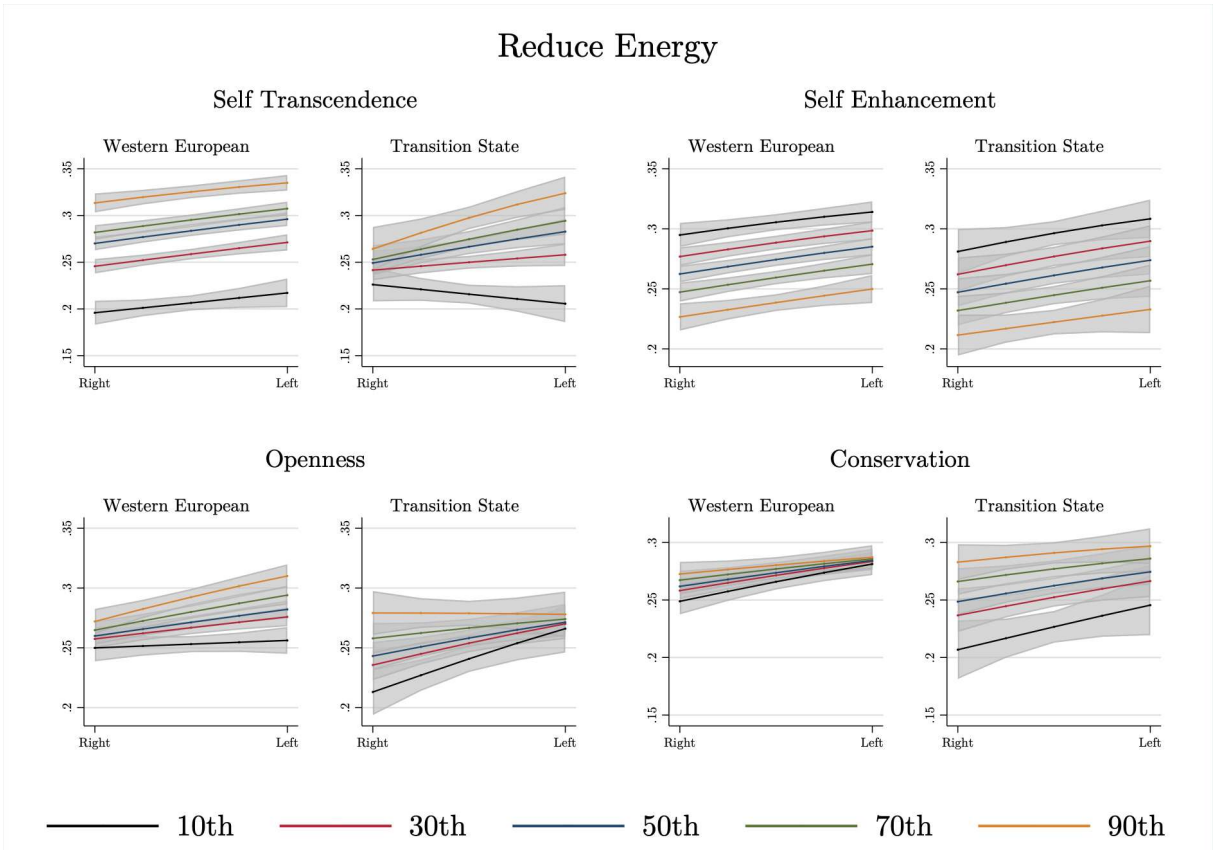
Furthermore, there appears to be oppositional effects of openness in Western European and transition states. Within Western European states, there is little differences in the likelihood to reduce their energy based upon quantities of openness for people on the political right, but substantive differences for those on the political left. While the opposite is true in transition states, where there are greater differences based upon openness for those on the political right than for those on the political left.

Increased Fossil Fuel Taxes

There appears to be the greatest differences in the interactive effects of human values dimensions by political orientation between Western European and transition states in the likelihood to support increased fossil fuel taxes (Figure 5.7). Interestingly, it appears that for each value dimension, there is a substantive interaction in one of the country groupings, but not in the other. For self-transcendence and conservation, there appears to be an interactive effect within Western European states, while for self-enhancement and openness there appears to be an effect within transition states. This is an interesting finding, as the moderating effect of political orientation does appear to greatly differ between Western European and transition states for each value dimension. As such, there may be something unique about this effect with relation to fossil fuel taxation policy support.

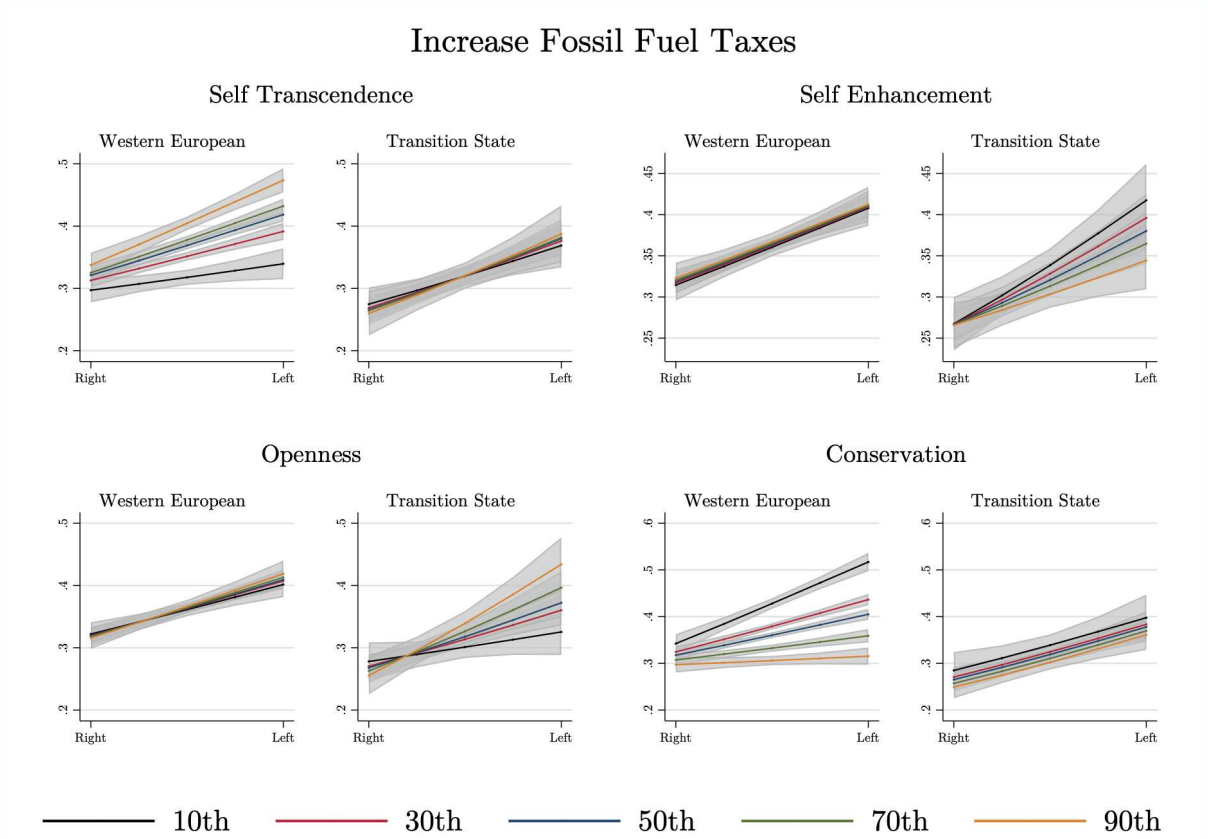
5.4 Discussion

This paper engages an analysis of the key individual-level predictors of climate change attitudes and behaviors, comparing the differences in their substantive effect across Western European and transition state contexts. This analysis builds upon a developing cross-national literature com-



Predicting highest value outcome for Reduce Energy "Always". Predicted probabilities of human values dimension are plotted by 10^{th}, 30^{th}, 50^{th}, 70^{th} , 90^{th} percentile values. Confidence intervals are plotted in dark grey.

Figure 5.6: Interaction of Political Orientation by Human Values on Reduce Energy



Predicting highest value outcome for Increased Fossil Fuel Taxes "Somewhat" or "Strongly" Favor. Predicted probabilities of human values dimension are plotted by 10^{th}, 30^{th}, 50^{th}, 70^{th} , 90^{th} percentile values. Confidence intervals are plotted in dark grey.

Figure 5.7: Interaction of Political Orientation by Human Values on Increased Fossil Fuel Taxes

paring key predictors of climate change attitudes and behaviors between Western European and transition states (McCright et al., 2016a; Lewis et al., 2018; Smith and Mayer, 2018a; Poortinga et al., 2019; Marquart-Pyatt et al., 2019), namely the effects of human values and political factors. I find, that in most cases, the effect of most predictors is not substantively or significantly different between Western European and transition states.

The effect of self-transcendence values is diminished within transition states across concern, behaviors and policy support. This means that, while self-transcendence has a positive effect on climate change attitudes and behaviors in transition states, the substance of this effect is comparatively lower than in Western European states. This is an interesting effect, one that deserves further research to understand the theoretical reasons for these differences, and is in support of other recent findings (Poortinga et al., 2019).

Social trust has more of an effect on policy support at lower levels of trust in transition states, but roughly the same effect at higher levels of social trust. But, for climate change concern, social trust has consistently less of a positive effect in transition states across all levels of trust. These findings could indicate some very differing effects regarding the role of trust in transition states. Previous studies have noted comparably lower levels of trust in transition states (Delhey and Newton, 2005; Raiser et al., 2008), likely a legacy of the erosion of social norms and predictability of social life caused by the collapse Communist system (Abbott and Beck, 2003; Burawoy et al., 2000). Similarly, Mishler and Rose (1997) also find that people in transition states are highly skeptical of major social institutions. Furthermore, Smith and Mayer (2018b) find that social trust has a substantive, direct effect on climate change behaviors and policy support on the individual- and contextual-level. These findings suggest that there is variability in the effect of social trust within and between countries, but further research is needed to investigate the role of trust specifically within transition states.

Notably, political orientation does not have a significantly different effect between Western European and transition states. But, it does appear to have a roughly 0.10 predicted probability less effect on climate change concern across right and left political orientations in transition states.

These findings come as a bit of a surprise, as previous research has noted a diminished, or even null effect, of political orientation in transition states (McCright et al., 2016a; Smith and Mayer, 2018a; Marquart-Pyatt et al., 2019). I engaged a series of supplementary analyses to confirm the robustness of this finding, as well as to compare it to recent findings using the same ESS data (see Supplementary Information A.1). I find that these results are robust against a number of different potential causes (country, time, data, methodological variances). As such, these findings question the emerging consensus surrounding the lack of effect of political orientation driving climate change attitudes and behaviors in transition states. Rather, political orientation may affect differences for some types of climate change attitudes, and not for others. As such, these findings against support the need for multiple measures approaches to understanding climate change attitudes and behaviors, and caution when making generalizable inferences based upon single indicator findings.

In sum, these findings suggest that there are more similarities than differences in the key predictors of climate change attitudes and behaviors in Western European and transition states, but where there are differences, they are not always consistent across different measures. Therefore, these findings present a framework for much further comparative research into this field, to illuminate the causes of these observed differences.

As this study is an initial, comprehensive examination into the the differences between Western European and transition states, these results are limited by several factors. First, this study only examines individual-level differences, that is, differences in the effects within the countries. It is plausible that the effects vary as much, and in different ways, between countries as well, and this needs to be further investigated. Furthermore, this study is limited by the seven transition state countries included in 2016 ESS. These states are exclusively those that are currently within the European Union, and therefore, the citizenry may have experienced greater economic and political benefits compared to transition states outside of the European Union. Further, transition states encompass a wide geographic region, with a multitude of regional, cultural and political differences. As such, further research would be needed to substantiate these findings by comparing a broader set of more diverse transition states with Western European states. Lastly, given the

exploratory nature of this initial research, there is a larger than typical possibility of biases resulting from excluded variables or potential suppressor effects. Further research needs to be performed to include a wider set of theoretical predictors, as well as understand the interrelations between different predictors.

Chapter 6

Discussion

6.1 Dissertation Summary

Climate change presents a global threat, necessitating changes to almost all components of social life. One of the key questions surrounding climate change is understanding the conditions under which people are willing to make these changes, either individually or collectively through public policy, as well as how dangerous people perceive the risk of climate change to be. This dissertation contributes to this broader literature on climate change by focusing on the role of human values and political factors and their interactions within Western European and transition states. A key focus of this dissertation is addressing the interactive relationship between human values and political factors in driving a range of climate change attitudes and behaviors.

This dissertation has developed several theoretical and empirical components. First, in Chapter 2, I engaged with the extensive literature on cross-national climate change attitudes and behaviors, with particular attention being paid to the role of human values and political factors. Human values are core components driving a person's attitudes and actions, drawn upon to make assessments of which sorts of behaviors are considered acceptable or not, and frame how an individual views social phenomena (Hitlin, 2008). Values can be seen as a moral compass (Joas, 2000), guiding individual attitudes and behaviors towards climate change (Poortinga et al., 2004; Dietz et al., 2007; Poortinga et al., 2019). Similarly, political factors have long been noted as strong predictors of climate change attitudes and behaviors (Hornsey et al., 2016), where people on the political left have generally been found to be more concerned about climate change and more willing to engage in actions and support policies aimed at fighting it. The causes for these political differences are quite complex, and likely involve a combination of individual- (such as preferences to role of government (McCright and Dunlap, 2010; Campbell and Kay, 2014) and contextual- forces (such as partisan social identity (Iyengar et al., 2012; Colvin et al., 2015) and

responding to elite cues (Farrell, 2016; Brulle et al., 2012). But, human values and political factors do not exist in isolation of one another, and are rather deeply related constructs (Caprara and Zimbardo, 2004; Feldman, 2003; Piurko et al., 2011). Accordingly, when an individual's values and and political factors are in alignment, I argue it is likely to result in an amplifying effect on their climate change attitudes and behaviors. Furthermore, I argue it is likely that political factors, human values and their interaction can function to have differing effects based upon the structural historical and political contexts (Poortinga et al., 2019; McCright et al., 2016a; Lewis et al., 2018) and the outcome being measured. As such, we can expect differences across country groupings, in particular, between Western European and transition states (Marquart-Pyatt et al., 2019; Smith and Mayer, 2018a).

Table 6.1: Overview of Findings: Hypotheses

	Chapter 3 Western European			**Chapter 4 Transition European**		
	Supported	*Limited Support*	*No Support*	*Supported*	*Limited Support*	*No Support*
Hypothesis 1 - Political Orientation						
Climate Change Concern	•					•
Reduce Energy	•					•
Increase Fossil Fuel Taxes	•					•
Hypothesis 2 - Human Values						
Climate Change Concern	•			•		
Reduce Energy	•			•		
Increase Fossil Fuel Taxes	•			•		
Hypothesis 3 - Moderation Effect						
Climate Change Concern	•				•	
Reduce Energy		•			•	
Increase Fossil Fuel Taxes	•			•		

Chapter 3 presents an analysis of the independent and interactive role of human values and political factors in Western European states. As expected, I found that human values - most notably self-transcendence and conservation values - are substantial predictors of concerns, behaviors and policy support. These results are consistent with previous findings (see Dietz et al., 2007; Poortinga

et al., 2011, 2019). Furthermore, I find substantive evidence of political differences in concern for climate change and willingness to support climate change policies (see McCright et al., 2016a; Smith and Mayer, 2018a; Lewis et al., 2018), but limited indication of differences in individual actions (in line with some recent findings (Marquart-Pyatt et al., 2019)). Most notably, I find strong evidence of an interactive effect of human values and political factors, where when in alignment, these forces amplify climate change attitudes and behaviors. These interactive effects appear to be most prominent with self-transcendence and conservation values.

Chapter 4 adopts a parallel analysis to transition states. Given the unique political and social history of transition states, it is expected that the role of human values and political factors may differ within these countries. All four higher order human values dimensions are found to be substantive predictors, but their effect size varies based upon the climate change attitude or behavior. Further, I find, somewhat unexpectedly, that political factors have a significant effect on concern, behaviors and policy support, although substantively, these effects are quite small. Lastly, I find evidence of a interactive effect of human values and political factors, indicating generalizability of these findings across European states.

In Chapter 5, I build upon these previous empirical findings to directly compare how the effects of key predictors of climate change attitudes and behaviors differ based upon Western European and transition states. I find, to my surprise, that the predictors have largely similar patterns on concern, behaviors and policy support between these two country groupings, but with some notable differences. The effect of self-transcendence values, while still positive, is smaller within transition states. Similarly, education also appears to have a comparatively stronger effect in Western European states relative to transition states. Further, there are minimal substantive differences in the relationship between political orientation and behaviors or policy support, although political orientation does appear to have comparatively less of an effect on concern in transition states.In both Western European and transition states self-transcendence appears to interact similarly with political orientations, but, substantive differences in the interactive effects for self-enhancement and conservation were observed. The results suggest that while there is an interactive, amplifying

effect for all values dimensions on climate change concern in Western European states, this effect is only present in self-transcendence values in transition states.

6.2 Discussion

Alignment of Values and Attitudes

The primary goal of this dissertation is to understand the interactive role of human values and politics. I find substantial support of an interactive effect between human values and political factors shaping climate change attitudes and behaviors, a key finding. When human values and political orientations are in alignment, they can act as a self-reinforcement mechanism, amplifying their climate change attitudes and behaviors. I find this effect most prominently within self-transcendence values, which is likely as result of these values having the strongest substantive direct effects, and therefore the greatest possibility for amplification. For example, I find that at high levels of self-transcendence in Western European states people on the political left have a roughly 0.20 higher predicted probability than those on the right of being concerned about climate change (see Figure 3.3). I find a similar pattern within transition states as well, where the difference in predicted probabilities is roughly 0.15 (see Figure 4.3). But the opposite is also true. When human values and political factors are not in alignment, these forces will act as a dampening effect. Returning to the predictors of climate change concern in Western European states, at low levels of self-transcendence, there are minimal substantive differences between people on the political right and left. These findings are suggestive of a number of political implications, which I discuss at further depth in the section that follows.

In my robustness checks, I did not find evidence of political orientation mediating the effect of the human values dimensions on climate change attitudes or behaviors. That is, the direct effect of human values was not substantively confounded by political orientations. This finding, along with strong evidence of an interactive effect, suggests that the effect of human values on climate change attitudes and behaviors do not occur *through* political orientations, but that political orientations moderates the strength of this relationship. In terms of causal ordering, human values

are theorized to be prior to attitudes (Schwartz, 1994; Maio and Olson, 2000), and further, are presumed to be longer lasting and durable than the more dynamic attitudes and behaviors (Konty and Dunham, 1997). As such, these results could support this hypothesis, but future research involving longitudinal data would need to be engaged to confirm these findings. Further given the comparatively more moderate role of political orientations in Western European states, future research should be engaged to explore where human values remains robust when political factors become a stronger predictor (such as in the United States). It is possible that in such a case, the effect of human values could be mediated by political orientation.

Contextual Differences in Western European and Transition States

Differences in key predictors between Western European and transition states are also explored in this dissertation project. I find that, for most of the individual-level predictors of climate change attitudes and behaviors, there are minimal differences based upon whether a person is from a Western European or transition state context. This is an important finding, as the role of socio-demographics (age, gender, income), perceived efficacy, religious determinants are found to have minimal differences. This supports some generalizability of these findings across European contexts (McCright et al., 2016a; Poortinga et al., 2019; Marquart-Pyatt et al., 2019), and is largely supportive of literature from English-speaking states as well (McCright et al., 2016b; Tranter, 2011; Carter, 2014; Lachapelle et al., 2014).

But, there are a number of notable cases where role of factors differs across Western European and transition states. Most notably, the effect of self-transcendence values is comparatively smaller in transition states. Self-transcendence still has a positive effect on concern and behaviors, but not as substantively as large of an effect as in Western European states. These findings are largely in support of those recently reported by (Poortinga et al., 2019). This is an important distinction, as self-transcendence (and the related value altruism) are repeatedly found in other contexts to be the most effective human value driving climate change attitudes and behaviors (Dietz et al., 2007; Corner et al., 2014; Poortinga et al., 2004).

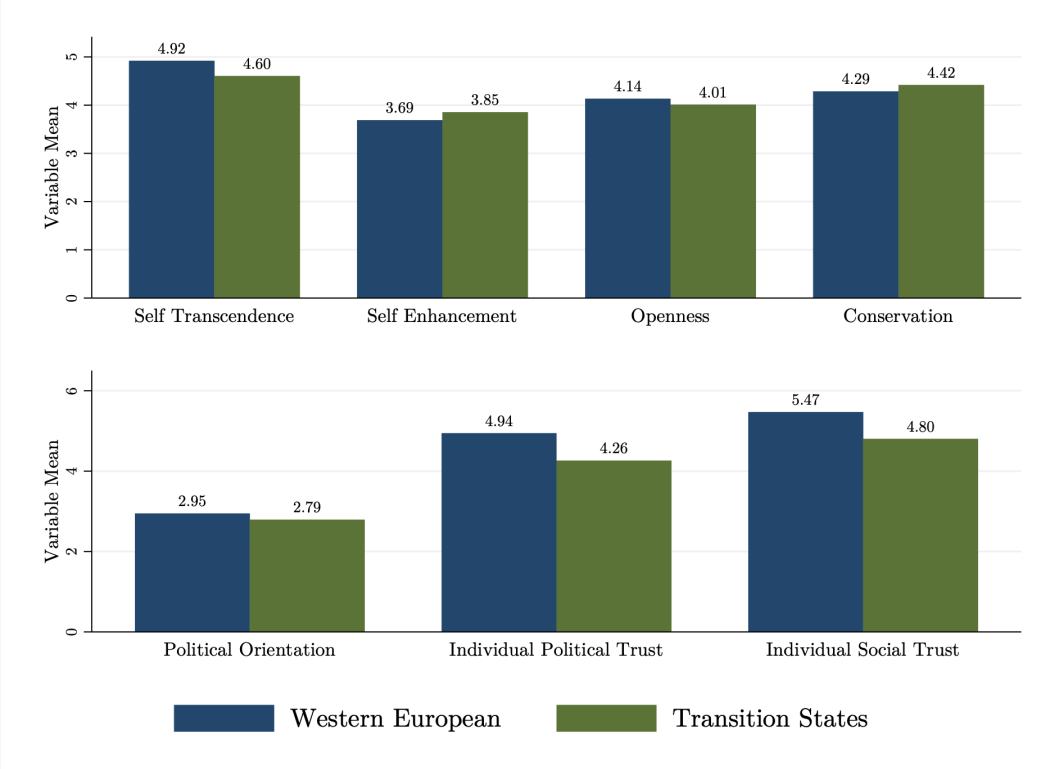


Figure 6.1: Key Predictors by Country Grouping

Comparatively, people from transition states are less likely to express self-transcendence values (see Figure 6.1). If people are less likely to have self-transcendence values, and the effect of these values is diminished, this presents a scenario where the potential for a large effect of self-transcendence is greatly reduced in these states. That is, the effect of an indicator can either increase or decrease based upon the quantity of that variable in the population and effect size that it has. Given the key role of self-transcendence values, this could provide insight into why there are comparatively lower aggregate levels of climate change concern and behaviors in transition states. If self-transcendence values are a substantial driver of people's responses to climate change, yet it relatively absent in transition states, other values and factors will need to be motivated to affect change.

Notably, the effect of political orientation does not significantly differ between Western European and transition states across the three measures of climate change attitudes and behaviors - although, the effect of political orientations is roughly 0.10 less on climate change concern in

transition states. These findings are a bit of a surprise, given that recent research has demonstrated a diminished, or even null effect, of political orientation on climate change attitudes and behaviors in transition states (McCright et al., 2016a; Smith and Mayer, 2018a; Marquart-Pyatt et al., 2019). I engaged a number of supplementary analyses (please see Supplementary Information A.1), to examine the robustness of this finding against a number of different potential causes (contextual, temporal, data, methodological variances). I find that these results are robust against a number of different potential causes.

Accordingly, these findings question the emerging hypothesis of political orientation having a null effect driving climate change attitudes and behaviors in transition states (Smith and Mayer, 2018a; McCright et al., 2016a). Rather, it appears political orientation may effect differences for some types of climate change attitudes and behaviors, and not for others. As previously noted, I do find substantive differences for climate change concern, but not for behaviors or attitudes. Other studies also note some heterogeneity in the effect of political orientation in transition states across a range of climate change attitudes and behaviors. For example, McCright et al. (2016a) finds political ideology (right to left) to be a negative predictor of willingness to pay for climate change, but an non-significant predictor for a number of other beliefs, concerns and policy items. While Marquart-Pyatt et al. (2019) finds political ideology to be (right to left) negatively associated with energy behaviors, but having null effects on energy policy preferences.

Taken in sum, these findings suggest that there is greater nuance to the effect of political orientation in transition states across forms of climate change attitudes and behaviors. The effects of political orientation appears to be positive, negative, and null in different cases. Therefore, the effect of political orientation should not be generalized across a broader range of climate change items, and further research and attention should be paid to discover patterns of where and why these factors matter in certain attitudes and behaviors, and not in others.

Social trust is also found to have a divergent effects on climate change concern within transition. The effect of social trust on climate change concern is negative for both Western European and transition states (see Tables 3.2 and 4.2). Further, the effect of social trust on climate change

concern is diminished in transition states, meaning that is less negative. Similar to previous studies (Delhey and Newton, 2005; Raiser et al., 2008), I also find comparatively lower levels of social trust in transition states (see Fig 6.1). Given that people comparatively trust others less in transition states, and that the effect of social trust is substantively smaller, these results suggest that social trust is not much of a factor on driving climate change concern on the individual level.

In conclusion, these findings demonstrate that there are more similarities than differences in the key predictors of climate change attitudes and behaviors in Western European and transition states, but where there are differences, they are not always consistent across different measures. Accordingly, these findings require more comparative research, to understand how self-transcendence values and political factors differ between Western European and transition states across a range of climate change attitudes and behaviors and identify factors underlying these differences.

Importance of Multiple Measures Approaches to Attitudes and Behaviors

A third important contribution of this study is the evidence of substantial differences in these effects across the types of climate change attitudes and behaviors being examined. In general, political orientation appears to be a much stronger predictor of climate change concerns and support for climate change policies, but is substantively negligible for behaviors. This finding is consistent across Western European and transition states. The effect of political orientation on policy support has been previously explored, where most climate change policies rely upon substantial governmental interventions, and as such, would largely be in contradiction to political attitudes prioritizing economic liberalism and individual liberties (Campbell and Kay, 2014). Similarly, McCright and Dunlap (2010) suggest that people on the political right, who are more supportive of capitalist and free-market systems, are more likely to reject problems that this economic system causes. Accordingly, people on the political right could be less likely to be concerned about climate change. But, neither of these arguments seems to hold for explaining why political orientation is strongly related to climate change concern, but not behaviors.

The types of behaviors and motivations for climate actions appear to be quite complex. Diekmann and Preisendörfer (2003) note differences in willingness to engage in 'high' and 'low' cost environmental behavioral transitions. For example, people are more likely to engage in low cost behaviors, such as recycling or reusable bags, than in high cost behaviors, such as driving less or eating less meat. Energy use can be considered a relatively 'low cost' transition in so far as most people have the capacity to limit their energy consumption and people with lower economic means often have even greater incentive to do so. Accordingly, the diminishing effect of a high cost transition does not appear to be a large factor in these findings.

Kollmuss and Agyeman (2002) present a comprehensive model for the environmental behaviors, where a complex system of internal and external factors determine an individual's likelihood to engage in an action. This model suggests that factors such as values, political attitudes, perceived risks and knowledge comprise a person's 'environmental consciousness'. If a person has a greater environmental consciousness, they will be more likely to act, but these factors can be greatly distorted and inhibited by a number of barriers such as, lack of information, lack of incentives, lack of agency to change, and most prominently, previous behavioral patterns. That is, the pathways of political factors on climate change behaviors is much more indirect and complex, as it is dependent upon a multitude of other individual- and structural-forces. The findings of a diminished the role for political orientation on energy reducing behaviors is consistent with this theory, as this effect is transformed and inhibited by a complex set of factors, resulting in minimal direct effect.

The results of my analyses clearly emphasize the importance of differentiating between types of climate change attitudes and behaviors. That is, the effects of a key predictor are not generalizable across all types of outcomes. This accentuates the need for a multi-measures approach to understanding climate change attitudes and behaviors, as well as much care in making intuitions about the findings of a research project. Furthermore, there may be as great of differences within the types of climate change attitudes and behaviors as between them. As noted above, the willingness to engage in behavioral changes is dependent upon the transition costs.

But, the reasons for willingness to engage in these behavioral changes may also differ. For example, at lower cost changes, one's desire to protect the environment can be a substantive predictor, but higher cost changes are more likely to be the result of non-environmental reasons, such as the individual convenience of travel to work, or the desire for one to improve their health (see Whitmarsh, 2009). Similarly, concepts of climate change concern can be differentiated into spatial (local/regional/global) and temporal (current/future) components. For example, Smith et al. (2018) note that religious factors, such as affiliation and beliefs, have a greater effect on an individual's future concerns than current ones. In sum, it is crucial for researchers to not only disentangle the ways in which different factors shape of climate change attitudes and behaviors, and how these factors change vary based on social contexts, but also to examine how and why these factors differ across the type of climate change outcome being studied.

6.3 Political Relevance of Findings

This study's findings have substantive implications for policy makers, climate change advocates and stakeholders. Over recent decades, climate change has become an increasingly important component of the political framing for candidates and parties. Climate change was the most important issue for voters in Western European states in the most recent European Parliamentary elections (Eurobarometer, 2019). Subsequently, Green parties received historically high support in the 2019 European Parliamentary Elections, as well as in recent federal elections in Austria, Belgium and Switzerland.

But, the role of climate change motivating voters appears to be split amongst generational lines – younger voters (45% of $<$25 years old) were more likely than older voters (34% of $>$55) to say that combating climate change was an issue motivating their vote (Eurobarometer, 2019). Furthermore, climate change is viewed as secondary issue to economic and labor issues in Southern and Eastern European states (fitting with historical patterns of comparatively decreased environmental concerns within these states (Chaisty and Whitefield, 2015).

Germany, for example, has had a decades long environmental social movement (often centered around issues such as nuclear energy (Joppke, 1993)), but public opinion surrounding the environment has shifted rapidly in the past year, where it was viewed as the most important problem facing the country. Since 2000, rarely more than 10% of Germans have viewed the environment as an important problem (see Figure 6.2). Recent survey data suggests that between 45%–60 % of Germans view the environment and climate change as an important problem (Politbarometer, 2019), far greater than any other issue [19]. But the salience of climate change as a political issue does not appear to be universal amongst similarly developed states. In the UK, the environment remains largely a secondary issue to concerns of Brexit (YouGov, 2019), while in the US, there appears to be limited differences in viewing the environment as a top issue over recent years (Gallup, 2019). This suggests that mobilization efforts by political parties and elites can have substantial implications for popular responses to climate change, most notably with the diminished saliance of the issue in the US (Brulle et al., 2012; Farrell, 2016).

For many of these emerging green parties and environmental social movements, the question remains: how can increased salience of climate change as an issue be mobilized for public policies and collective actions? For parties and stakeholders on the political left, the widespread political salience of climate change appears to be a relatively new phenomenon. But, the same is not true for those on the political right. For decades, the political conservatives, largely based in the United States, have engaged a climate change counter-movement, aimed at discrediting the science behind climate and minimizing the projected effects (McCright and Dunlap, 2003; Jacques et al., 2008; McCright and Dunlap, 2011a; Oreskes and Conway, 2011). These efforts have been very successful in shaping the attitudes and beliefs towards climate change for individuals in the US (Brulle et al., 2012; Guber, 2013; Farrell, 2016), resulting in substantial polarization (Johnson and Schwadel, 2019; McCright and Dunlap, 2011b).

[19] Please note that this data predates the current COVID-19 pandemic, and is therefore very unlikely to be applicable to the most current attitudes in Germany)

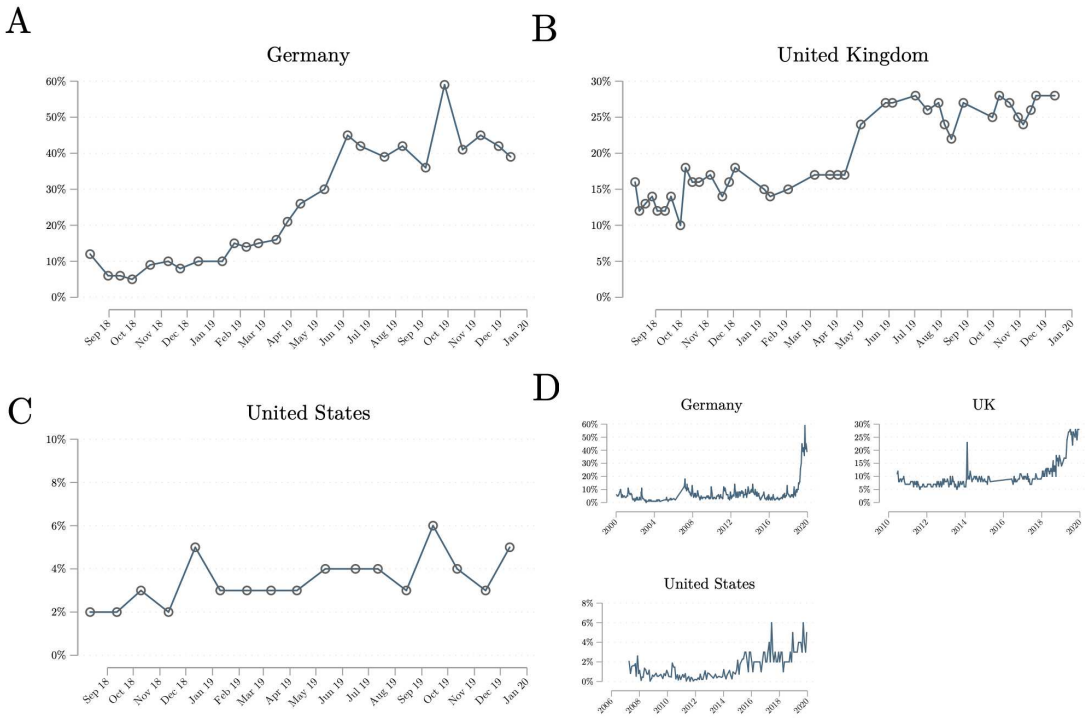


Figure 6.2: Percentages of adults that list the "Environment as an Important Issue"
Panels (A), (B) and (C) present survey data collected at least monthly since the beginning of the Fridays for Future and Extinction Rebellion protests in August 2018 until current from Germany, the United Kingdom and the United States, respectively. Dotted grey vertical lines display days of global strikes organized by Fridays4Future in March, May and September 2019. Panel (D) presents survey data collected from the longest periods available for each program. Data is collected by Forschungsgruppe Wahlen: Politbarometer (Germany), YouGov (United Kingdom) and Gallup (United States). The question wordings and survey methodologies are similar, but are not identical. Therefore, direct interpretation of percentages between countries is cautioned against. Rather, comparisons are better made within each country over time.

Much has been made about the role of friendly, conservative media in amplifying these efforts (Feldman et al., 2012; Hmielowski et al., 2014), but my findings suggest a complimentary and parallel effect may be at play as well. The successful consolidation of conservative political attitudes against climate change may also be a product of the tactics adopted by these elite actors. In particular, the alignment of negative attitudes towards climate change with the existing values and political attitudes of these individuals.

Self-enhancement and conservation values were largely found to be negatively related to climate change concern, behaviors and policy support in this study (see Tables 3.3 and 4.3). Self-enhancement value dimensions prioritize individual success, status and prestige over collective protections and welfare (Schwartz et al., 2010). Climate change could be seen as a threat to this value, as the solutions generally require substantive governmental interventions (Campbell and Kay, 2014), prioritizing the protection of a common good (Emerson and Smith, 2001; Tranby and Hartmann, 2008). Conservation value dimensions further emphasize maintenance of the status quo, and previous ways of doing. Accordingly, climate change can be seen as a threat to these values as well, as the societal transformations required are substantive, directly threatening and replacing a multitude of actions, industries and technologies. Conservation dimension values are also directly related to right leaning political orientations. Jost et al. (2003) suggests that politically conservative ideologies emphasize resistance to change and work towards justifying inequalities, while empirical studies have linked these values with conservative political ideologies (Caprara et al., 2017) and right of center party affiliation (Caprara and Zimbardo, 2004).

The conditions are set for political actors to frame the conservative movement in opposition to climate change, bringing the values, political views and climate change attitudes into alignment. By framing climate change actions as a direct threat to their values - such as limiting an individual's liberties, capacities for monetary and status achievements, and unjustified governmental intrusion into individual, collective and economic practices - conservative elites have the capacity to motivate people not only against climate change, but also bring these people further into their political movement, as these right leaning parties and politicians would be seen as protecting against these

threats. Accordingly, framing climate change as a threat to core values not only brings these forces into alignment - thereby amplifying the (negative) attitudes and behaviors towards climate change- it also further embeds these issues as part of an individual's political social identity, setting strong boundaries for who is 'in' and 'out' of a their group (Iyengar et al., 2012; Colvin et al., 2015; Bliuc et al., 2015).

Furthermore, bringing values and politics into alignment would appear to shield individual attitudes and behaviors from persuasion. People are less likely to accept information that is contradictory to salient political attitudes commonly held by their in-group members, via a process called 'politically motivated reasoning' (Jost et al., 2013). Politically motivated reasoning functions primarily as a form of identity protection, where in keeping beliefs consistent with those shared by the group, a person's membership status is maintained (Kahan, 2015; Cohen, 2003). At the same time, individuals identify more strongly with political ideologies, parties and policies that defend their values against perceived threats (Barnea and Schwartz, 1998; Schwartz et al., 2010).

Accordingly, I posit that the intersection of aligned human values, political views and climate change attitudes can construct a stable,internalized systematization of beliefs, which are amplified via self-reinforcement and protected from change. Thus having the potential for a powerful politically motivating force. We see such examples of political motivation in the US, where climate change skepticism and resistance to climate change policies has been a core component of conservative and Republican political attitudes for the past two decades. But, it is as of yet, unclear whether similar processes have emerged amongst conservatives in Western European and transition states.

Returning to the contemporary rise of climate change as a political issue and green party support in Western European states, these factors present an opportunity left-leaning policy makers and advocates to draw more directly upon values, bringing these forces into alignment. Such an operation would echo previous efforts of conservative actors in the US but work in ways that affect needed change. In this case, political actors could frame their efforts to fight climate change directly towards the self-transcendence value dimensions. As previously noted, research has noted

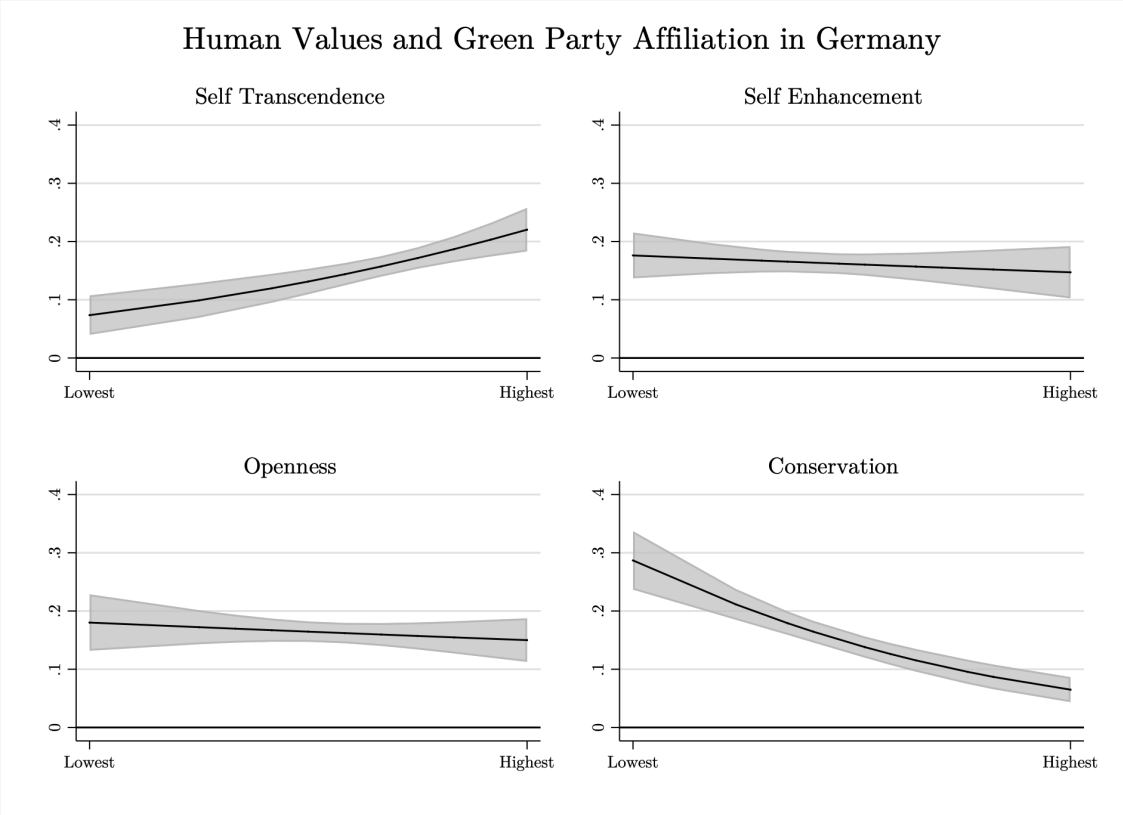


Figure 6.3: Human Values and Green Party Affiliation in Germany
Predicted probabilities of human values on likelihood to be affiliated with the Green Party (Bündnis 90/ Die Grünen), holding all control variables at their observed values and averaging the probabilities for each score of the focal predictor variables (marginal effects). Predicted probabilities are based upon logistic regression of green party affiliation on human values dimensions, controlling for gender, age, education, income, political and social trust, religious belonging and attendance using data from the 2016 ESS.

that self-transcendence (and the closely altruistic) values are positively related to climate change attitudes (Dietz et al., 2007; Corner et al., 2014; Poortinga et al., 2019). While left-leaning political affiliations are associated with self-transcendence values, in particular universalism (Caprara et al., 2017). Further, left-leaning political orientations are also found to be more likely to be concerned about climate change and support climate change policies in Western European states (McCright et al., 2016a; Smith and Mayer, 2018a; Lewis et al., 2018). But, the relationship between values, green party affiliation and climate change attitudes is less established.

Accordingly, I engaged supplementary analyses, looking at specifically at the Green Party (Bündnis 90/ Die Grünen) in Germany. I chose specifically the German Green party, as they are

one of most supported environmentally focused parties in Europe, and have one of the longest histories, first gaining representation in the then West German federal government in 1983. Using data from the 2016 ESS, I find that self-transcendence is positively related to Green Party affiliation in Germany (see Figure 6.3) fitting with expectations. While both Green Party affiliation and self-transcendence value have substantive, direct effects on climate change concern, behaviors and policy support (see Table 6.2). Furthermore, I interact Green Party affiliation by self-transcendence values, finding strong evidence of an amplification effect (see Fig 6.4. I also include interaction effects for two other major left-leaning parties in Germany SPD (social democrats), the Left (left-wing) as well as the center-right party CDU/CSU (Christian democrats). I find the strongest evidence of an amplification effect for the Green and center-left SPD parties, but also noticeable amplification for the far-left and center-right CDU/CSU parties.

Table 6.2: Predicted Probabilities of Value Dimensions and Political Orientation, main effects

	Climate Change Concern	**Reduce Energy**	**Increase Fossil Fuel Taxes**
Party Affiliation			
Green Party Affiliation	0.65	0.16	0.60
Non-Green Party Affiliation	0.43	0.14	0.36
Self-transcendence			
Low	0.25	0.08	0.31
Moderate	0.44	0.14	0.37
High	0.60	0.21	0.43
Observations	2,341	2,364	2,366

Predicted probability calculated at highest value of dependent variables.

This supplementary analysis implies that the effect of alignment is most prominent within parties most closely associated with environmental protectionism, but there is meaningful effect for other parties as well. Two sets of policy-relevant recommendations emerge. For the German Greens, closely align framing on climate change with the core-underlying value sets of their constituency. This recommendation has a clear benefit of not only motivating voters towards an important party policy goal, substantive climate change actions, but also could tie voters closer to

the party, as they will be more likely to be seen as protecting their values. This is akin to the the "win-win" described above for US conservatives (albeit in opposite policy directions). Second, for governing German, center-right CDU/CSU, this is an opportunity to develop their base set of voters. If climate change is the top issue for a majority of German voters, this means that it is important for not only Green and SDP voters, but for a meaningful portion of their own constituency. As such, it is important to not lose these voters to emergent parties, while possibly being able to expand this constituency by framing approaches to climate change in relation to self-transcendence values[20].

In times of increased issue salience of climate change shifting public opinion dynamics presents an opportunity to open a "policy window". Policy windows are opportunities for advocates (policy entrepreneurs) to promote their preferred policy instruments (Kingdon, 1995). If these policy entrepreneurs are to be successful in changing political leadership, policy agendas, governing coalitions and the like, they must act strategically, in order to motivate the most potential resources as quickly as possible, as these ephemeral policy windows occur infrequently, and are open for short periods of time (Kingdon, 1995). Issue framing is a crucial component for social movements, as they function as the key strategy utilized to recruit new members, to motivate current adherents and to mobilize resources (Benford and Snow, 2000). This is particularly the case with issues of the environment. Lakoff (2010) notes that, in general, conservatives actors in the US have been successful in framing issues of the environment, but that there is much space for those on the political-left as well, particular when framing issues directly in relation to individual values. Social movement can amplify these frames by drawing on values related to climate change, such as self-transcendence (Snow et al., 1986).

Climate change social movements can play a crucial role, as they provide a mechanism to develop new political coalitions (Weible and Sabatier, 2017b) and have the capacity for generating rapid shifts in public opinion. Politicians are considered to be responsive to shifting public opinions

[20]As a note of caution, Germany may present a unique political case study, and the implications of these results should not be generalized to other contexts without further empirical investigation.

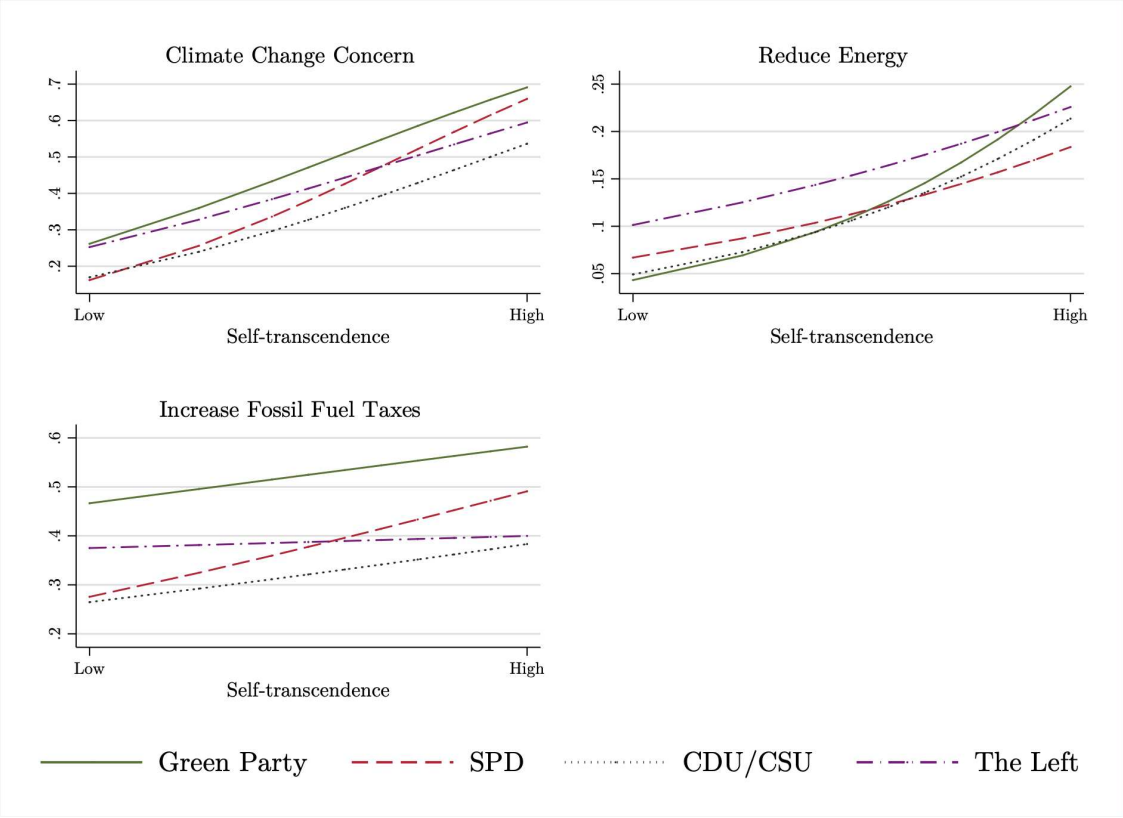


Figure 6.4: Self-transcendence by Party Affiliation Interaction in Germany
Predicted probabilities of self-transcendence by party affiliation interaction in Germany. Predicted probabilities are calculated for four major German political parties, the Greens (Bündnis 90/ Die Grünen), the center-left SDP (Sozialdemokratische Partei Deutschlands), the far-left party the Left (die Linke) and center-right coalition party CDU/CSU. These probabilities are calculated holding all control variables at their observed values and averaging the probabilities for each score of the focal predictor variables (marginal effects). Predicted probabilities are based upon logistic regression of green party affiliation on human values dimensions, controlling for gender, age, education, income, political and social trust, religious belonging and attendance using data from the 2016 ESS.

Soroka and Wlezien (2010), and if these changes are large, they carry the potential to punctuate previously sticky institutions, such as environmental regulatory regimes, resulting in substantive policy shifts (Baumgartner and Jones, 2010).

Recently, most developed democratic states have experienced a rise of right-wing populist movements. Contemporary right-wing populist (RWP) parties are often seen as a potential hindrance to developing climate policies Lockwood (2018), but may not always be the case. Unlike more traditional conservative political movements, there is nothing inherent about populist movements that makes opposed to climate change actions. Mudde (2004) notes that RWP movements broadly exhibit three traits - anti-eliteism, 'us-versus them', and people centeredness - but all are primarily focused motivating people around an issue that is 'popular'. That is to say, there is nothing naturally conservative in ideology within these movements, RWP populist movements often adopt many issues that are in ideological opposition to each other, but rather frame their politics around what the public considers to be popular, reflecting the 'will' of the people against the elites Mudde (2004). Accordingly, some populist parties, such as the 'Five Star Movement' in Italy, have adopted progressive climate policy stances, while others have adopted much of the same language of climate change skepticism developed by the conservative movement in the US, like the AfD in Germany.

In sum, there is great potential in the role of human values in shifting or, at least, moderating political actors, policies and institutions. Those wishing to stimulate action should pay greater attention to framing issues in ways that call upon individual values.

6.4 Social Tipping Dynamics

Recently, much scholarship has developed around the concept of social tipping. Broadly, these concepts revolve around theories that describe how a relatively small shift can affect large, systematic change (Milkoreit et al., 2018; Otto et al., 2020a). The concept of social tipping itself is not particularly new. Schelling (1971) famously developed a theory of social tipping to explain patterns of racial neighborhood segregation, while Granovetter (1978) modelled collective action

as a form of social tipping, where participation in a riot or strike is dependent upon passing individual thresholds. Furthermore, tipping dynamics have been adopted to explain political revolutions (Kuran, 1989) and policy regime changes/stability (Gould and Eldredge, 1993). The process of social 'tipping points' has become popularized by the Malcolm Gladwell 2000, where he explores contagion-like effects in fads and fashions.

Social tipping processes have received much recent attention as a potential mechanism for rapid transformations in relation to climate change, or sustainability more broadly (Kopp et al., 2016; Milkoreit et al., 2018; Lenton et al., 2019; Farmer et al., 2019; Otto et al., 2020a; Lenton, 2020). Milkoreit et al. (2018) provides a definition for social tipping as: "the point or threshold at which small quantitative changes in the system trigger a non-linear change process that is driven by system-internal feedback mechanisms and inevitably leads to a qualitatively different state of the system, which is often irreversible." This definition builds off of recent findings from the climate sciences (Lenton et al., 2008; Schellnhuber, 2009), where a potentially small change can affect a systemic shift to a new state, largely driven by positive internal-feedback mechanisms.

But, there are several key distinctions in tipping processes unique to social systems that are missing from this definition. Social systems, and the actors embedded within them, do not exist in relative isolation from each other, and rather are deeply embedded and overlapping. Furthermore, changes within social systems, or within their broader environment, can make a system more or less vulnerable to changes, such that under one set of circumstances, and small perturbation within the system can affect large changes, while having no observable effects in others. Importantly, social tipping processes also carry agential capacity (Otto et al., 2020b), meaning that actors can proactively attempt to make changes to the system itself (such as via social movements or policy initiatives).

Therefore, social tipping cannot be merely understood via a single point, or threshold, but rather more comprehensively as a dynamic process of change. Much attention is often paid to a specific triggering event that initiates the social tipping, but it is rarely one single actor or action which accounts for the entirety of the tipping process. Rather, to understand the process of social

tipping, a full account has to be made of all of the previous and related processes that have made the system more or less vulnerable to changes. This process tracing should account for the actions and normative/structural changes that have led to such rapid system changes. Accordingly, such an analysis of social tipping processes can likely only be performed in hindsight, as the complexity or such social dynamics are difficult to identify in real-time.

But, this literature does commonly identify how changes, even potentially very small ones, to individual-level attitudes and behaviors have the capacity to effect large, systemic change. Drawing from modelling techniques, the proportion of the population required the engage in a behavioral or normative change before the majority of the population becomes willing to do so as well is comparatively low. Similar to Granovetter (1978), Centola et al. (2018) suggests that a "critical mass phenomenon" is possible when 20–30% of a population becomes engaged in an activity, thereby providing sufficient proportion to 'tip' the majority of the society into the same actions. Rockström et al. (2017) note these "Pareto effects" within the context of decarbonization societal transformations as well.

As actors have agency within social tipping dynamics, climate change activists and political stakeholders could focus on trying to trigger normatively "positive" tipping processes Tàbara et al. (2018); Farmer et al. (2019). In order to do so, these actors could focus changing the broader conditions surrounding climate change attitudes and behaviors. This could involve increasing social activism, concerns and attitudes for climate change, or support for climate change policies or parties supportive of climate change actions. This dissertation finds one such mechanism for increasing attitudes and behaviors in relation to climate change.

These findings suggest that framing climate change in relation to self-transcendence values, such as communications and policy platforms aimed at protecting and respecting the welfare of all peoples, could lead to amplifying effects on climate change concern and policy support. For people on the political left in Western European states, there is roughly a 0.15 to 0.20 difference in predicted probabilities to be concerned about climate change for between medium and high levels of self-transcendence (see Figure 3.3). Similarly, there is a roughly 0.10-0.15 difference in

the predicted probability of climate change policy support. Drawing upon the self-transcendence values of those on the political left has great potential move the system closer to a vulnerable state, or even in some cases, trigger rapid systemic changes.

Due to the complexity of social systems, it is largely unclear whether such a shift in climate change attitudes and behaviors can deterministically affect structural changes in any given system, nor is it clear that any particular extreme weather event, social movement or political action could trigger such changes. Rather, sometimes the source of broad changes can originate from very unlikely sources, such as a single Swedish teenager protesting for climate change actions. Effecting shifts in the broader climate change attitudes and behaviors can make a system more vulnerable such that an event will occur. Accordingly, any pathway or mechanism with potential to substantively changing attitudes and behaviors could be engaged by climate change activists and political stakeholders, as the cumulative effect of all of these changes could result in societal transformation they seek.

6.5 Limitations and Future Research

The role of human values in shaping climate change attitudes and behaviors clearly needs further research. There are still relatively limited cross-national data, with the ESS being the only publicly available, survey data set. Given the substantive importance of these indicators, in particular self-transcendence values, human values need to be accounted for in future climate change attitudes and behaviors focused survey programs, allowing for greater research in this field. Similarly, future research would also need to account for the interactive role of human values and political factors. My analysis provides little evidence of a mediating or suppressor effect, so analyses excluding human values are not inherently rendered invalid. Rather, the observed interactive effect provides patterns of where the role of political factors can be amplified or dampened, based upon the human values, and therefore, provides importance contribution to future research in this field.

Further, the field could greatly benefit from qualitative analyses into the direct and interactive role of human values. Such research would provide a framework for more robust theory building, where the specific ways in which values are drawn upon for climate change attitudes and behaviors. The quantitative measures for human values are designed to be quite general (so they can be utilized universally), and as such, there is a possibility for far greater enrichment of these findings.

Similarly, recent research has began to question to presumed causal relationship between human values and political attitudes. Theory suggests that values are always exogenous to attitudes (Rokeach, 1973; Schwartz, 1992; Hitlin and Piliavin, 2004), but in the case of highly politicized and strongly held attitudes, it appears that these attitudes can actually affect a change on an individual's values (Eisentraut, 2019). This study finds that values are not mediated by political orientation, but if an issue becomes highly politicized (like the beliefs surrounding climate change in English-speaking states) it is possible that an individual will change their values to be in alignment with their attitudes, and not the other way around as is largely presumed. This is an important theoretical component of values-attitudes-action research, and need to be further investigated, likely via the adoption of longitudinal data sources.

Lastly, there needs to be more research on transition states, and developing states in general. These are areas that are most likely to be disproportionately affected by climate change. Further, the international community is asking developing states to find pathways to development that are outside methods that have historically been used (the comparatively cheaper carbon-based industrialization). This appears to be an unfair trade, and more research is required to know how people perceive the effects of climate change, how they plan to adapt, what they think of climate change policies, and how these might align with values in the contexts, too. As of current, the vast majority of the literature focuses on developed, Western states, and these findings reiterate recent research that shows the drivers and key indicators are not directly transferable to transitioning and developing states. As such, comparatively more attention needs to be paid to these areas.

While specific limitations are noted at the end of each chapter, there are some broader limitations to the entirety of this dissertation project. First, the generalizability of these findings are limited to the regions and countries included within this study. There are many avenues of potential future research, to support the finding of an interaction between human values and political factors in other contexts. But, given the unique contexts of other locales, such as the United States, these findings would first need to be replicated.

Furthermore, the ESS contains a comparatively limited set of transition state countries, seven, all of which are currently within the European Union. Therefore, the recent experiences, political stability and economic development of these states may be substantively different than those in Central Asia or outside of the EU. As such, the findings should be treated with caution before being generalized to a broader set of transition states. Similarly, there may be greater differentiation within Western European states than this study's country grouping allows for. Marquart-Pyatt et al. (2019) utilizes the 2016 ESS, but breaks out countries by their welfare state groupings, find some patterns of differences between liberal, social democratic and corporatist states.

Lastly, as previously noted, this study is limited by including only three, single item indicators for concern, behaviors and policy support. There is strong evidence that there is variance not only between these types of indicators of climate change attitudes and behaviors, but within them as well. Therefore, further research is needed to substantiate these results with a broader array of indicators, to better differentiate the patterns within and between Western European and transition states.

Bibliography

Abbott, Pamela and Matthias Beck. 2003. "The post-soviet health crisis: A sociological explanation." *East European Politics and Societies* 21:219–258.

Abelson, Robert P. 1959. "Modes of resolution of belief dilemmas." *Journal of Conflict Resolution* 3:343–352.

Abramowitz, Alan I. and Kyle L. Saunders. 2006. "Exploring the Bases of Partisanship in the American Electorate: Social Identity vs. Ideology." *Political Research Quarterly* 59:175–187.

Ajzen, Icek. 1985. "From Intentions to Actions: A Theory of Planned Behavior." In *Action Control: From Cognition to Behavior*, SSSP Springer Series in Social Psychology, pp. 11–39. Berlin: Springer.

Ajzen, Icek. 1991. "The theory of planned behavior." *Organizational Behavior and Human Decision Processes* 50:179–211.

Ajzen, Icek. 2002. "Residual Effects of Past on Later Behavior: Habituation and Reasoned Action Perspectives." *Personality and Social Psychology Review* 6:107–122.

Akerlof, Karen, Edward W. Maibach, Dennis Fitzgerald, Andrew Y. Cedeno, and Amanda Neuman. 2013. "Do people "personally experience" global warming, and if so how, and does it matter?" *Global Environmental Change* 23:81–91.

Alford, Robert. 1967. "Class voting in Anglo-American political systems." In *Party Systems and Voter Alignments: Cross-national perspectives*, pp. 67–93. New York: Free Press.

Amrhein, Valentin, Sander Greenland, and Blake McShane. 2019. "Scientists rise up against statistical significance." *Nature* 567:305.

Arbuckle, Matthew B. and David M. Konisky. 2015. "The Role of Religion in Environmental Attitudes." *Social Science Quarterly* 96:1244–1263.

Aspelund, Anna, Marjaana Lindeman, and Markku Verkasalo. 2013. "Political Conservatism and Left—Right Orientation in 28 Eastern and Western European Countries." *Political Psychology* 34:409–417.

Auyero, Javier and Debora Swistun. 2008. "The Social Production of Toxic Uncertainty." *American Sociological Review* 73:357–379.

Bardi, Anat and Robin Goodwin. 2011. "The Dual Route to Value Change: Individual Processes and Cultural Moderators." *Journal of Cross-Cultural Psychology* 42:271–287.

Bardi, Anat and Shalom H. Schwartz. 1996. "Relations among Sociopolitical Values in Eastern Europe: Effects of the Communist Experience?" *Political Psychology* 17:525–549.

Barnea, Marina F. and Shalom H. Schwartz. 1998. "Values and Voting." *Political Psychology* 19:17–40.

Baron, Reuben and David Kenny. 1986. "The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations." *Journal of Personality and Social Psychology* 51:1173–1182.

Baumgartner, Frank R. and Bryan D. Jones. 2010. *Agendas and instability in American politics*. Chicago: University of Chicago Press.

Beasley, Ryan K. and Mark R. Joslyn. 2001. "Cognitive Dissonance and Post-Decision Attitude Change in Six Presidential Elections." *Political Psychology* 22:521–540.

Benford, Robert D. and David A. Snow. 2000. "Framing Processes and Social Movements: An Overview and Assessment." *Annual Review of Sociology* 26:611–639.

Berend, Ivan and Tibor Iván Berend. 1996. *Central and Eastern Europe, 1944-1993: detour from the periphery to the periphery*, volume 1. Cambridge University Press.

Bliuc, Ana-Maria, Craig McGarty, Emma F Thomas, Girish Lala, Mariette Berndsen, and RoseAnne Misajon. 2015. "Public division about climate change rooted in conflicting socio-political identities." *Nature Climate Change* 5:226.

Brambor, Thomas, William Roberts Clark, and Matt Golder. 2006. "Understanding Interaction Models: Improving Empirical Analyses." *Political Analysis* 14:63–82.

Brechin, Steven R. 1999. "Objective Problems, Subjective Values, and Global Environmentalism: Evaluating the Postmaterialist Argument and Challenging a New Explanation." *Social Science Quarterly* 80:793–809.

Breen, Richard, Kristian Bernt Karlson, and Anders Holm. 2013. "Total, Direct, and Indirect Effects in Logit and Probit Models." *Sociological Methods & Research* 42:164–191.

Breen, Richard, Kristian Bernt Karlson, and Anders Holm. 2018. "Interpreting and Understanding Logits, Probits, and Other Nonlinear Probability Models." *Annual Review of Sociology* 44:39–54.

Brewer, Marilynn and Rupert Brown. 1998. "Intergroup Relations." In *Handbook of Social Psychology*, edited by Daniel Gilbert, Susan Fiske, and Gardner Lindzey, volume 2, pp. 554–594. Boston: McGraw-Hill, 4th edition edition.

Brizga, Janis, Kuishuang Feng, and Klaus Hubacek. 2013. "Drivers of CO2 emissions in the former Soviet Union: A country level IPAT analysis from 1990 to 2010." *Energy* 59:743–753.

Brody, Samuel D., Sammy Zahran, Arnold Vedlitz, and Himanshu Grover. 2008. "Examining the Relationship Between Physical Vulnerability and Public Perceptions of Global Climate Change in the United States." *Environment and Behavior* 40:72–95.

Broomell, Stephen B., David V. Budescu, and Han-Hui Por. 2015. "Personal experience with climate change predicts intentions to act." *Global Environmental Change* 32:67–73.

Brulle, Robert J., Jason Carmichael, and J. Craig Jenkins. 2012. "Shifting public opinion on climate change: an empirical assessment of factors influencing concern over climate change in the U.S., 2002–2010." *Climatic Change* 114:169–188.

Burawoy, Michael, Pavel Krotov, and Tatyana Lytkina. 2000. "Involution and Destitution in Capitalist Russia." *Ethnography* 1:43–65.

Campbell, Troy H. and Aaron C. Kay. 2014. "Solution aversion: On the relation between ideology and motivated disbelief." *Journal of Personality and Social Psychology* 107:809–824.

Caprara, Gian Vittorio, Shalom Schwartz, Cristina Capanna, Michele Vecchione, and Claudio Barbaranelli. 2006. "Personality and Politics: Values, Traits, and Political Choice." *Political Psychology* 27:1–28.

Caprara, Gian Vittorio, Michele Vecchione, Shalom H. Schwartz, Harald Schoen, Paul G. Bain, Jo Silvester, Jan Cieciuch, Vassilis Pavlopoulos, Gabriel Bianchi, Hasan Kirmanoglu, Cem Baslevent, Cătălin Mamali, Jorge Manzi, Miyuki Katayama, Tetyana Posnova, Carmen Tabernero, Claudio Torres, Markku Verkasalo, Jan-Erik Lönnqvist, Eva Vondráková, and Maria Giovanna Caprara. 2017. "Basic Values, Ideological Self-Placement, and Voting: A Cross-Cultural Study." *Cross-Cultural Research* 51:388–411.

Caprara, Gian Vittorio and Philip G. Zimbardo. 2004. "Personalizing politics: a congruency model of political preference." *The American Psychologist* 59:581–594.

Capstick, Stuart, Lorraine Whitmarsh, Wouter Poortinga, Nick Pidgeon, and Paul Upham. 2015. "International trends in public perceptions of climate change over the past quarter century." *Wiley Interdisciplinary Reviews: Climate Change* 6:35–61.

Carlton, J. Stuart, Amber S. Mase, Cody L. Knutson, Maria Carmen Lemos, Tonya Haigh, Dennis P. Todey, and Linda S. Prokopy. 2016. "The effects of extreme drought on climate change beliefs, risk perceptions, and adaptation attitudes." *Climatic Change* 135:211–226.

Carmin, JoAnn and Adam Fagan. 2010. "Environmental mobilisation and organisations in post-socialist Europe and the former Soviet Union." *Environmental Politics* 19:689–707.

Carter, Neil. 2014. "The politics of climate change in the UK." *Climate Change* 5:423–433.

Carter, Neil and Ben Clements. 2015. "From 'greenest government ever' to 'get rid of all the green crap': David Cameron, the Conservatives and the environment." *British Politics* 10:204–225.

Centola, Damon, Joshua Becker, Devon Brackbill, and Andrea Baronchelli. 2018. "Experimental evidence for tipping points in social convention." *Science* 360:1116–1119. tex.publisher: American Association for the Advancement of Science.

Cetkauskaite, Anolda and Simo Laakkonen. 2019. "Water Pollution and Protection in the Lithuanian Soviet Republic." In *Nature and the Iron Curtain*, edited by Astrid Mignon Kirchhof and J. R. McNeill, Environmental Policy and Social Movements in Communist and Capitalist Countries, 1945–1990, pp. 36–54. University of Pittsburgh Press.

Chaisty, Paul and Stephen Whitefield. 2015. "Attitudes towards the environment: are post-communist societies (still) different?" *Environmental Politics* 24:598–616.

Chatard, Armand and Leila Selimbegovic. 2007. "The Impact of Higher Education on Egalitarian Attitudes and Values: Contextual and Cultural Determinants." *Social and Personality Psychology Compass* 1:541–556.

Clements, John M., Aaron M. McCright, and Chenyang Xiao. 2014. "Green Christians? An Empirical Examination of Environmental Concern Within the U.S. General Public." *Organization & Environment* 27:85–102.

Cohen, Geoffrey. 2003. "Party Over Policy: The Dominating Impact of Group Influence on Political Beliefs." *Journal of Personality and Social Psychology* 85:808–822.

Colvin, R. M., G. Bradd Witt, and Justine Lacey. 2015. "The social identity approach to understanding socio-political conflict in environmental and natural resources management." *Global Environmental Change* 34:237–246.

Converse, Philip. 1964. "The Nature of Belief Systems in Mass Publics." In *Ideology and Discontent*. Glencoe, IL: Free Press.

Converse, Philip. 1976. *The Dynamics of Party Support: Cohort-analyzing Party Identification*. Beverly Hills, CA: Sage.

Cook, John, Naomi Oreskes, Peter T. Doran, William R. L. Anderegg, Bart Verheggen, Ed W. Maibach, J. Stuart Carlton, Stephan Lewandowsky, Andrew G. Skuce, Sarah A. Green, Dana Nuccitelli, Peter Jacobs, Mark Richardson, Bärbel Winkler, Rob Painting, and Ken Rice. 2016. "Consensus on consensus: a synthesis of consensus estimates on human-caused global warming." *Environmental Research Letters* 11:048002. Publisher: IOP Publishing.

Cooper, Joel. 2012. "Cognitive Dissonance Theory." In *Handbook of Theories of Social Psychology: Volume 1*, edited by Paul Van Lange, Arie Kruglanski, and Tory Higgins, pp. 377–397. London: SAGE Publications Ltd.

Corner, Adam, Ezra Markowitz, and Nick Pidgeon. 2014. "Public engagement with climate change: the role of human values." *Wiley Interdisciplinary Reviews: Climate Change* 5:411–422.

Coumel, Laurent. 2019. "Building a Soviet Eco-Power while Looking at the Capitalist World." In *Nature and the Iron Curtain*, edited by Astrid Mignon Kirchhof and J. R. McNeill, Environmental Policy and Social Movements in Communist and Capitalist Countries, 1945–1990, pp. 17–35. University of Pittsburgh Press.

Creutzig, Felix, Joyashree Roy, William F. Lamb, Inês M. L. Azevedo, Wändi Bruine de Bruin, Holger Dalkmann, Oreane Y. Edelenbosch, Frank W. Geels, Arnulf Grubler, Cameron Hepburn, Edgar G. Hertwich, Radhika Khosla, Linus Mattauch, Jan C. Minx, Anjali Ramakrishnan,

Narasimha D. Rao, Julia K. Steinberger, Massimo Tavoni, Diana Ürge Vorsatz, and Elke U. Weber. 2018. "Towards demand-side solutions for mitigating climate change." *Nature Climate Change* 8:260–263. Number: 4 Publisher: Nature Publishing Group.

Davidov, Eldad. 2008. "A cross-country and cross-time comparison of the human values measurements with the second round of the European Social Survey." *Survey Research Methods* 2:33–46. Conference Name: Survey Research Methods Meeting Name: Survey Research Methods Number: 1 Publisher: European Survey Research Association.

Davidov, Eldad, Bart Meuleman, Jaak Billiet, and Peter Schmidt. 2008a. "Values and Support for Immigration: A Cross-Country Comparison." *European Sociological Review* 24:583–599.

Davidov, Eldad, Peter Schmidt, and Shalom H. Schwartz. 2008b. "Bringing Values Back InThe Adequacy of the European Social Survey to Measure Values in 20 Countries." *Public Opinion Quarterly* 72:420–445.

de Groot, Judith I. M. and Linda Steg. 2008. "Value Orientations to Explain Beliefs Related to Environmental Significant Behavior: How to Measure Egoistic, Altruistic, and Biospheric Value Orientations." *Environment and Behavior* 40:330–354.

Delhey, Jan and Kenneth Newton. 2005. "Predicting Cross-National Levels of Social Trust: Global Pattern or Nordic Exceptionalism?" *European Sociological Review* 21:311–327.

Demski, Christina, Stuart Capstick, Nick Pidgeon, Robert Gennaro Sposato, and Alexa Spence. 2017. "Experience of extreme weather affects climate change mitigation and adaptation responses." *Climatic Change* 140:149–164.

Diekmann, Andreas and Peter Preisendörfer. 2003. "Green and Greenback: The Behavioral Effects of Environmental Attitudes in Low-Cost and High-Cost Situations." *Rationality and Society* 15:441–472.

Dietz, Thomas, Amy Dan, and Rachael Shwom. 2007. "Support for Climate Change Policy: Social Psychological and Social Structural Influences*." *Rural Sociology* 72:185–214.

Dietz, Thomas, Amy Fitzgerald, and Rachael Shwom. 2005. "Environmental Values." *Annual Review of Environment and Resources* 30:335–372.

Dietz, Thomas, Linda Kalof, and Paul C. Stern. 2002. "Gender, Values, and Environmentalism." *Social Science Quarterly* 83:353–364.

Ding, Ding, Edward W. Maibach, Xiaoquan Zhao, Connie Roser-Renouf, and Anthony Leiserowitz. 2011. "Support for climate policy and societal action are linked to perceptions about scientific agreement." *Nature Climate Change* 1:462–466.

Dominick, Raymond. 1998. "Capitalism, communism, and environmental protection: lessons from the German experience." *Environmental History* 3:311–332. ISBN: 1084-5453 Publisher: JSTOR.

Dunlap, Riley, Aaron McCright, and Jerrod Yarosh. 2016. "The Political Divide on Climate Change: Partisan Polarization Widens in the U.S." *Environment: Science and Policy for Sustainable Development* 58:4–23.

Dunlap, Riley E. 1975. "The Impact of Political Orientation on Environmental Actions." *Environment and Behavior* 7:428–454.

Dunlap, Riley E. and Kent D. Van Liere. 1978. "The "New Environmental Paradigm"." *The Journal of Environmental Education* 9:10–19.

Dunlap, Riley E., Kent D. Van Liere, Angela G. Mertig, and Robert Emmet Jones. 2000. "New Trends in Measuring Environmental Attitudes: Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale." *Journal of Social Issues* 56:425–442.

Dunlap, Riley E., Kent Van Liere, Angela G. Mertig, and Robert Emmet Jones. 2008. "The New Environmental Paradigm Scale: From Marginality to Worldwide Use." *The Journal of Environmental Education* 40:3–18.

Dunlap, Riley E. and Richard York. 2008. "The Globalization of Environmental Concern and the Limits of the Postmaterialist Values Explanation: Evidence from Four Multinational Surveys." *Sociological Quarterly* 49:529–563.

Echavarren, José M. 2017. "From Objective Environmental Problems to Subjective Environmental Concern: A Multilevel Analysis Using 30 Indicators of Environmental Quality." *Society & Natural Resources* 30:145–159.

Eisentraut, Marcus. 2019. "Explaining attitudes toward minority groups with human values in Germany - What is the direction of causality?" *Social Science Research* 84:102324.

Emerson, Michael O. and Christian Smith. 2001. *Divided by faith: Evangelical religion and the problem of race in America*. USA: Oxford University Press.

Eurobarometer. 2019. "The 2019 Post-Electoral Survey: Have European Elections Entered a New Dimension?" Technical Report Eurobarometer Survey 91.5, European Parliament, Brussels.

European Social Survey. 2016a. "ESS8 - 2016 Documentation Report." Technical report, Norwegian Centre for Research Data, Norway.

European Social Survey. 2016b. "European Social Survey Round 8 Data: Edition 2.0." Technical report, Norwegian Centre for Research Data, Norway.

Evans, Geoffrey. 2000. "The Continued Significance of Class Voting." *Annual Review of Political Science* 3:401–417.

Fagin, Adam and Petr Jehlička. 1998. "Sustainable development in the Czech Republic: A doomed process?" *Environmental Politics* 7:113–128.

Fairbrother, Malcolm. 2013. "Rich People, Poor People, and Environmental Concern: Evidence across Nations and Time." *European Sociological Review* 29:910–922.

Fairbrother, Malcolm. 2016. "Trust and Public Support for Environmental Protection in Diverse National Contexts." *Sociological Science* 3:359–382.

Farmer, J. D., C. Hepburn, M. C. Ives, T. Hale, T. Wetzer, P. Mealy, R. Rafaty, S. Srivastav, and R. Way. 2019. "Sensitive intervention points in the post-carbon transition." *Science* 364:132–134.

Farrell, Justin. 2016. "Corporate funding and ideological polarization about climate change." *Proceedings of the National Academy of Sciences* 113:92–97.

Feather, Norman T. 1975. *Values in education and society*. New York: Free Press.

Feinberg, Matthew, Alexa M. Tullett, Zachary Mensch, William Hart, and Sara Gottlieb. 2017. "The political reference point: How geography shapes political identity." *PLOS ONE* 12:e0171497. Publisher: Public Library of Science.

Feinberg, Matthew and Robb Willer. 2011. "Apocalypse Soon?: Dire Messages Reduce Belief in Global Warming by Contradicting Just-World Beliefs." *Psychological Science* 22:34–38.

Feldman, Lauren, Edward W. Maibach, Connie Roser-Renouf, and Anthony Leiserowitz. 2012. "Climate on Cable: The Nature and Impact of Global Warming Coverage on Fox News, CNN, and MSNBC." *The International Journal of Press/Politics* 17:3–31.

Feldman, Stanley. 1988. "Structure and Consistency in Public Opinion: the Role of Core Beliefs and Values." *American Journal of Political Science* 32:416–440.

Feldman, Stanley. 2003. "Values, ideology, and the structure of political attitudes." In *Oxford Handbook of Political Psychology*, edited by David Sears, Leonie Huddy, and Robert Jervis, pp. 477–508. New York: Oxford University Press.

Festinger, Leon. 1957. *A theory of cognitive dissonance*. Evanston, IL: Row and Peterson.

Fischer, Ronald. 2017. "From Values to Behavior and from Behavior to Values." In *Values and Behavior: Taking a Cross Cultural Perspective*, edited by Sonia Roccas and Lilach Sagiv, pp. 219–235. Cham: Springer International Publishing.

Frank, Kenneth A. 2000. "Impact of a Confounding Variable on a Regression Coefficient." *Sociological Methods & Research* 29:147–194. Publisher: SAGE Publications Inc.

Frank, Kenneth A., Spiro J. Maroulis, Minh Q. Duong, and Benjamin M. Kelcey. 2013. "What Would It Take to Change an Inference? Using Rubin's Causal Model to Interpret the Robustness of Causal Inferences." *Educational Evaluation and Policy Analysis* 35:437–460. Publisher: American Educational Research Association.

Franzen, Axel. 2003. "Environmental Attitudes in International Comparison: An Analysis of the ISSP Surveys 1993 and 2000*." *Social Science Quarterly* 84:297–308.

Franzen, Axel and Dominikus Vogl. 2013. "Two decades of measuring environmental attitudes: A comparative analysis of 33 countries." *Global Environmental Change* 23:1001–1008.

Frink, Dwight D., Gregory M. Rose, and Ann L. Canty. 2004. "The Effects of Values on Worries Associated With Acute Disaster: A Naturally Occurring Quasi-Experiment1." *Journal of Applied Social Psychology* 34:85–107.

Gallup. 2019. "Most Important Problem." Technical report, Gallup Inc., Washington DC.

Gelissen, John. 2007. "Explaining Popular Support for Environmental Protection: A Multilevel Analysis of 50 Nations." *Environment and Behavior* 39:392–415.

Gerber, Alan S., Gregory A. Huber, and Ebonya Washington. 2010. "Party Affiliation, Partisanship, and Political Beliefs: A Field Experiment." *American Political Science Review* 104:720–744.

Gerring, John. 1997. "Ideology: A Definitional Analysis." *Political Research Quarterly* 50:957–994.

Gieryn, Thomas F. 2000. "A Space for Place in Sociology." *Annual Review of Sociology* 26:463–496. Publisher: Annual Reviews.

Gilson, Lucy. 2003. "Trust and the development of health care as a social institution." *Social Science & Medicine* 56:1453–1468.

Gladwell, Malcolm. 2000. *The tipping point: How little things can make a big difference*. Boston, MA: Little, Brown and Company.

Glassheim, Eagle. 2019. "Building a Socialist Environment." In *Nature and the Iron Curtain*, edited by Astrid Mignon Kirchhof and J. R. McNeill, Environmental Policy and Social Movements in Communist and Capitalist Countries, 1945–1990, pp. 137–150. University of Pittsburgh Press.

Goodwin, Robin and Stanley Gaines Jr. 2009. "Terrorism perception and its consequences following the 7 July 2005 London bombings." *Behavioral Sciences of Terrorism and Political Aggression* 1:50–65.

Gould, Stephan Jay and Niles Eldredge. 1993. "Punctuated equilibrium comes of age." *Nature* 366:223.

Granovetter, Mark. 1978. "Threshold models of collective behavior." *American journal of sociology* 83:1420–1443.

Green, Donald, Bradley Palmquist, and Eric Schickler. 2002. *Partisan Hearts and Minds: Political Parties and the Social Identities of Voters*. New Haven: Yale University Press.

Greene, Steven. 2004. "Social Identity Theory and Party Identification*." *Social Science Quarterly* 85:136–153.

Guber, Deborah Lynn. 2013. "A Cooling Climate for Change? Party Polarization and the Politics of Global Warming." *American Behavioral Scientist* 57:93–115.

Guth, James L., John C. Green, Lyman A. Kellstedt, and Corwin E. Smidt. 1995. "Faith and the Environment: Religious Beliefs and Attitudes on Environmental Policy." *American Journal of Political Science* 39:364–382.

Guy, Sophie, Yoshihisa Kashima, Iain Walker, and Saffron O'Neill. 2014. "Investigating the effects of knowledge and ideology on climate change beliefs." *European Journal of Social Psychology* 44:421–429.

Hadler, Markus and Patrick Wohlkonig. 2012. "Environmental Behaviours in the Czech Republic, Austria and Germany between 1993 and 2010: Macro-Level Trends and Individual-Level Determinants Compar." *Czech Sociological Review* 48:467–493.

Haller, Max and Markus Hadler. 2008. "Dispositions to Act in Favor of the Environment: Fatalism and Readiness to Make Sacrifices in a Cross-National Perspective 1." *Sociological Forum* 23:281–311.

Hamilton, Lawrence C. 2011. "Education, politics and opinions about climate change evidence for interaction effects." *Climatic Change* 104:231–242.

Hamilton, Lawrence C. 2015. "Polar facts in the age of polarization." *Polar Geography* 38:89–106.

Hamilton, Lawrence C. 2016. "Public Awareness of the Scientific Consensus on Climate." *SAGE Open* 6:2158244016676296.

Hamilton, Lawrence C., Matthew J. Cutler, and Andrew Schaefer. 2012. "Public knowledge and concern about polar-region warming." *Polar Geography* 35:155–168.

Hamilton, Lawrence C., Joel Hartter, and Kei Saito. 2015. "Trust in Scientists on Climate Change and Vaccines." *SAGE Open* 5:2158244015602752.

Hamilton, Lawrence C. and Barry D. Keim. 2009. "Regional variation in perceptions about climate change." *International Journal of Climatology* 29:2348–2352.

Hamilton, Lawrence C. and Kei Saito. 2015. "A four-party view of US environmental concern." *Environmental Politics* 24:212–227.

Hamilton, Lawrence C. and Mary D. Stampone. 2013. "Blowin' in the Wind: Short-Term Weather and Belief in Anthropogenic Climate Change." *Weather, Climate, and Society* 5:112–119.

Harring, Niklas. 2014. "Corruption, inequalities and the perceived effectiveness of economic pro-environmental policy instruments: A European cross-national study." *Environmental Science & Policy* 39:119–128.

Hastings, Orestes P. and Kassandra K. Roeser. 2020. "Happiness in Hard Times: Does Religion Buffer the Negative Effect of Unemployment on Happiness?" *Social Forces* .

Heath, Yuko and Robert Gifford. 2006. "Free-Market Ideology and Environmental Degradation: The Case of Belief in Global Climate Change." *Environment and Behavior* 38:48–71.

Heberlein, Thomas A. 1972. "The Land Ethic Realized: Some Social Psychological Explanations for Changing Environmental Attitudes1." *Journal of Social Issues* 28:79–87.

Hechter, Michael, Lynn Nadel, and Richard Michod. 1993. *The Origins of Values*. New York: De Gruyter.

Hempel, Lynn M., Kelsea MacIlroy, and Keith Smith. 2014. "Framing the Environment: The Cornwall Alliance, Laissez-faire Environmentalism, and the Green Dragon." *Journal of the sociology and theory of religion* .

Hitlin, Steven. 2008. "Processes Of Conscience: How The Moral Mind Works." In *Moral Selves, Evil Selves: The Social Psychology of Conscience*, edited by Steven Hitlin, pp. 75–92. New York: Palgrave Macmillan US.

Hitlin, Steven and Jane Allyn Piliavin. 2004. "Values: Reviving a Dormant Concept." *Annual Review of Sociology* 30:359–393.

Hmielowski, Jay D., Lauren Feldman, Teresa A. Myers, Anthony Leiserowitz, and Edward Maibach. 2014. "An attack on science? Media use, trust in scientists, and perceptions of global warming." *Public Understanding of Science* 23:866–883.

Hoffman, Andrew J. 2011. "The growing climate divide." *Nature Climate Change* 1:195–196. Number: 4 Publisher: Nature Publishing Group.

Hofstede, Geert. 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations Across Nations*. Thousand Oaks, CA: Sage, 2nd edition.

Hornsey, Matthew J., Emily A. Harris, Paul G. Bain, and Kelly S. Fielding. 2016. "Meta-analyses of the determinants and outcomes of belief in climate change." *Nature Climate Change* 6:622–626.

Hornsey, Matthew J., Emily A. Harris, and Kelly S. Fielding. 2018. "Relationships among conspiratorial beliefs, conservatism and climate scepticism across nations." *Nature Climate Change* 8:614–620.

Howe, Peter D., Ezra M. Markowitz, Tien Ming Lee, Chia-Ying Ko, and Anthony Leiserowitz. 2013. "Global perceptions of local temperature change." *Nature Climate Change* 3:352–356. Number: 4 Publisher: Nature Publishing Group.

Huebner, Robert B. and Mark W. Lipsey. 1981. "The Relationship of Three Measures of Locus of Control to Environment Activism." *Basic and Applied Social Psychology* 2:45–58.

Inglehart, Ronald. 1977. "Values, Objective Needs, and Subjective Satisfaction Among Western Publics." *Comparative Political Studies* 9:429–58.

Inglehart, Ronald. 1995. "Public Support for Environmental Protection: Objective Problems and Subjective Values in 43 Societies." *PS: Political Science & Politics* 28:57–72.

Inglehart, Ronald and Paul R. Abramson. 1999. "Measuring Postmaterialism." *The American Political Science Review* 93:665–677.

IPCC Working Group. 2014. “Climate Change 2014: Synthesis Report - Summary for Policymakers.” Technical report, IPCC, Geneva Switzerland.

Iyengar, Shanto, Gaurav Sood, and Yphtach Lelkes. 2012. “Affect, Not Ideology: A Social Identity Perspective on Polarization.” *Public Opinion Quarterly* 76:405–431.

Jacques, Peter J., Riley E. Dunlap, and Mark Freeman. 2008. “The organisation of denial: Conservative think tanks and environmental scepticism.” *Environmental Politics* 17:349–385.

Joas, Hans. 2000. *The Genesis of Values*. Cambridge, UK: Polity Press.

Johnson, Erik W. and Philip Schwadel. 2019. “Political Polarization and Long-Term Change in Public Support for Environmental Spending.” *Social Forces* .

Johnston, Charles S. 1995. “The Rokeach Value Survey: Underlying Structure and Multidimensional Scaling.” *The Journal of Psychology* 129:583–597. Publisher: Routledge _eprint: https://doi.org/10.1080/00223980.1995.9914930.

Johnston, Ron and Christopher Deeming. 2016. “British political values, attitudes to climate change, and travel behaviour.” *Policy & Politics* 44:191–213.

Joppke, Christian. 1993. *Mobilizing against nuclear energy: A comparison of Germany and the United States*. Univ of California Press.

Jost, John T., Jack Glaser, Arie W. Kruglanski, and Frank J. Sulloway. 2003. “Political Conservatism as Motivated Social Cognition.” *Psychological Bulletin* 129:339–375.

Jost, John T., Erin P. Hennes, and Howard Lavine. 2013. “"Hot" political cognition: Its self-, group-, and system-serving purposes.” In *The Oxford handbook of social cognition.*, Oxford library of psychology., pp. 851–875. New York, NY, US: Oxford University Press.

Kahan, Dan, Hank Jenkins-Smith, and Donald Braman. 2011. “Cultural cognition of scientific consensus.” *Journal of Risk Research* 14:147–174.

Kahan, Dan, Ellen Peters, Maggie Wittlin, Paul Slovic, Lisa Larrimore Ouellette, Donald Braman, and Gregory Mandel. 2012. "The polarizing impact of science literacy and numeracy on perceived climate change risks." *Nature Climate Change* 2:732.

Kahan, Dan M. 2015. "The Politically Motivated Reasoning Paradigm, Part 1: What Politically Motivated Reasoning Is and How to Measure It." *Emerging trends in the social and behavioral sciences: An interdisciplinary, searchable, and linkable resource* pp. 1–16.

Kahan, Dan M. 2017. "'Ordinary science intelligence': a science-comprehension measure for study of risk and science communication, with notes on evolution and climate change." *Journal of Risk Research* 20:995–1016.

Kaiser, Florian and Heinz Gutscher. 2003. "The Proposition of a General Version of the Theory of Planned Behavior: Predicting Ecological Behavior1." *Journal of Applied Social Psychology* 33:586–603.

Karlson, Kristian Bernt, Anders Holm, Richard Breen, and Paul Slovic. 2012. "Comparing Regression Coefficients Between Same-sample Nested Models Using Logit and Probit: A New Method." *Sociological Methodology* 42:286–313.

Kasperson, Roger E., Ortwin Renn, Paul Slovic, Halina S. Brown, Jacque Emel, Robert Goble, Jeanne X. Kasperson, and Samuel Ratick. 1988. "The Social Amplification of Risk: A Conceptual Framework." *Risk Analysis* 8:177–187.

Kellstedt, Paul M., Sammy Zahran, and Arnold Vedlitz. 2008. "Personal Efficacy, the Information Environment, and Attitudes Toward Global Warming and Climate Change in the United States." *Risk Analysis* 28:113–126.

Kingdon, John W. 1995. *Agendas, alternatives, and public policies*. Boston: Little, Brown.

Kirchhof, Astrid Mignon and J. R. McNeill. 2019. "Introduction." In *Nature and the Iron Curtain*, edited by Astrid Mignon Kirchhof and J. R. McNeill, Environmental Policy and Social Move-

ments in Communist and Capitalist Countries, 1945–1990, pp. 3–14. University of Pittsburgh Press.

Kohn, Melvin L. and Carmi Schooler. 1982. "Job Conditions and Personality: A Longitudinal Assessment of Their Reciprocal Effects." *American Journal of Sociology* 87:1257–1286.

Kollmuss, Anja and Julian Agyeman. 2002. "Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior?" *Environmental Education Research* 8:239–260.

Konisky, David M., Llewelyn Hughes, and Charles H. Kaylor. 2016. "Extreme weather events and climate change concern." *Climatic Change* 134:533–547.

Konty, Mark A. and Charlotte Chorn Dunham. 1997. "Differences in value and attitude change over the life course." *Sociological Spectrum* 17:177–197.

Kopp, Robert E, Rachael L Shwom, Gernot Wagner, and Jiacan Yuan. 2016. "Tipping elements and climate–economic shocks: Pathways toward integrated assessment." *Earth's Future* 4:346–372.

Kristiansen, Connie M. and Mark P. Zanna. 1991. "Value Relevance and the Value-Attitude Relation: Value Expressiveness Versus Halo Effects." *Basic and Applied Social Psychology* 12:471–483.

Kroesen, Maarten. 2013. "Exploring people's viewpoints on air travel and climate change: understanding inconsistencies." *Journal of Sustainable Tourism* 21:271–290.

Krosnick, Jon A. 1988. "Attitude importance and attitude change." *Journal of Experimental Social Psychology* 24:240–255.

Kulin, Joakim and Bart Meuleman. 2015. "Human Values and Welfare State Support in Europe: An East–West Divide?" *European Sociological Review* 31:418–432.

Kulin, Joakim and Stefan Svallfors. 2013. "Class, Values, and Attitudes Towards Redistribution: A European Comparison." *European Sociological Review* 29:155–167.

Kuran, Timur. 1989. "Sparks and prairie fires: A theory of unanticipated political revolution." *Public Choice* 61:41–74.

Kvaløy, Berit, Henning Finseraas, and Ola Listhaug. 2012. "The publics' concern for global warming: A cross-national study of 47 countries." *Journal of Peace Research* 49:11–22.

Lachapelle, Erick, Christopher P. Borick, and Barry Rabe. 2012. "Public Attitudes toward Climate Science and Climate Policy in Federal Systems: Canada and the United States Compared1." *Review of Policy Research* 29:334–357.

Lachapelle, Erick, Christopher P. Borick, and Barry G. Rabe. 2014. "Public Opinion on Climate Change and Support for Various Policy Instruments in Canada and the US: Findings from a Comparative 2013 Poll." SSRN Scholarly Paper ID 2652429, Social Science Research Network, Rochester, NY.

Lakoff, George. 2010. "Why it Matters How We Frame the Environment." *Environmental Communication* 4:70–81. Publisher: Routledge _eprint: https://doi.org/10.1080/17524030903529749.

Lange, Bettina and Andy Gouldson. 2010. "Trust-based environmental regulation." *Science of The Total Environment* 408:5235–5243.

Lee, Tien Ming, Ezra M. Markowitz, Peter D. Howe, Chia-Ying Ko, and Anthony A. Leiserowitz. 2015. "Predictors of public climate change awareness and risk perception around the world." *Nature Climate Change* 5:1014–1020.

Leiserowitz, Anthony. 2006. "Climate Change Risk Perception and Policy Preferences: The Role of Affect, Imagery, and Values." *Climatic Change* 77:45–72.

Lenton, Timothy M. 2020. "Tipping positive change." *Philosophical Transactions of the Royal Society B* .

Lenton, Timothy M, Hermann Held, Elmar Kriegler, Jim W Hall, Wolfgang Lucht, Stefan Rahmstorf, and Hans Joachim Schellnhuber. 2008. "Tipping elements in the Earth's climate system." *Proceedings of the national Academy of Sciences* 105:1786–1793.

Lenton, Timothy M., Johan Rockström, Owen Gaffney, Stefan Rahmstorf, Katherine Richardson, Will Steffen, and Hans Joachim Schellnhuber. 2019. "Climate tipping points — too risky to bet against." *Nature* 575:592–595.

Lewandowsky, Stephan, Gilles E. Gignac, and Klaus Oberauer. 2013a. "The Role of Conspiracist Ideation and Worldviews in Predicting Rejection of Science." *PLOS ONE* 8:e75637.

Lewandowsky, Stephan, Gilles E. Gignac, and Samuel Vaughan. 2013b. "The pivotal role of perceived scientific consensus in acceptance of science." *Nature Climate Change* 3:399–404.

Lewis, Gregory B., Risa Palm, and Bo Feng. 2018. "Cross-national variation in determinants of climate change concern." *Environmental Politics* 0:1–29.

Lipset, Seymour. 1960. *Political Man*. New York: Doubleday.

Lipset, Seymour and Stein Rokkan. 1967. *Party Systems and Voter Alignment: Cross-national perspectives*. New York: Free Press.

Lo, Alex Y. and Alex T. Chow. 2015. "The relationship between climate change concern and national wealth." *Climatic Change* 131:335–348.

Lockwood, Matthew. 2018. "Right-wing populism and the climate change agenda: exploring the linkages." *Environmental Politics* 27:712–732.

Long, J. Scott and Jeremy Freese. 2014. *Regression models for categorical dependent variables using Stata*. College Station, TX: Stata Press, second edition edition.

Lorenzoni, Irene, Sophie Nicholson-Cole, and Lorraine Whitmarsh. 2007. "Barriers perceived to engaging with climate change among the UK public and their policy implications." *Global Environmental Change* 17:445–459.

Lubell, Mark, Arnold Vedlitz, Sammy Zahran, and Letitia T. Alston. 2006. "Collective Action, Environmental Activism, and Air Quality Policy." *Political Research Quarterly* 59:149–160.

Lynch, Diahanna. 2000. "Closing the Deception Gap: Accession to the European Union and Environmental Standards in East Central Europe." *The Journal of Environment & Development* 9:426–437.

Maio, Gregory and James Olson. 2000. "What is a 'Value-Expressive' Attitude?" In *Why We Evaluate: Functions of Attitudes*, edited by Gregory Maio and James Olson, pp. 249–269. Mahwah, NJ: Lawrence Erlbaum.

Malin, Stephanie A. 2015. *The Price of Nuclear Power*. New Brunswick, N.J.: Rutgers University Press.

Malka, Ariel, Jon A. Krosnick, and Gary Langer. 2009. "The Association of Knowledge with Concern About Global Warming: Trusted Information Sources Shape Public Thinking." *Risk Analysis* 29:633–647.

Malka, Ariel and Yphtach Lelkes. 2010. "More than Ideology: Conservative–Liberal Identity and Receptivity to Political Cues." *Social Justice Research* 23:156–188.

Manza, Jeff, Michael Hout, and Clem Brooks. 1995. "Class Voting in Capitalist Democracies Since World War II: Dealignment, Realignment, or Trendless Fluctuation?" *Annual Review of Sociology* 21:137–162.

Marquart-Pyatt, Sandra T. 2008. "Are There Similar Sources of Environmental Concern? Comparing Industrialized Countries*." *Social Science Quarterly* 89:1312–1335.

Marquart-Pyatt, Sandra T. 2012. "Contextual influences on environmental concerns cross-nationally: A multilevel investigation." *Social science research* 41:1085–1099.

Marquart-Pyatt, Sandra T., Aaron M. McCright, Thomas Dietz, and Riley E. Dunlap. 2014. "Politics eclipses climate extremes for climate change perceptions." *Global Environmental Change* 29:246–257.

Marquart-Pyatt, Sandra T., Hui Qian, Matthew K. Houser, and Aaron M. McCright. 2019. "Climate Change Views, Energy Policy Preferences, and Intended Actions Across Welfare State Regimes: Evidence from the European Social Survey." *International Journal of Sociology* 49:1–26. Publisher: Routledge _eprint: https://doi.org/10.1080/00207659.2018.1560979.

Mason, Lilliana. 2015. ""I Disrespectfully Agree": The Differential Effects of Partisan Sorting on Social and Issue Polarization." *American Journal of Political Science* 59:128–145.

Mayer, Adam. 2017. "Political identity and paradox in oil and gas policy: A study of regulatory exaggeration in Colorado, US." *Energy Policy* 109:452–459.

Mayer, Adam and E. Keith Smith. 2017. "Rethinking Economic Conditions and Environmental Attitudes: Macroeconomic Effects, Individual Experiences, and Subjectivity." *Social Currents* 4:342–359.

Mayer, Adam and E. Keith Smith. 2018. "Unstoppable climate change? The influence of fatalistic beliefs about climate change on behavioural change and willingness to pay cross-nationally." *Climate Policy* 0:1–13.

McCrea, Rod, Zoe Leviston, and Iain A. Walker. 2016. "Climate Change Skepticism and Voting Behavior: What Causes What?" *Environment and Behavior* 48:1309–1334.

McCright, Aaron M. 2010. "The effects of gender on climate change knowledge and concern in the American public." *Population and Environment* 32:66–87.

McCright, Aaron M. 2011. "Political orientation moderates Americans' beliefs and concern about climate change." *Climatic Change* 104:243–253.

McCright, Aaron M. and Riley E. Dunlap. 2003. "Defeating Kyoto: The Conservative Movement's Impact on U.S. Climate Change Policy." *Social Problems* 50:348–373.

McCright, Aaron M. and Riley E. Dunlap. 2010. "Anti-reflexivity." *Theory, Culture & Society* 27:100–133.

McCright, Aaron M. and Riley E. Dunlap. 2011a. "Cool dudes: The denial of climate change among conservative white males in the United States." *Global Environmental Change* 21:1163–1172.

McCright, Aaron M. and Riley E. Dunlap. 2011b. "The Politicization of Climate Change and Polarization in the American Public's Views of Global Warming, 2001–2010." *Sociological Quarterly* 52:155–194.

McCright, Aaron M., Riley E. Dunlap, and Sandra T. Marquart-Pyatt. 2016a. "Political ideology and views about climate change in the European Union." *Environmental Politics* 25:338–358.

McCright, Aaron M., Sandra T. Marquart-Pyatt, Rachael L. Shwom, Steven R. Brechin, and Summer Allen. 2016b. "Ideology, capitalism, and climate: Explaining public views about climate change in the United States." *Energy Research & Social Science* 21:180–189.

Mettler, Suzanne. 2011. *The submerged state: How invisible government policies undermine American democracy*. Chicago: Chicago University Press.

Michener, H. Andrew and John D. DeLamater. 1998. *Social Psychology*. Belmont, CA: Wadsworth.

Milfont, Taciano L., Petar Milojev, Lara M. Greaves, and Chris G. Sibley. 2015. "Socio-structural and psychological foundations of climate change beliefs." *New Zealand Journal of Psychology* 44:17–30.

Milkoreit, Manjana, Jennifer Hodbod, Jacopo Baggio, Karina Benessaiah, Rafael Calderón-Contreras, Jonathan F Donges, Jean-Denis Mathias, Juan Carlos Rocha, Michael Schoon, and

Saskia E Werners. 2018. “Defining tipping points for social-ecological systems scholarship—an interdisciplinary literature review.” *Environmental Research Letters* 13:033005.

Mishler, William and Richard Rose. 1997. “Trust, Distrust and Skepticism: Popular Evaluations of Civil and Political Institutions in Post-Communist Societies.” *The Journal of Politics* 59:418–451.

Mize, Trenton D. 2019. “Best Practices for Estimating, Interpreting, and Presenting Nonlinear Interaction Effects.” *Sociological Science* 6:81–117.

Mood, Carina. 2010. “Logistic regression: Why we cannot do what we think we can do, and what we can do about it.” *European sociological review* 26:67–82.

Mosley, Stephen. 2014. “Environmental History of Air Pollutionand Protection.” In *The Basic Environmental History*, edited by Mauro Agnoletti and Simone Neri Serneri, volume 4, pp. 143–169. New York: Springer International Publishing.

Mudde, Cas. 2004. “The Populist Zeitgeist.” *Government and Opposition* 39:541–563.

Muttarak, Raya and Wolfgang Lutz. 2014. “Is Education a Key to Reducing Vulnerability to Natural Disasters and hence Unavoidable Climate Change?” *Ecology and Society* 19:1–8.

Notzon, Francis C., Yuri M. Komarov, Sergei P. Ermakov, Christopher T. Sempos, James S. Marks, and Elena V. Sempos. 1998. “Causes of Declining Life Expectancy in Russia.” *JAMA* 279:793–800.

O’Brien, Karen, Robin Leichenko, Ulka Kelkar, Henry Venema, Guro Aandahl, Heather Tompkins, Akram Javed, Suruchi Bhadwal, Stephan Barg, Lynn Nygaard, and Jennifer West. 2004. “Mapping vulnerability to multiple stressors: climate change and globalization in India.” *Global Environmental Change* 14:303–313.

O’Connor, Robert E., Richard J. Bard, and Ann Fisher. 1999. “Risk Perceptions, General Environmental Beliefs, and Willingness to Address Climate Change.” *Risk Analysis* 19:461–471.

Oreskes, Naomi and Erik M Conway. 2011. *Merchants of doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming*. Bloomsbury Publishing USA.

Otto, Ilona M., Jonathan F. Donges, Roger Cremades, Avit Bhowmik, Richard J. Hewitt, Wolfgang Lucht, Johan Rockström, Franziska Allerberger, Mark McCaffrey, Sylvanus S. P. Doe, Alex Lenferna, Nerea Morán, Detlef P. van Vuuren, and Hans Joachim Schellnhuber. 2020a. "Social tipping dynamics for stabilizing Earth's climate by 2050." *Proceedings of the National Academy of Sciences* 117:2354–2365.

Otto, Ilona M., Marc Wiedermann, Roger Cremades, Jonathan F. Donges, Cornelia Auer, and Wolfgang Lucht. 2020b. "Human agency in the Anthropocene." *Ecological Economics* 167:106463.

Overland, Indra and Benjamin K. Sovacool. 2020. "The misallocation of climate research funding." *Energy Research & Social Science* 62:101349.

Paton, Douglas. 2008. "Risk communication and natural hazard mitigation: how trust influences its effectiveness." *International Journal of Global Environmental Issues* 8:2–16.

Peters, Anja, Peter de Haan, and Roland W. Scholz. 2015. "Understanding Car-Buying Behavior: Psychological Determinants of Energy Efficiency and Practical Implications." *International Journal of Sustainable Transportation* 9:59–72.

Piurko, Yuval, Shalom H. Schwartz, and Eldad Davidov. 2011. "Basic Personal Values and the Meaning of Left-Right Political Orientations in 20 Countries." *Political Psychology* 32:537–561.

Plagnol, Anke C. and Felicia A. Huppert. 2010. "Happy to Help? Exploring the Factors Associated with Variations in Rates of Volunteering Across Europe." *Social Indicators Research* 97:157–176.

Politbarometer. 2019. "Politbarometer Cumulative Dataset." Technical Report ZA7492, Forschungsgruppe Wahlen E.V., Cologne, Germany.

Poortinga, Wouter, Alexa Spence, Lorraine Whitmarsh, Stuart Capstick, and Nick F. Pidgeon. 2011. "Uncertain climate: An investigation into public scepticism about anthropogenic climate change." *Global Environmental Change* 21:1015–1024.

Poortinga, Wouter, Linda Steg, and Charles Vlek. 2004. "Values, Environmental Concern, and Environmental Behavior: A Study into Household Energy Use." *Environment and Behavior* 36:70–93.

Poortinga, Wouter, Lorraine Whitmarsh, Linda Steg, Gisela Böhm, and Stephen Fisher. 2019. "Climate change perceptions and their individual-level determinants: A cross-European analysis." *Global Environmental Change* 55:25–35.

Raiser, Martin, Alan Rousso, Franklin Steves, and Utku Teksoz. 2008. "Trust in Transition: Cross-Country and Firm Evidence." *The Journal of Law, Economics, and Organization* 24:407–433.

Rockström, Johan, Owen Gaffney, Joeri Rogelj, Malte Meinshausen, Nebojsa Nakicenovic, and Hans Joachim Schellnhuber. 2017. "A roadmap for rapid decarbonization." *Science* 355:1269–1271.

Rohrschneider, Robert and Matthew R. Miles. 2015. "Representation through parties? Environmental attitudes and party stances in Europe in 2013." *Environmental Politics* 24:617–640.

Rokeach, Milton. 1973. *The nature of human values*. New York: Free Press.

Rokeach, Milton. 1979. *Understanding Human Values: Individual and Societal*. New York: Free Press.

Sabatier, Paul A. 1988. "An advocacy coalition framework of policy change and the role of policy-oriented learning therein." *Policy Sciences* 21:129–168.

Saks, Alan M. and Blake E. Ashforth. 1997. "Organizational Socialization: Making Sense of the Past and Present as a Prologue for the Future." *Journal of Vocational Behavior* 51:234–279.

Satterfield, Terre A., C. K. Mertz, and Paul Slovic. 2004. "Discrimination, Vulnerability, and Justice in the Face of Risk." *Risk Analysis* 24:115–129.

Schelling, Thomas C. 1971. "Dynamic models of segregation." *Journal of mathematical sociology* 1:143–186.

Schellnhuber, Hans Joachim. 2009. "Tipping elements in the Earth System." *Proceedings of the National Academy of Sciences* 106:20561–20563. tex.publisher: National Acad Sciences.

Schultz, Wesley P. and Lynette Zelezny. 1999. "Values as predictors of environmental attitudes: Evidence for consistency across 14 countries." *Journal of Environmental Psychology* 19:255–265.

Schwartz, Shalom. 2006. "A Theory of Cultural Value Orientations: Explication and Applications." *Comparative Sociology* 5:137–182.

Schwartz, Shalom. 2012. "An Overview of the Schwartz Theory of Basic Values." *Online Readings in Psychology and Culture* 2.

Schwartz, Shalom H. 1992. "Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries." In *Advances in Experimental Social Psychology*, edited by Mark P. Zanna, volume 25, pp. 1–65. Academic Press.

Schwartz, Shalom H. 1994. "Are There Universal Aspects in the Structure and Contents of Human Values?" *Journal of Social Issues* 50:19–45.

Schwartz, Shalom H. 2003. "A Proposal for Measuring Value Orientations Across Nations." Technical report, European Social Survey, London.

Schwartz, Shalom H. 2005. "Robustness and fruitfulness of a theory of universals in individual human values." In *Valores e comportamento nas organizaç Atoes [Values and behavior in organizations]*, edited by A Tamayo and J.B. Porto, pp. 56–95. Petropolis, Brazil: Vozes.

Schwartz, Shalom H. and Wolfgang Bilsky. 1987. "Toward a universal psychological structure of human values." *Journal of Personality and Social Psychology* 53:550–562.

Schwartz, Shalom H., Gian Vittorio Caprara, and Michele Vecchione. 2010. "Basic Personal Values, Core Political Values, and Voting: A Longitudinal Analysis." *Political Psychology* 31:421–452.

Semenza, Jan C., David E. Hall, Daniel J. Wilson, Brian D. Bontempo, David J. Sailor, and Linda A. George. 2008. "Public Perception of Climate Change: Voluntary Mitigation and Barriers to Behavior Change." *American Journal of Preventive Medicine* 35:479–487.

Shahgedanova, Maria and Timothy P Burt. 1994. "New data on air pollution in the former Soviet Union." *Global Environmental Change* 4:201–227.

Shao, Wanyun. 2017. "Weather, climate, politics, or God? Determinants of American public opinions toward global warming." *Environmental Politics* 26:71–96.

Shao, Wanyun, Barry D. Keim, James C. Garand, and Lawrence C. Hamilton. 2013. "Weather, Climate, and the Economy: Explaining Risk Perceptions of Global Warming, 2001–10." *Weather, Climate, and Society* 6:119–134. Publisher: American Meteorological Society.

Sheldon, Kennon M. 2005. "Positive value change during college: Normative trends and individual differences." *Journal of Research in Personality* 39:209–223.

Shkolnikov, Vladimir, Martin McKee, and David A Leon. 2001. "Changes in life expectancy in Russia in the mid-1990s." *The Lancet* 357:917–921.

Shwom, Rachael, David Bidwell, Amy Dan, and Thomas Dietz. 2010. "Understanding U.S. public support for domestic climate change policies." *Global Environmental Change* 20:472–482.

Siegelbaum, Lewis. 1986. “Production Collectives and Communes and the "Imperatives" of Soviet Industrialization, 1929-1931.” *Slavic Review* 45:65–84. Publisher: Association for Slavic, East European, and Eurasian Studies.

Siegrist, Michael and George Cvetkovich. 2000. “Perception of Hazards: The Role of Social Trust and Knowledge.” *Risk Analysis* 20:713–720.

Simonet, Guillaume and Sandra Fatorić. 2016. “Does “adaptation to climate change” mean resignation or opportunity?” *Regional Environmental Change* 16:789–799.

Smith, E. Keith, Lynn M. Hempel, and Kelsea MacIlroy. 2018. “What’s ‘evangelical’ got to do with it? Disentangling the impact of evangelical Protestantism on environmental outcomes.” *Environmental Politics* 27:292–319.

Smith, E. Keith, Michael G. Lacy, and Adam Mayer. 2019. “Performance Simulations for Categorical Mediation: Analyzing khb estimates of mediation in ordinal regression models.” *Stata Journal* pp. 1–19. Status: forthcoming.

Smith, E. Keith and Adam Mayer. 2018a. “Anomalous Anglophones? Contours of free market ideology, political polarization, and climate change attitudes in English-speaking countries, Western European and post-Communist states.” *Climatic Change* 152:17–34.

Smith, E. Keith and Adam Mayer. 2018b. “A social trap for the climate? Collective action, trust and climate change risk perception in 35 countries.” *Global Environmental Change* 49:140–153.

Smith, Nicholas and Anthony Leiserowitz. 2012. “The rise of global warming skepticism: exploring affective image associations in the United States over time.” *Risk Analysis: An Official Publication of the Society for Risk Analysis* 32:1021–1032.

Snow, David A., E. Burke Rochford, Steven K. Worden, and Robert D. Benford. 1986. “Frame Alignment Processes, Micromobilization, and Movement Participation.” *American Sociological Review* 51:464–481. Publisher: [American Sociological Association, Sage Publications, Inc.].

Soroka, Stuart N. and Christopher Wlezien. 2010. *Degrees of Democracy: Politics, Public Opinion and Policy*. New York: Cambridge University Press.

Sovacool, Benjamin K. 2014. "Diversity: Energy studies need social science." *Nature News* 511:529. Section: Comment.

Spence, A., W. Poortinga, C. Butler, and N. F. Pidgeon. 2011. "Perceptions of climate change and willingness to save energy related to flood experience." *Nature Climate Change* 1:46–49.

Spence, Alexa, Wouter Poortinga, and Nick Pidgeon. 2012. "The Psychological Distance of Climate Change." *Risk Analysis* 32:957–972.

Spini, Dario. 2003. "Measurement Equivalence Of 10 Value Types From The Schwartz Value Survey Across 21 Countries." *Journal of Cross-Cultural Psychology* 34:3–23.

Steffen, Will, Johan Rockström, Katherine Richardson, Timothy M. Lenton, Carl Folke, Diana Liverman, Colin P. Summerhayes, Anthony D. Barnosky, Sarah E. Cornell, Michel Crucifix, Jonathan F. Donges, Ingo Fetzer, Steven J. Lade, Marten Scheffer, Ricarda Winkelmann, and Hans Joachim Schellnhuber. 2018. "Trajectories of the Earth System in the Anthropocene." *Proceedings of the National Academy of Sciences* 115:8252–8259.

Steg, Linda and Judith I. M. De Groot. 2012. "Environmental Values." In *The Oxford Handbook of Environmental and Conservation Psychology*, edited by Susan D. Clayton, pp. 81–92. New York: Oxford University Press.

Stern, Paul C. 2000. "New Environmental Theories: Toward a Coherent Theory of Environmentally Significant Behavior." *Journal of Social Issues* 56:407–424.

Stern, Paul C. and Thomas Dietz. 1994. "The Value Basis of Environmental Concern." *Journal of Social Issues* 50:65–84.

Stern, Paul C., Thomas Dietz, Troy Abel, Gregory A. Guagnano, and Linda Kalof. 1999. "A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism." *Human Ecology Review* 6:81–97.

Stern, Paul C., Thomas Dietz, and Gregory A. Guagnano. 1998. "A Brief Inventory of Values." *Educational and Psychological Measurement* 58:984–1001.

Stern, Paul C., Thomas Dietz, and Linda Kalof. 1993. "Value Orientations, Gender, and Environmental Concern." *Environment and Behavior* 25:322–348.

Stern, Paul C., Linda Kalof, Thomas Dietz, and Gregory A. Guagnano. 1995. "Values, Beliefs, and Proenvironmental Action: Attitude Formation Toward Emergent Attitude Objects1." *Journal of Applied Social Psychology* 25:1611–1636.

Stevenson, Kathryn T., M. Nils Peterson, Howard D. Bondell, Susan E. Moore, and Sarah J. Carrier. 2014. "Overcoming skepticism with education: interacting influences of worldview and climate change knowledge on perceived climate change risk among adolescents." *Climatic Change* 126:293–304.

Stickley, Andrew, Sara Ferlander, Tanya Jukkala, Per Carlson, Olga Kislitsyna, and Ilkka Henrik Mäkinen. 2009. "Institutional Trust in Contemporary Moscow." *Europe-Asia Studies* 61:779–796.

Stoutenborough, James W., Arnold Vedlitz, and Xinsheng Liu. 2015. "The Influence of Specific Risk Perceptions on Public Policy Support: An Examination of Energy Policy." *The ANNALS of the American Academy of Political and Social Science* 658:102–120.

Striessnig, E., W. Lutz, and A. Patt. 2013. "Effects of educational attainment on climate risk vulnerability." *Ecology and Society* 18:16.

Summers, Nik and Tom VanHeuvelen. 2017. "Heterogeneity in the Relationship between Country-Level Affluence and Environmental Concern." *Social Forces* 96:329–360.

Tajfel, Henri. 1978. "Social Categorization, Social Identity and Social Comparisons." In *Differentiation between Social Groups*, edited by Henri Tajfel, pp. 61–76. London: Academic.

Tesler, Michael. 2017. "Elite Domination of Public Doubts About Climate Change (Not Evolution)." *Political Communication* 0:1–21.

Thorisdottir, Hulda, John T. Jost, Ido Liviatan, and Patrick E. Shrout. 2007. "Psychological Needs and Values Underlying Left-Right Political Orientation: Cross-National Evidence from Eastern and Western Europe." *Public Opinion Quarterly* 71:175–203.

Tilly, Charles. 1995. "Citizenship, Identity and Social History." *International Review of Social History* 40:1–17. Publisher: Cambridge University Press.

Tjernström, Emilia and Thomas Tietenberg. 2008. "Do differences in attitudes explain differences in national climate change policies?" *Ecological Economics* 65:315–324.

Tranby, Eric and Douglas Hartmann. 2008. "Critical whiteness theories and the evangelical "race problem": Extending Emerson and Smith's Divided by Faith." *Journal for the Scientific Study of Religion* 47:341–359.

Tranter, Bruce. 2011. "Political divisions over climate change and environmental issues in Australia." *Environmental Politics* 20:78–96.

Tranter, Bruce. 2013. "The Great Divide: Political Candidate and Voter Polarisation over Global Warming in Australia." *Australian Journal of Politics & History* 59:397–413.

Tranter, Bruce and Kate Booth. 2015. "Scepticism in a changing climate: A cross-national study." *Global Environmental Change* 33:154–164.

Tynkkynen, Nina. 2010. "A great ecological power in global climate policy? Framing climate change as a policy problem in Russian public discussion: Environmental Politics: Vol 19, No 2." *Environmental Politics* 19:179–195.

Tàbara, David, Niki Frantzeskaki, Katharina Hölscher, Simona Pedde, Kasper Kok, Francesco Lamperti, Jens H Christensen, Jill Jäger, and Pam Berry. 2018. "Positive tipping points in a rapidly warming world." *Current Opinion in Environmental Sustainability* 31:120–129.

Unsworth, Kerrie L. and Kelly S. Fielding. 2014. "It's political: How the salience of one's political identity changes climate change beliefs and policy support." *Global Environmental Change* 27:131–137.

van der Linden, Sander. 2015. "The social-psychological determinants of climate change risk perceptions: Towards a comprehensive model." *Journal of Environmental Psychology* 41:112–124.

Vecchione, Michele, Anna K. Döring, Guido Alessandri, Gilda Marsicano, and Anat Bardi. 2016. "Reciprocal Relations across Time between Basic Values and Value-expressive Behaviors: A Longitudinal Study among Children." *Social Development* 25:528–547.

Verkasalo, Markku, Robin Goodwin, and Irina Bezmenova. 2006. "Values Following a Major Terrorist Incident: Finnish Adolescent and Student Values Before and After September 11, 2001." *Journal of Applied Social Psychology* 36:144–160.

von Hardenberg, Wilko Graf. 2019. "An Unguided Boom." In *Nature and the Iron Curtain*, edited by Astrid Mignon Kirchhof and J. R. McNeill, Environmental Policy and Social Movements in Communist and Capitalist Countries, 1945–1990, pp. 102–115. University of Pittsburgh Press.

Wang, Shanyong, Jin Fan, Dingtao Zhao, Shu Yang, and Yuanguang Fu. 2016. "Predicting consumers' intention to adopt hybrid electric vehicles: using an extended version of the theory of planned behavior model." *Transportation* 43:123–143.

Weible, Christopher and Paul A. Sabatier. 2017a. *Theories of the Policy Process*. New York: Westview Press, 4th edition.

Weible, Christopher and Paul A. Sabatier. 2017b. *Theories of the Policy Process*. New York: Westview Press, 4th edition.

Weisberg, Herbert and Steven Greene. 2003. "The Political Psychology of Party Identification." In *Electoral Democracy*, edited by Michael MacKuen and George Rabinowitz, pp. 83–124. Ann Arbor, MI: University of Michigan Press.

White, Jr., Lynn. 1967. "The Historical Roots of Our Ecological Crisis." *Science* 155:1203–1207.

Whitmarsh, Lorraine. 2009. "Behavioural responses to climate change: Asymmetry of intentions and impacts." *Journal of Environmental Psychology* 29:13–23.

Whitmarsh, Lorraine. 2011. "Scepticism and uncertainty about climate change: Dimensions, determinants and change over time." *Global Environmental Change* 21:690–700.

Whitmarsh, Lorraine and Saffron O'Neill. 2010. "Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours." *Journal of Environmental Psychology* 30:305–314.

Williams, Richard. 2012. "Using the Margins Command to Estimate and Interpret Adjusted Predictions and Marginal Effects." *The Stata Journal* 12:308–331. Publisher: SAGE Publications.

Wlezien, Christopher. 1995. "The Public as Thermostat: Dynamics of Preferences for Spending." *American Journal of Political Science* 39:981–1000.

Wolske, Kimberly S., Paul C. Stern, and Thomas Dietz. 2017. "Explaining interest in adopting residential solar photovoltaic systems in the United States: Toward an integration of behavioral theories." *Energy Research & Social Science* 25:134–151.

Wood, B. Dan and Arnold Vedlitz. 2007. "Issue Definition, Information Processing, and the Politics of Global Warming." *American Journal of Political Science* 51:552–568.

YouGov. 2019. "Top Issues Tracker." Technical report, YouGov UK, London, UK.

Zahran, Sammy, Samuel D. Brody, Himanshu Grover, and Arnold Vedlitz. 2006. "Climate Change Vulnerability and Policy Support." *Society & Natural Resources* 19:771–789.

Appendix A

Supplementary Information

A.1 Discussion of Political Factors

A key finding of these analyses is the effect of political factors, which in the main effects models has a positive effect on all three indicators of climate change attitudes and behaviors. That is, people on the political left appear to be more likely than those on the right to be concerned about climate change, support increasing fossil fuel taxes, and to a somewhat lesser extent, be likely to engage in energy reducing behaviors. These effects were largely unexpected, as the previous literature has largely found null effects of political factors in transition states, and even some evidence that people on the political right may be more likely than those on the left to be more likely to engage in 'pro-climate' behaviors or have 'pro-climate' attitudes. In order to better substantiate and validate the findings of this study, I have engaged a number of supplemental analyses, to identify potential sources of these unexpected and differing effects.

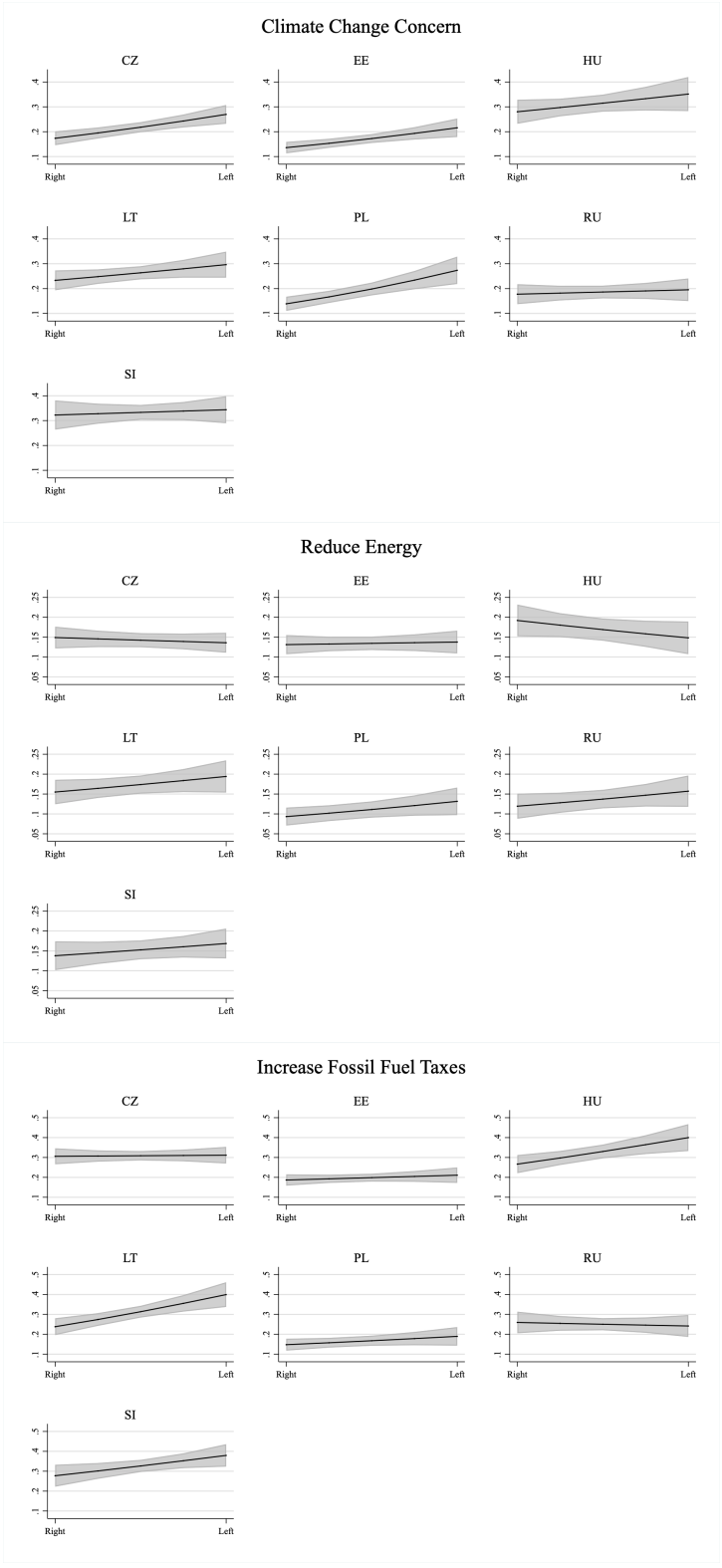
First, I tested for moderating or suppressing effects of other covariates within the model. Political factors was interacted by all covariates (in addition to the reported interactions with human values), where none of these control variables appeared to moderate the effect of political factors. Further suppressor effects were tested for as well, where individual models runs were performed to exclude individual – and substantive groups – of covariates. None of these sequential model runs resulted in substantial differences in the effect of political factors, providing no evidence of a suppressor effect. Lastly, I utilized khb to test for classical forms of mediation (Barron and Kenny), where a single covariate never had more than a 15% confounding percentage on direct effect of political factors. Therefore, I again found little evidence of a mediating effect by any of the covariates.

Second, I analyzed how the effect of political factors differs individually within each of the seven transition states included in this study (see Figure A.1). While there is clearly some

variation in the effect of political factors across countries - as would be expected - the directional effect remains positive across almost all country and dependent variable iterations (with the single, but notable exception, of the effect of political factors in Hungary on individual likelihood to reduce their energy usage). Clearly, there are some differences in the substantive effect political factors - which appear to be stronger in states like Hungary, Lithuania and Poland – but there does not appear to be a material divide in the direction of the effect of political factors based upon a specific countries or climate change attitudes or behavior. As such, these different findings do not appear to be a result of individual country differences.

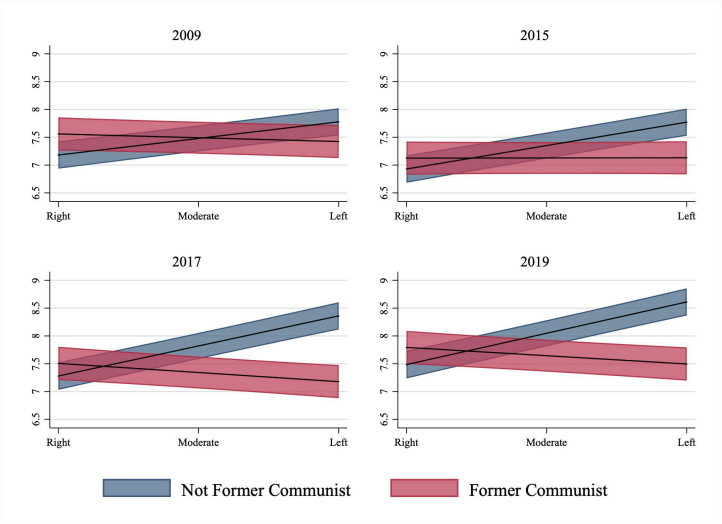
Third, I engaged a supplementary analysis to understand how the effect of political factors could have changed in recent years. The previous literature has relied upon comparatively older data – McCright et al. (2016a) adopt data from 2008, while Smith and Mayer (2018a) use two data sources from 2010. The ESS data is from 2016, and it is possible that the effect of political factors have shifted within this time. As a supplementary analysis, I adopted data from the Eurobarometer, with 5 available time points from 2008-2017, comparting the effect of political factors on climate change concerns (measured on a scale of 1-10) between Western European and transition states (see Figure A.2). These analysis suggest while the effect of political factors appears to be increasing in Western European states, it has remained relatively consistent throughout the past decade in transition states. But this analysis does come with some limitations, as many of the covariate controls used in the previous analysis are not available in the Eurobarometer data (such as human values, forms of trust and efficacy, and religious factors). Still, these results provide evidence that the effect of political factors on climate change concern has remained relatively stable over the recent decade in transition states.

Lastly, I performed an analysis to make a direct comparison to the single article (Marquart-Pyatt et al., 2019) currently available in the literature that uses the ESS data to understanding the effect of political factors on climate change relevant attitudes and behaviors in transition states. Marquart-Pyatt et al. (2019) finds that political factors are non-significant predictors of energy policy preferences, but that people with a right leaning political affiliation are somewhat more



Predicting values of political orientation from ordered logistic regression. Predicting highest value for each outcome.

Figure A.1: Predicted Probabilities of Political Orientation for all Transition States



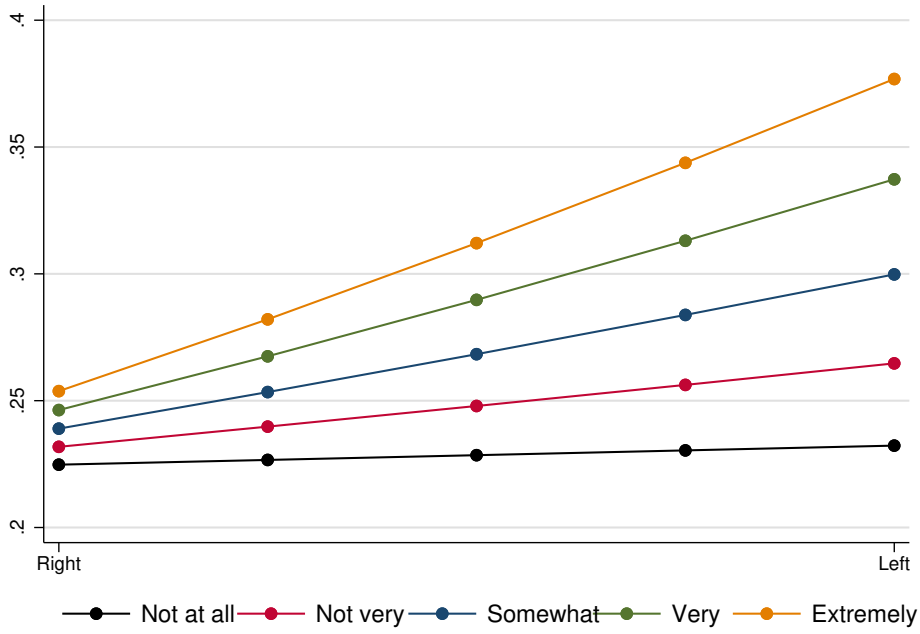
Predicting values of political orientation from multilevel mixed-effects linear regression. Eurobarometer Data: EB 71.1 (2009), EB 83.4 (2015), EB 87.1 (2017), EB 91.3 (2019)

Figure A.2: Predicted Probabilities of Climate Change Concern by Transition State Status * Political Orientation Interaction

likely engage in energy efficient behaviors (beta=0.03), both of which are in contradiction to the findings reported above.

Therefore, I engaged an analysis to replicate these results, finding some primary and substantive differences in their study design. First, the Marquart-Pyatt et al. (2019) study utilizes the initial release of the ESS (v1.0), which excluded 2 of the 7 transition states (Lithuania and Hungary). I performed the analyses as above, excluding these two transition states from my analysis. I found very minimal differences between the 5- or 7-country models.

Second, this study adopts an model design where climate concern moderates the effect of political factors on energy policy preferences and energy behaviors. I engaged supplementary analyses mimicking these approaches for my models, but found minimal differences. Concern does interact with political factors in the effect on energy policy preferences, acting as an amplifier of political factors (see Figure A.3). That is, the effect of concern became greater as people become more politically left-leaning, a classic "fanning out" of these interactive effects. While efficacy does appear to amplify the effects of political factors, this is still in the same general direction, and therefore cannot account for these contradictory results. But concern did not interact with political



Predicting values of Climate Change Concern * Political Preference from multilevel mixed-effects ordered regression. Predicting highest value outcome for Increased Fossil Fuel Taxes "Somewhat" or "Strongly" Favor

Figure A.3: Predicted Probabilities of Support for Increased Fossil Fuel Taxes by Climate Change Concern * Political Preference Interaction

factors for energy reducing actions. Further, I found no evidence that concern acted as a mediator for either of these dependent variables. As such, this moderation modelling approach does not appear to effecting the key differences for political factors.

Third, and most importantly, the Marquart-Pyatt et al. (2019) study utilizes different indicators for their two dependent variables, energy policy preferences and energy behaviors. Energy policy preferences is a latent construct made up of three items (increasing taxes on fossil fuels, subsidizing renewable energy, and banning the sale of the least-energy-efficient household appliances), while my study uses only the first of these items. In my analyses, these three items do not hold particularly well together within transition states in either CFA or PCA analyses. In particular, the third item, banning inefficient appliances, does not appear to be strongly related to a common underlying factor. As such, I engaged separate regression analyses for each of these items, finding a substantive effect of political factors in transition states for the first two items (increased taxes and renewable energy subsidies) but no effect of banning energy efficient appliances. As such, the

inclusion of this third item in a common factor likely acts to suppress the effect of political factors in transition states. Further, even in analyses using this three-item latent construct, there is a significant positive effect of political factors when the two further transitions countries are included in the analyses. As such, it appears that the choice of including an item on banning appliances into a common factor for energy policy preferences, as well as the adoption of a smaller list of transition states accounts, accounts for most of the differences in the reported effect of political factors on energy policy preferences between these two studies.

Further, energy behaviors is operationalized differently between these two studies. Marquart-Pyatt et al. (2019) uses an item asking how likely the respondent is to purchase an energy efficient large appliance, while the analysis included above adopts an indicator of how frequently an individual engages in actions to reduce their energy usage. Neither of these indicators are directly related to climate change, and are both therefore both carry some limitations in their usage for this case, and potential generalizability. But, the effect of political factors does appear to diverge based upon the indicator used. Political factors (on a right to left scale) have a negative effect on the likelihood to purchase energy efficient appliances in transition states, while having a positive effect on individual energy reducing actions. This difference could potentially be related to the affluence of an individual, as individuals on the political right are comparatively more wealthy in transition states, and therefore may be more willing to purchase a new appliance, or even a potentially more expensive energy efficient appliance.

In sum, it appears that the differences between this the results of this study, and those reported in previous literature, may be due to different conceptualization and operationalizations of dependent variables. That is, the effect of political factors in transition states does appear to vary in terms of substance, and direction, depending upon the type of climate change relevant attitude or behavior. And it is therefore important to pay close attention to these different constructs, and to further develop these differences more systematically within future research.

A.2 Supplementary Tables

Table A.1: Cronbach's α for Scales and items, Western European States

	Cronbach's α *if deleted*
Self-transcendence	
important to help people and care for others well-being	0.649
important to be loyal to friends and devoted to help people	0.660
important that people are treated equally and have equal opportunities	0.677
important to understand different people	0.665
important to care for nature and environment	0.691
Overall Cronbach's α	0.716
Self-enhancement	
important to have a good time	0.704
important to seek fun and things that give pleasure	0.706
important to show abilities and be admired	0.659
important to be successful and that people recognize achievements	0.642
important to be rich, have money and expensive things	0.688
important to get respect from others	0.700
Overall Cronbach's α	0.722
Openness to Change	
important to think new ideas and being creative	0.575
important to make own decisions and be free	0.629
important to try new and different things in life	0.476
important to seek adventures and have an exciting life	0.553
Overall Cronbach's α	0.633
Conservation	
important to live in secure and safe surroundings	0.653
important that government is strong and secures safety	0.659
important to do what is told and follow rules	0.670
important to behave properly	0.640
important to be humble and modest, not draw attention	0.691
important to follow traditions and customs	0.677
Overall Cronbach's α	0.704
Political Trust	
Trust in country's parliament	0.834
Trust in the legal system	0.856
Trust in politicians	0.830
Trust in political parties	0.838
Overall Cronbach's α	0.878

Table A.2: Cronbach's α for Scales and items, Transition States

	Cronbach's α *if deleted*
Self-transcendence	
important to help people and care for others well-being	0.714
important to be loyal to friends and devoted to help people	0.725
important that people are treated equally and have equal opportunities	0.761
important to understand different people	0.744
important to care for nature and environment	0.730
Overall Cronbach's α	0.776
Self-enhancement	
important to have a good time	0.760
important to seek fun and things that give pleasure	0.762
important to show abilities and be admired	0.743
important to be successful and that people recognize achievements	0.739
important to be rich, have money and expensive things	0.766
important to get respect from others	0.780
Overall Cronbach's α	0.790
Openness to Change	
important to think new ideas and being creative	0.608
important to make own decisions and be free	0.692
important to try new and different things in life	0.555
important to seek adventures and have an exciting life	0.652
Overall Cronbach's α	0.696
Conservation	
important to live in secure and safe surroundings	0.699
important that government is strong and secures safety	0.704
important to do what is told and follow rules	0.729
important to behave properly	0.674
important to be humble and modest, not draw attention	0.712
important to follow traditions and customs	0.707
Overall Cronbach's α	0.741
Political Trust	
Trust in country's parliament	0.858
Trust in the legal system	0.861
Trust in politicians	0.850
Trust in political parties	0.858
Overall Cronbach's α	0.889

Table A.3: Cronbach's α for Scales and items, by Western European and Transition State

	Western European α *if deleted*	Transition State α *if deleted*
Self-transcendence		
important to help people and care for others well-being	0.649	0.714
important to be loyal to friends and devoted to help people	0.660	0.725
important that people are treated equally and have equal opportunities	0.677	0.761
important to understand different people	0.665	0.744
important to care for nature and environment	0.691	0.730
Overall Cronbach's α	0.716	0.776
Self-enhancement		
important to have a good time	0.704	0.760
important to seek fun and things that give pleasure	0.706	0.762
important to show abilities and be admired	0.659	0.743
important to be successful and that people recognize achievements	0.642	0.739
important to be rich, have money and expensive things	0.688	0.766
important to get respect from others	0.700	0.780
Overall Cronbach's α	0.722	0.790
Openness to Change		
important to think new ideas and being creative	0.575	0.608
important to make own decisions and be free	0.629	0.692
important to try new and different things in life	0.476	0.555
important to seek adventures and have an exciting life	0.553	0.652
Overall Cronbach's α	0.633	0.696
Conservation		
important to live in secure and safe surroundings	0.653	0.699
important that government is strong and secures safety	0.659	0.704
important to do what is told and follow rules	0.670	0.729
important to behave properly	0.640	0.674
important to be humble and modest, not draw attention	0.691	0.712
important to follow traditions and customs	0.677	0.707
Overall Cronbach's α	0.704	0.741
Political Trust		
Trust in country's parliament	0.834	0.858
Trust in the legal system	0.856	0.861
Trust in politicians	0.830	0.850
Trust in political parties	0.838	0.858
Overall Cronbach's α	0.878	0.889