

Moral Values and Ideology: Examining the Causes of Polarised Attitudes Towards Climate Change

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Abstract

The thesis seeks to explain variation in support for climate change within a society, i.e. why one ideological group is more supportive than another, and why populist attitudes further enhance the ideological divide on attitudes towards climate change. The analysis provides a bridge between the literatures on climate change scepticism and moral psychology. I examine the psychological and ideological factors that shape individual attitudes toward climate change in the United States and the United Kingdom. I argue that climate change scepticism is a complex and multifaceted issue that varies dependent on factors such as ideological, populist, and moral values, rather than logical engagement with the scientific consensus on climate change.

To evaluate my claims, I adopted a mixed methods approach, combining an observational study of digital news-media organisations with two experimental survey studies using US participants. The first study analyses how six news outlets in the US and the UK frame climate change issues and how they appeal to different moral foundations and populist discourses. The second study tests how exposure to unfamiliar and familiar climate change mitigation strategy frames affects climate change attitudes among individuals with different moral and ideological profiles. The third study explores how a populist Manichean moral reframing increases support for climate action amongst participants with populist attitudes. The main findings of the thesis are: (1) news-media organisations vary significantly in their framing of climate change, reflecting their moral and ideological orientations; (2) exposure to different moral foundation frames can influence individual attitudes toward climate change, but those attitudes largely depend on their ideological values; (3) populism has a similar yet enhancing influence on carbon emission regulation attitudes when compared to ideology; (4) ideology is the strongest predictor of climate change attitudes in both experimental studies.

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Declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as References.

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Chapter 1: Introduction

1.1. Summary

This thesis explores the role of moral foundations theory (MFT) in explaining the ideological polarisation that frequently characterises attitudes to climate change. It consists of three empirical papers that use different methods and data sources to examine how moral values shape the attitudes of individuals (survey participants) and media outlets across the ideological spectrum. The first paper (Chapter 4) conducts a content analysis of six digital news-media platforms from the US and UK, ranging from left-wing to right-wing, to investigate how they moralise climate change and cancel culture according to the five moral foundations proposed by MFT. The paper finds that the media outlets tend to emphasise moral values that are consistent with their ideological leanings, and that the tone and frequency of moral arguments vary depending on the issue and the target audience. The paper also identifies some limitations and challenges of applying the moral foundations dictionary (MFD) to analyse media texts and suggests ways to improve its validity and reliability.

The second paper (Chapter 5) uses survey data from the US to test the effects of moral foundations on public opinion on climate change and cancel culture. The paper hypothesises that individuals who endorse the moral foundations of harm/care and fairness/reciprocity are more likely to accept the scientific consensus on climate change and support action to mitigate it, while those who endorse the moral foundations of loyalty/ingroup, authority/respect and purity/sanctity are more likely to reject or resist climate change mitigation and express scepticism or hostility towards it. The paper also hypothesises that individuals who endorse the moral foundations of loyalty/ingroup, authority/respect and purity/sanctity are more likely to perceive cancel culture (defined as withdrawing support for a person, group, company, or organization after they have said or done something that is considered offensive or objectionable) as a threat to free speech and social order, while those who endorse the moral foundations of harm/care and fairness/reciprocity are more likely to perceive cancel culture as a

form of social justice and accountability. The paper tests these hypotheses using regression models and finds partial support for them, while also controlling for other factors such as political ideology, education, age, gender and media consumption.

The third paper (Chapter 6) focuses on the relationship between populism and climate change scepticism and examines how populist framing can influence public attitudes towards climate change. The paper reviews the literature on populism and climate change and argues that populism is associated with climate change scepticism because of its anti-elitist, anti-expert and anti-globalist rhetoric, as well as its appeal to the moral foundations of loyalty/ingroup, authority/respect and purity/sanctity. The paper then proposes an experimental design to test the effects of populist framing on climate change attitudes, using online surveys that manipulate the presence and absence of populist cues in climate change messages. The paper expects that populist framing will increase climate change scepticism among respondents who identify with populist parties or movements and decrease it among those who do not.

The thesis concludes by discussing the main findings and contributions of the three papers and highlighting the implications and recommendations for future research and practice. I also acknowledge the limitations and challenges of applying MFT to complex and dynamic phenomena such as climate change and cancel culture, suggesting ways to address them. The thesis argues that moral foundations theory (MFT) can offer a valuable theoretical and empirical framework to understand the moral dimensions of ideological polarisation, and to design more effective and morally inclusive communication strategies to bridge the gap climate change attitude gap between different groups.

1.2. The Research Agenda and puzzle

The main research puzzle that motivates this thesis is to understand the role of moral values in shaping public discourse and attitudes towards climate change, a contentious topic that is deeply consequential for all people regardless of values (IPCC 2022). This question is motivated by the observation that the United States, and to a lesser extent the United Kingdom, have

experienced persistent ideological and moral polarisation around climate change in recent decades (IPSOS 2022). I contend that climate change values are influenced by moral foundation values (Nisbet, Markowitz, and Kotcher 2012; Sauer et al. 2021) and populist Manichean arguments (Lockwood 2018; Norris and Inglehart 2019), even when those values conflict with entrenched ideological positions. Furthermore, I sought to understand the extent to which communicating through such moral values has the potential to alter climate change attitudes amongst individuals, regardless of their ideology. Going beyond experiments, I also aimed to examine how the news-media incorporates moral foundation values to influence the public away from outgroup values and toward ingroup issues, depending on their ideological leanings.

To answer the main research question of examining the role moral values play in influencing public discourse and attitudes towards climate change, the thesis adopts a mixedmethods approach that combines content analysis and experimental techniques. The content analysis examines how digital news-media frame issues in terms of moral foundations, which are basic moral values that shape people's judgments and preferences amongst groups with different ideological orientations (Graham et al. 2009; Haidt 2012). The experimental techniques consist of two online surveys that manipulate the framing of issues and measure the effects on public opinion, as well as a natural experiment that exploits a real-world event to test the causal impact of moral framing. The order of these studies was as follows:

Chapter 4: Examining the use of moral foundations by digital news-media on climate change and cancel culture in the UK and US

Chapter 5: Examining Moral foundation framing's influence on support for familiar and unfamiliar climate change mitigation policies in the United States

Chapter 6: Assessing the influence of populism framing on support for carbon emission regulations in the United States

Overall, the research agenda aims to contribute to the literature on climate change scepticism, moral foundations theory, framing, populism by providing a comprehensive and

comparative analysis of the role of morality in political communication and public opinion formation. Three papers - two experimental and one observational - collate both real world and experimental evidence. These three studies had four underlying research questions that each contributed towards my overall thesis aim.

1.2.1. Research Questions

As described above, there has been some research into the efficacy of moral foundation values are influential in altering environmental attitudes (Wolsko 2017; Wolsko, Ariceaga and Seiden 2016; Stecula and Merkley 2019), with some positive results. However, prior research has not comprehensively accounted for other variables correlated to climate change attitudes such as ideology (Hornsey et al. 2016; Huber 2020) or populism (Lockwood 2018; Yan, Schroeder and Stier 2021), which may supersede or even determine the influence of moral foundations messaging on climate change attitudes. Therefore, the following research question is the most important in answering my overall aims:

- RQ1: To what extent do moral foundations influence climate change attitudes?

Before other questions are addressed, the efficacy of moral foundations theory's use as an attitude altering communication tool must first be assessed in the context of climate change scepticism. This tool has been used in other environmental contexts with some degree of success (i.e. Koleva et al. 2012; Stecula and Merkley 2019). Yet the literature also finds that climate change is a deeply entrenched issue that can be impervious to framing (Feldman and Hart 2018), and framing can even backfire and cause greater resistance (de Vries 2017). In prior moral framing studies, scholars have raised concerns that the public framing of climate change continues to appeal to liberal moral values, rather than a broader range of values (Nisbet, Markowitz, and Kotcher 2012; Stecula and Merkley 2019). The experimental paper on moral foundations will assess whether moral framing can be used as a tool to reduce polarisation on climate change attitudes, whilst the observational paper on climate change article content in the

digital news-media will aim to shed light on whether there is an underlying trend of moralised communication by left and right-leaning media organisations.

The second question broadens to the scope of moral values to include populist Manichean values of good and evil (Mudde 2017), whilst specifying the type of climate change attitudes being examined. The surge of populist parties in the last decade (Mudde 2017; Lockwood 2018) that relied in upon 'good vs evil' framing strategies (Norris and Inglehart 2019) made for an interesting additional moral dimension to study in relation to climate change scepticism, especially since scepticism has been shown to correlate with right-wing populism in multiple countries (Huber 2020; Yan, Schroeder and Stier 2021). This multi study approach seeks to understand if framing climate change through varied moral values as well as through familiar and unfamiliar climate change mitigation strategies can alter the attitudes of climate change, as has been the case with studies on other environmental issues using different approaches (Clayton; Koehn and Grover 2013; Koleva et al. 2012; Stecula and Merkley 2019). Specifically, this thesis focuses on carbon emissions for their familiarity to the public, and stratospheric aerosol injections for their unfamiliarity to the public, to evaluate whether issue salience plays a role in issue polarisation. This question will be addressed primarily for within a US context, due to the heightened levels of polarisation on climate change in the US compared with other western nations (Huber 2020; Pew Research 2021). With these objectives in mind, the second research question is:

- RQ2: Do moral values shape preferences for different types of policy solutions on climate change?

The digital news space is a key sphere of public communication which has become increasingly polarising in the US and UK (Fletcher 2022), reflected in a polarised society (Mason 2015;2016). If moral foundations are utilised in news-media content, in line with the theory's expectations on ideological differences (Graham et al 2009;2011), then we would expect that divisive issues like climate change and cancel culture are moralised in a manner that is congenial with the values of their ideological group (see IPSOS 2022; Norris 2023). In particular, whether

the context of the moral language is used in support or criticism of a contentious issue would aid in our understanding of how moral language is deployed by the news-media to shape their audiences' attitudes towards divisive issues. Therefore, research question 3 asks:

- RQ3: Does moral communication vary across different political issues such as cancel culture and climate change in the news-media, in terms of their moral content and context?

A core criticism of moral foundations theory is that ideological differences may supersede moral foundational values (Hatemi, Crabtree and Smith 2019), and that moral foundations (they claim) do not remain constant over longitudinal studies (Smith et al. 2017). Though these results were challenged (see Clifford 2017), whether moral values correlate with climate change more than ideology when participants are exposed to moral framing could provide supplementary evidence in this ongoing debate between moral value and ideological influence on attitude formation. Given the prior points, research question 4 asks:

- RQ4: Are moral values more significant than ideology in influencing climate change attitudes?

Each research question is addressed in either all or at least one of the three research papers within this thesis. The following section discusses the originality and contributions of each paper as a collective contribution, whilst Chapters 4,5 and 6 each have their own contributions outlined.

1.3. Originality and Contribution of Research

The primary contributions of this thesis are to supplement the wider literature on the relationship between moral foundations theory and climate change scepticism, as well as their association with ideology and populist moral values. The moral foundations dictionary content analysis (Chapter 4) expands upon prior moral foundation theory (MFT) content analyses by examining moral foundation content in digital news-media articles discussing both left (climate change) and right-wing (cancel culture) contentious topics, to better understand whether and/or how the moral asymmetry between ideological groups (Haidt 2012) impacts the

communication in the news-media on these topics. In addition, this chapter helps to explain the differences in unsubstantiated fears of outgroups based on political ideology present in prior research (Duffy 2019; Kleinfeld 2023; Mason 2016). Unlike prior MFT content analysis studies (Hopp et al. 2021), the contexts of each moral word within digital news article were collected, reducing errors that stem from using other data collection techniques. Finally, Chapter 4 contributes to the media communication literature, providing an additional lens from which to view an increasingly polarised media landscape.

Chapters 5 and 6 employ novel approaches to moral and populism framing. An analysis of the efficacy of moral foundations as a framework to understand the differences in climate change mitigation technology value formations (Chapter 5), contributes to the ongoing discussion as to the primacy of either ideology or moral foundational values (see Clifford 2017; Hatemi, Crabtree and Smith 2019; Smith et al. 2019), in regard to their influence over public attitudes on climate change mitigation. The second framing study using populist moral framing (Chapter 6), improves our understanding of the relationship between populism, within the context of the ideational definition of populism (De La Torre 2017; Mudde 2017), and with climate change attitudes. It also acts as an additional assessment of whether populism is a relevant factor in determining climate change attitudes, distinct from ideology (Huber 2020), and whether populist moral framing can override the traditional left-right divide on environmental issues in the United States. Both experiments provide substantial evidence supporting the primacy of ideology in determining climate change attitudes, regardless of framing techniques or contexts.

Chapter 2: Literature Review

2.1. Aims and Structure

The aim of this literature review chapter is to provide a conceptual and empirical overview of the different forms and dimensions of climate change scepticism, its connection to ideology and populism, as well as some of the psychological factors that influence its emergence and persistence. The chapter will examine the impacts of factors like ideology and populist attitude on individual and group scepticism of climate change science as well as climate change and discuss the challenges and opportunities for communicating and engaging with climate change sceptics through framing techniques. The chapter will be structured as follows:

Section 2.2 begins by defining and classifying climate change scepticism. This section will also explore what many consider to be the primary source of climate change scepticism - right-wing ideology (See; Huber 2020; McCright et al. 2016) - while also discussing the complexity of this relationship when other factors such as education and geography are considered. Section 2.3 extends the variables correlated with climate change attitudes to populism, which has received growing interest from scholars in the last decade. Section 2.4 brings in moral values as another variable associated with climate change scepticism (Stecula and Merkley 2019). Specifically, by discussing the relevance of MFT in explaining ideological differences in climate change attitudes. The section defines moral foundations theory, explaining why MFT is a valuable psychological framework for understanding ideological differences towards environmental attitudes, including climate change. Section 2.5 brings all the prior sections together through the framing research. These framing studies include ideology, populism and MFT to highlight successes and challenges of communicating climate change to the public in a manner that is congenial to their ideological and moral values. Finally, section 2.6 discusses how this review of the key literature is used to instruct the theoretical basis of the three studies conducted within this thesis.

2.2. Climate Change Scepticism

Climate change scepticism is a term that encompasses various forms of doubt, denial, or dismissal of the scientific consensus on climate change and its causes, consequences, and solutions (Capstick and Pidgeon 2014; Lockwood 2018). Climate change sceptics may question any or all of the validity, reliability, or interpretation of climate data and models, the attribution of climate change to human activities, the severity and urgency of the projected impacts, or the feasibility and desirability of mitigation and adaptation measures (Hornsey et al. 2016). There is considerable variation in how common and widespread climate change scepticism is across different countries, regions, and social groups (Ipsos 2022). According to several surveys, climate change scepticism is more prevalent in the United States, Australia, and some European countries, such as the United Kingdom, than in other parts of the world (Bell et al. 2021; Ipsos

2022). Within countries, climate change scepticism tends to be higher among men, older people, conservatives, and those with lower levels of education, income, or environmental concern (e.g. Hamilton 2011; McCright & Dunlap 2011; Whitmarsh 2011).

Climate change response scepticism seems to be increasing in certain nations (Bell et al. 2021; IPSOS 2022), and thus identifying the types of groups and individuals most likely to form sceptical views towards climate change science and mitigation policies is the first step in finding solutions to scepticism toward climate change science. In the literature, a climate change sceptic can range from scepticism towards the science of global warming, to scepticism towards the need/capability of technological or political solutions to climate change (Capstick and Pidgeon 2014). These different forms of scepticism can be usefully divided into two categories: epistemic sceptics - sceptical of the science of global warming - and response sceptics - sceptical that governments have the capacity to, or even should, respond to climate change and its effects (Capstick and Pidgeon 2014).

2.2.1. Climate Change Scepticism and Ideology

As a predictor variable, political ideology has been shown to explain a significant amount of climate scepticism and support for environmental protection (Dunlap et al. 2016; McCright and Dunlap 2013; Guber 2013; McCright et al. 2016). The consensus of research points to right-wing ideology's strong association with lower support for climate-related regulations and policies, whilst left-wing ideology favours state intervention and supports climate-related regulations and policies (Huber 2020). Bolsen, Druckman and Cook (2015) reported that party identification and political ideology were important factors in determining individuals' beliefs about global warming, since the predicted probability of expressing belief in global warming ranks at 72 percent for Democrats and 57 percent for Republicans. In a meta-analysis of the determinants and outcomes of belief in climate change using 25 polls and 171 academic studies across 56 nations, Hornsey et al. (2016) found that determinants of climate change belief (i.e., education, sex, subjective knowledge, and experience of extreme weather events) were overshadowed in predictive power by values, ideologies, and political affiliation (Hornsey et al.

2016). There is evidence that the association between climate scepticism and conservatism is particularly strong in the United States: one study found positive correlations between climate scepticism and ideology were stronger and more consistent than in 24 other nations (Hornsey, Harris and Fielding 2018). However, concerns have been raised with climate change attitude survey data. The overreliance on polling data in western countries often ignores the wider world context, as well as the cultural contexts of climate change attitude change over a long period of time (Capstick et al. 2014).

Associations between climate change and conservative views have been supported by numerous studies (Hornsey, Harris and Fielding 2018; McCright et al. 2016). A main factor is the lower sense of perceived danger from the hazards of climate change (Leiserowitz 2006). Conservative views also connect to climate change by the justification of socio-economic disparities and the current system (Jylha and Akrami 2015; McCright et al. 2016). Psychological factors like dominance and low empathy are also associated with climate change denial (Jylha and Akrami 2015). Partisan biases also appear to be relevant in this debate. Conservatives were found to pay less attention than liberals to climate related words when reading the same text (Whitman et al. 2018). It should also be noted that recent research stresses caution when relying on a left-right scale for climate scepticism. For example, Green Party voters are more climate conscious than other left-wing groups, while non-voters show less concern over the effects of climate change than voters (Fisher et al. 2022). This effect varies further when discussing multiple countries. While Western countries are very similar, Fisher and colleagues (2022) found no consistent climate values in Central and Eastern European countries.

2.2.2. The Far-Right and the Environment

Links between climate change scepticism and far-right movements in Europe and Latin America are also well established (Forchtner 2019; 2020; Whitmarsh 2011). The far-right will use antiestablishment discourses, ethno-nationalism and will draw upon traditional masculinity stereotypes in an attempt to convince their potential supporters that climate change is not real, or poses no threat to their nation (Hultman, Bjork and Viinikka 2020). It is, however, important

to distinguish between climate change scepticism and anti-environmentalism. For example, there is support for certain environmental policies amongst the far-right in Denmark (Kølvraa 2020), Austria (Voss 2020), Hungary (Kyriazi 2020), and even the US (Taylor 2020).

The natural environment has been present in far-right political imaginaries and myths for decades (Forchtner et al. 2020). European far-right parties vary in their views on the natural environment but tend to see it as the pure heart of their nation, the central place where both the aesthetics and symbolism merge (Kølvraa 2020: 107). Views on the natural environment incorporate a range of ecological worldviews stressing the interconnectedness of flora, fauna, the nation, and its homeland (Forchtner et al. 2020: 1-2.). In the United Kingdom, notions of ‘the land’ are important to far right groups (Richardson 2017), in similar ways to other far-right groups in Europe such as Poland through ‘homeland’ and Germany through ‘heimat’ – love of rural, idyllic homeland (Bennett & Kwiatkowski 2020: 242), as well as the ‘German forest’ which resonates as part of a nativist Germanic identity (Forchtner & Ozvatan 2020). The Danish People’s Party (DPP) uses aesthetic depictions of the Danish countryside and utilises symbolism to connect nature to the national community (Kølvraa 2020 109). But when it comes to climate change, far right parties tend to deny or cast doubt on international environmental risks (Forchtner and Kølvraa 2015; Schaler and Carius 2019).

2.2.3. Climate Change Scepticism and Populism

Recently, right-wing populism has been shown to be a variable influencing climate change attitudes, orthogonal to ideology (Huber 2020; Lockwood 2018). The causes of these trends remain difficult to ascertain. In one study of right-wing populists, Jylha and Hellmer (2020) reported no connection between climate change denial and anti-establishment attitudes, arguing that ideological worldviews could be the core differentiator with liberals. A finding from the US was that the perceived threat to society from what were referred to as ‘environmentalists’, consistently and uniquely accounted for any connection between conservatives and climate change scepticism (Hoffarth and Hodson 2016). Huber (2020) finds

that populism acts as an enhancer of ideological divisions on climate change, in which right-wing populists will be more sceptical of climate change than their right-wing non populist counterparts.

2.2.4. Climate Change Science and Education

The relationship between ideology and climate change science is further complicated when taking a broader look at the relationship between conservatives and their support for science. For instance, conservatives have been found to be less trusting than liberals of scientific findings that have an impact on society, such as science with the potential to impact education or the environment. However, conservatives display greater trust in science analysing production operations and manufacturing processes than their liberal counterparts (McCright et al. 2013). For example, liberals are less trusting of nuclear power generation, despite it having a much lower accident rate than almost all other forms of energy generation (Feldman and Hart 2018; Kahan 2015;). This distinction between knowledge and belief acquisition is an important and overlooked theme within research on climate change scepticism (Kahan 2016). In this theory of climate change scepticism, having sceptical attitudes reveals a conflict of values, rather than inadequate education (Kahan 2016). Indeed, educational attainment has been shown to be positively associated for Democrats with views on climate change consistent with scientific consensus, but the association is weaker or negative for Conservatives and Republicans (McCright et al. 2016).

2.3. Populism

Populism, especially right-wing populism (RWP), has attracted a lot of academic and media interest, especially after Donald Trump became the US president. Since 2016, right-wing populist movements have grown in vote share in Europe, Latin America, and Asia. Populist parties have common characteristics, but each one also has some differences (Mueller 2019). For example, far-right populists use narratives that match their own national history and identity (Wodak 2020). This is most evident with the reaction of European far-right parties to

the Russian invasion of Ukraine in 2022, in which some far-right parties were more willing than others to denounce Russia (Fagerholm 2024), based on their narratives about Russia being an ally against immigration and liberalism. Therefore, it is hard to draw theoretical connections between populist parties from different countries, and this may reduce the significance of populism as a concept (Mudde 2017). Populism definitions tend to combine an ideological stance with an anti-establishment binary morality (Norris and Inglehart). The policies of a populist party tend to form around a “thin ideology” (Mueller 2019) in which a populist party latches loosely onto policies and agendas from existing parties, while maintaining that they represent the true “will” of the people against the evil elite (Mudde 2017 Hawkins and Rovira-Kaltwasser 2018: Norris 2020). For instance, right wing populists tend to view the elite as a cultural elite, while left-wing populism is more concerned with economic inequality, with the “elites” in this context being the wealthy (Vasilopoulos and Jost 2020).

Paired with a “thin” ideology, populism is viewed in ideational terms (Mudde 2004). This unique set of ideas is one that understand politics as a Manichean struggle between a reified will of the people and a conspiring, self-serving elite (Hawkins and Rovira-Kaltwasser 2018; Mudde 2004; Mudde 2017: Norris 2020). For example, Donald Trump’s ardent supporters compared Trump to Biblical figures who were not perfect characters, but were important for the survival of humanity, such as King Cyrus or King David (Gabbatt, 2020). This distinction between “good” and “evil,” or “pure” and “corrupt,” further separates the populist concept of the people from that of the mainstream parties (Akkerman et al. 2014). De La Torre (2017) adds to the ideational argument, stating that populism is a discourse that splits politics and society into a constant fight between the people and the power group.

The ideational definition seems more appropriate when examining countries with multiple populist forces (Erisen et al. 2021). For instance, in Italy, Silvio Berlusconi blamed the left and the judges for having too much political power; Matteo Salvini accused the elites outside of Italy, such as the EU institutions causing economic problems, or NGOs for supporting further immigration, while the 5-Star Movement attacked the corrupt politicians for exploiting the

country (Erisen et al. 2021). All parties in this example argue that they pursue the will of the people, with ‘common sense’ politics (Mudde 2017). This thought process seems obvious to populists, who seem unable to imagine that their values might be partisan (Mudde 2017), therefore those who claim to hold contrasting beliefs are either insincere or have nefarious intentions.

Ideational populism’s simplicity is also its constraint. Ideational definitions distinguish mainstream parties from populist parties yet cannot easily distinguish one populist party from another. Ideational concepts may misunderstand the goals of populism by emphasizing popular sovereignty and ignoring the populist twist where the people automatically transfer their sovereignty to a charismatic leader. Thus, it has been argued that ideational approach overestimates the rhetorical appeal to marginal voters (Weyland 2017). Furthermore, the idea of toppling the corrupt system is unlikely to be the only factor within populism, since multiple studies report that voters in general prefer party leaders who do not aim to drastically alter or topple the democratic representational system (Van der Brug et al. 2005; Bos and Van der Brug, 2010). On the contrary, one study found that parties have to be seen to be legitimate to succeed (Bos et al. 2013). Unless ideational definitions of populism were combined with a more traditional “thick” ideology on the left or right (Vasilopoulos & Jost 2020), it may be unlikely that a political campaign without structure would be able to succeed on Manichean moral arguments alone.

Publications linking populism and climate change scepticism are still relatively uncommon (Lockwood 2018), since most research refers instead to climate sceptic associations with far-right parties (Forchtner 2020). However, those who have considered the connection believe climate change to be an example of an international issue facing a populist backlash against globalising forces (Lockwood 2018; Norris and Inglehart 2019). Huber, Fesenfeld and Bernauer (2020) found that populism enhanced the partisan trend regarding climate change attitudes in the United States. The abstract and complex nature of climate change allows populists to diminish these issues as elite projects (Huber 2020). Once individuals perceive climate change

issues as elite projects that do not align with the will of the people, climate related and environmental politics will face resistance from voters (Huber 2020), which could be exploited by populist leaders who frame intergovernmental aims as threats to 'the people' (Engesser et al. 2016; Matthes and Schmuck 2017).

2.3.1. Populism and Climate Change Scepticism

Recent studies have shown positive links between climate change scepticism and populist views (Huber 2020). Participants who displayed strong populist views were more likely to doubt human-caused climate change and were less likely to support environmental conservation (Huber 2020). The US findings that populist views strengthen the effects of partisanship match the British results (Huber 2020). The most compelling comparative evidence comes from Yan, Schroeder and Stier (2021), who used web tracking data in France, Germany, Italy, Spain, the US, and the UK involving 150 million website visits across 8893 websites, paired with a survey containing questions about political preferences and attitudes towards climate change. The authors found that right-wing populism was indeed related to climate doubt (Yan, Schroeder and Stier 2021). The relationship between RWPs and climate change scepticism has also been demonstrated within the European Union. In a study of all 28 EU member states, Jahn (2021) reported that once in power, populist parties have a significant impact on GHG emissions, in terms of both the magnitude of the effect, and the time lag between the establishment of a populist government and its effect. Jahn concluded that no other European party causes such a rapid effect on GHG emissions when in power (Jahn 2021 12).

However, the cause of this trend between populism and climate change scepticism is less clear. It seems intuitive to assume that the relationship occurs because conservatives and RWPs are more likely to be anti-science (Remso and Renstro 2023). However, other scholars argue that this anti-science attitude is a spillover from a mistrust in government, rather than mistrust of climate change itself (Oreskes and Conway 2022). Indeed, left-wing populist (LWP) groups display the similar anti-science attitudes directed at other topics (Wade 2019). For example, left-

wing populist Mexican president Andres Lopez Obrador (AMLO) began cutting funding to university science scholarships, decrying academics as a wasteful elite (Wade 2019).

Furthermore, mishandling of the Covid pandemic in Mexico was partly attributed to AMLO's suspicion of the medical profession which he claimed cared more about what assets patients have than their conditions (Agren 2020). Overall, the links between climate change scepticism and right-wing populism are established (Huber 2020), yet the causes are still debated.

2.4. Moral Foundations Theory

If values are at the core of divisions on climate change science (Kahan 2016; Wolsko 2017), then a person's moral intuitions may underlie, motivate, and unite ideological positions across the climate change attitude divide (Koleva et al. 2012). Moral psychology uses many scales to assess stages of moral reasoning (Rest, Narvaez, Thomas and Bebeau 1999) and moral identity (Aquino and Reed 2002). These scales have tended to have the same assumptions in which morality is only about individuals harming or being unfair to other individuals (Graham et al. 2011). Haidt and Graham (2007) discovered that conservatives value some moral codes that liberals don't see as moral issues (Haidt 2012). Graham et al. (2009) showed that both liberals and conservatives value care and fairness, but conservatives value loyalty, authority, and sanctity more than liberals do. Graham et al. (2013) also found that people who value certain moral codes are more sensitive to related issues - for example, people who value care are more bothered by violence or cruelty. Some studies also found that conservatives feel more disgust than liberals when they encounter unpleasant stimuli, such as bad smells or videos (Dodd et al. 2012; Helzer and Pizarro 2011; Inbar, Pizarro and Bloom 2011). Haidt and colleagues grouped these various intuitive moral emotions into five moral codes that are common around the world; care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation (Haidt 2012; Graham et al. 2013). This framework and later related research (see Graham, Haidt, and Nosek 2009; Graham et al. 2011; 2013; Haidt 2008; 2012) became known as moral foundations theory (MFT). Further research into MFT showed that people's use of moral foundations predicted what views they held on certain moral issues (Strimling et al. 2019). These mental

modules (moral foundations) affect social and political values, as shown by the evidence for MFT (Hatemi, Crabtree and Smith 2019). This makes moral foundations theory the most widely used theory to explain political opinions and moral judgements (Feldman 2021). Though this thesis uses the base five moral foundations, it should be noted that there have been arguments for more foundations. Haidt argued for the inclusion of a liberty/oppression axis (2012), while other moral domains that have been discussed include reciprocity, heroism, and property (Curry, Jones Chesters, Van Lissa 2019).

The five moral foundations were grouped into two categories: individualising and binding. Individualising codes are based on personal rights and freedoms and apply to everyone, regardless of group identity (Malka et al. 2016). They include care and fairness (Yudkin et al. 2021). Binding codes are based on group cohesion and cooperation and favour ingroup members over out-group members. They include loyalty, authority, and purity (Malka et al. 2016). Conservatives tend to value binding codes more than liberals do (Graham et al. 2009). The other group of values that is more linked to the ideological right is the concept of 'binding' moral values, which are rooted in 'coalition psychology', which regulates community and group behaviour (Yudkin et al. 2021). Binding values help in cooperative settings, as the three foundations that make up this group are loyalty (giving up individual motivations for a collective group); authority (stronger support for power structures and traditions); and purity, which can involve protection of both physical and perceived threats (i.e. apostasy or sinful behaviour). The term binding is therefore suitable, as these morals 'bind' people into coherent groups (Malka et al. 2016). Evidence for individualising and binding moral groups was found in a meta-analysis that examined the connection between moral foundations and personal values (Feldman 2021). Feldman also reported that self-transcendence versus self-enhancement values dimensions were associated with individualizing foundations, whereas conservation versus openness-to-change values dimensions were associated with binding foundations (Feldman 2021).

One possible reason why conservatives value foundations beyond caring and fairness, like purity and loyalty, is that they have a stronger behavioural immune system, which is a

system of behaviours and intuitions that evolved to protect us from external threats like parasites, while also influencing our reactions and caution to strangers and outsiders (Murray and Schaller 2016). This system may affect how conservatives and liberals process information differently and form different worldviews (Kidwell et al. 2013). Ideology has been demonstrated to be a psychological trait that drives moral decision making (Jost 2021). Notably, preexisting political values have repeatedly been found to cognitively “charge” evaluative assessments (Jost 2003; 2021). This theory suggests that ideology leads to judgments of right and wrong which remain consistent with preexisting ideological worldviews. The main critique of MFT is that it is determined by ideology, rather than being the driving force behind shaping peoples’ world views (Smith et al. 2017). In this view of attitude creation, people use morality to justify their preexisting political values at least as much as, if not more than, using morality to inform them (Hatemi, Crabtree and Smith 2019).

In support of the ideological primacy in value creation, one study found little evidence that changes in moral foundations account for changes in political attitudes, and therefore MFT is not likely to be an explanation of the causes of ideology (Smith et al. 2017) (the authors did however stress that MFT retains considerable interest for framing investigations of the consequences of ideology). The Smith et al. (2017) results were challenged on multiple grounds relating to the methods used in the study (Clifford 2017). However, Hatemi, Crabtree & Smith (2019) tested whether moral intuitions drive political beliefs or if political beliefs drive moral intuitions and found consistent evidence supporting the hypothesis that ideology predicts moral intuitions rather than the reverse.

The relationship between MFT and ideology is further complicated when considering the different moral foundations. For instance, political liberals had more negative feelings towards someone than conservatives did if they violated the moral foundations of care/fairness. But if someone violated the moral foundations of loyalty/authority/purity, conservatives had more negative feelings than liberals did (Smith et al. 2019). How much public opinion shifts on an issue depends on how well one side can use harm-fairness arguments to support their position

over the other side (Strimling et al. 2019). MFT also does not align with the ideological primacy model when it comes to partisanship, as the loyalty foundation predicted the strength of an individual's partisan identity (Clifford 2017). Clifford (2017) argued that some people are more prone to form strong group ties than others, and therefore more likely to become strong partisans. This effect remained even after controlling for patriotism, which did not predict how the strength of someone's partisanship (Clifford 2017). Even those who doubt MFT as a way of explaining ideology say that their results do not make the link between these two concepts less relevant, and even say that their link is crucial for understanding how people acquire and keep their values (Hatemi, Crabtree & Smith 2019).

2.5. Climate Change Framing

Framing is a crucial concept if we seek to understand how moral and ideological values on climate change science and policy are communicated, with one strand of theory being that how the message is communicated matters more than the content itself (See Feldman and Hart 2018; Kahan 2016). Framing can best be summarised as “the process by which people develop a conceptualisation of an issue or reorient their thinking about an issue” (Chong and Druckman 2007, 102). Researchers use framing to study how people form or keep their values, by using speakers from their own group or highlighting some facts over others (Kahan et al. 2011, Kahan 2016, Shan, Diao and Wu 2020). To study framing effects, researchers often use emphasis framing (Binder, Childers and Johnson 2015, Bullock and Vedlitz 2017), which stresses certain speakers, politicians, or information (Kahan et al. 2011, Kahan 2016, Shan, Diao and Wu 2020).

Framing topics and issues relating to climate change can make people more willing to change their behaviour or support climate action if the benefits and/or consequences are communicated in ways that focus on certain issues and values (Spence and Pidgeon 2010; Vries et al. 2016). However, framing can also trigger partisan reactions, such as when mentioning “climate change” makes Republicans oppose and Democrats support clean energy policies (Feldman and Hart 2018). Some researchers argue that polarisation on issues related to the

environment may in part be explained by the chronic framing of persuasive messages in ideological and moral terms that hold greater appeal for liberals than conservatives (Wolsko, Ariceaga and Seiden 2016). Contrary to this optimistic view of framing other work has shown that although they may be perceived as manipulative in the long-term, cost-framed messages are effective in influencing climate change attitudes and behaviours (Vries et al. 2016). Another concern with framing stems from efficacy. Political issues that are deeply rooted can elicit strong reactions from participants (Behr and Iyengar 1985; Chong and Druckman 2007; Kahan et al. 2013). For example, Corner, Whitmarsh and Xenias (2012) found that people who are less sceptical about climate change evaluate the reliability and accuracy of information differently to people who were more sceptical about climate change, which they state demonstrates biased assimilation of the information based on prior values. Nevertheless, framing environmental issues has been shown to be effective at fostering concern for the environment and support for environmental protection in multiple studies (Clayton, Koehn and Grover 2013; Feinberg and Willer 2013; Kahan 2015; Koleva et al. 2012; Stecula and Merkley 2019).

2.5.1. Framing Climate Change through Moral Foundations

In political discourse, moral language tends to emphasise individualising foundations, as shown by the limited moral framing of environmental messages by political groups. For instance, Nisbet, Markowitz, and Kotcher (2012) observed a strong liberal bias in environmental campaigns and recommended that groups need to appeal to more moral foundations, learning different moral languages. For instance, when discussing the Deep-water Horizon event, mentioning the harm of climate change was slightly more effective than not doing so, but only for liberals. Conservative participants had weaker responses to the experiment (Clayton, Koehn and Grover 2013). Additionally, a UK study reported that 'perceived fairness' was a central and consistent predictor of policy support for net zero policies (Poortinga et al. 2023). This frequent exposure to the harm/care foundation may have reduced its effectiveness framing proenvironment messages amongst conservative sceptics who do not respond to harm/fairness messaging in the same manner as liberals.

Instead of presenting environmental issues as personal choices, moral frames that emphasise collective values elicited positive responses from US conservatives in several studies. For instance, Koleva et al. (2012) found that the purity frame shaped views on global warming, indicating a natural sense that the environment is sacred. Similarly, Feinberg and Willer (2013) found that using the purity frame for pro-environmental messages narrowed the gap between liberals' and conservatives' environmental views, in line with Koleva et al (2012). Purity was not the only collective moral frame that was effective for changing attitudes: when using multiple collective frames (loyalty to in-group, respect for authority etc.) Kidwell et al. (2013) showed that persuasive appeals that aligned with conservatives' 'binding' moral values increased conservatives' recycling intentions (Kidwell et al. 2013, 359). Similarly, pro-environmental messages framed as patriotic increased high system justifiers' conservation intentions and readiness to sign a pro-environmental petition. Feygina, Jost and Goldsmith (2010) showed that they could eliminate the negative effect of system justification on environmentalism by making people see pro-environmental change as patriotic (loyalty) and consistent with maintaining the status quo (authority).

Authority, another binding moral foundation, was shown to play a role in climate change attitudes as well. Sauer and colleagues (2021) investigated what kinds of messages would influence undergraduates' views on climate change. They found that the "engaging science lecture" frame did not affect students' climate perceptions, but appealing to student respect for authority had positive effects. Furthermore, three experiments by Wolsko, Ariceaga and Seiden (2016) tested how different moral frames of pro-environmental messages influenced conservation intentions, climate change attitudes, and donations to an environmental group. They found that conservatives moved significantly towards a pro-environmental position after seeing a binding moral frame, which included authority, purity and in-group patriotism. A possible reason for this difference between left and right could be that climate change and other environmental issues are already socially framed using individualising frames. This could account for Feinberg

and Willer's (2013) results - that current environmental discourse mainly used moral concerns related to the individualising moral foundations of harm and care.

2.5.2. Populism Framing

Populism framing can be defined as the use of populist elements, such as anti-elitism, antiexpertise, people-centrism, or moral polarisation, to construct and convey a certain message or position on climate change (Taggart 2000). Framing issues through Manichean ideas of good and evil, a common tactic amongst populists (Mudde 2017), has been demonstrated to appeal to conservative family values and Judeo-Christian morals, found throughout the western world, and deployed as moral calls to action by leaders like the former President Bolsonaro in Brazil (Barberia and Gómez 2020). Populism framing can have various effects and implications for the understanding and engagement with climate change. On the one hand, populism framing can undermine the scientific consensus and the legitimacy of the climate policies and actions, by casting doubt on the evidence and the motives of the climate scientists and policymakers, and by appealing to the common sense and the preferences of the people (Ernst et al. 2017). On the other hand, populism framing has the potential to enhance the salience and the urgency of the climate crisis, by exposing the failures and the injustices of the current system and by empowering the people to participate and have a say in the climate governance and decisionmaking.

2.6. Summary

The extensive research on climate change scepticism, ideology and moral foundations theory establishes a theoretical foundation for my thesis. The key points could be summarised as a complex picture of ideological and moral values interacting to shape attitudes to climate change. Factors like region, education and political party influence all play a role to help explain crosscountry variation in climate change scepticism. The latter section of the review focussing on framing research brings the previous sections together through their means of communication. The framing effect experimental studies discussed in this review utilised

populist, ideological and moral frames on environmental issues with mixed success, providing guidance for future framing research. This thesis builds upon that research with framing studies that are guided by the literature, alongside a content analysis that is specifically influenced by the sections on moral foundations theory and climate change scepticism.

The literature within this chapter will be discussed in all three papers, with discussions being made in relation to these prior findings. Chapter 4 makes specific use of the moral foundations and framing literature discussed to evaluate the framing of contentious issues like climate change in the digital news-media. The ideological differences in climate change attitudes, as well as regional differences were crucial in determining that the US and UK were the most appropriate countries to study. Chapter 5 also draws upon the moral foundations theory and framing literature, yet focusses more on the association between ideology and climate change attitudes as a baseline to examine moral values as an alternative means of climate value influence. The same climate change scepticism distribution evidence used in Chapter 4 was also helpful in guiding the data collection for Chapter's 5 and 6. Chapter 6 utilises the work on populism and climate change attitudes, building the methodology upon the guidance of prior populism framing studies. The guiding principle from the populism literature is that populism is an enhancement of ideological positions on climate change, rather than an independent factor (Huber 2020). Testing this principle using the moral element of populism will further expand the literature, attempting to determine populism's relationship to climate change attitudes, as a separate value dimension to ideology.

Chapter 3: Methodology

As discussed within the literature review, this thesis seeks to understand the role of moral values in influencing climate change attitudes, while accounting for other factors such as ideology and education. This thesis adopts a pragmatic approach to research, integrating both positivist and constructivist elements to comprehensively explore the role of moral values in shaping climate change attitudes. The content analysis (Chapter 4) employs a constructivist lens, focusing on the qualitative context of moral messaging within news-media to uncover how moral language and framing are socially constructed and context-dependent. This aligns with the constructivist belief that meaning and values are created through social and cultural interactions. Conversely, the experimental studies (Chapters 5 & 6) leverage a positivist approach, utilising quantitative methods to test hypotheses and measure the causal effects of moral framing on attitudes, while controlling for variables such as ideology and demographics. This methodological duality reflects the complexity of the research questions, necessitating both an understanding of the nuanced, socially mediated nature of moral communication and the systematic testing of theoretical predictions in controlled environments. By combining these methodological philosophies, I attempt to provide a robust exploration of how moral values influence climate change attitudes in both real-world and experimental contexts.

Within this thesis I utilise a mixed methods approach, integrating both qualitative and quantitative methodologies to address the research questions comprehensively. By blending

content analysis with experimental studies, I deploy a concurrent design (see Creswell 2014), as the qualitative and quantitative components are conducted and interpreted in tandem. Additionally, the thesis adopts an explanatory approach, as it seeks to test the causal relationships between moral values and climate change attitudes while exploring the underlying mechanisms and social contexts through which these relationships manifest. This dual focus allows for both hypothesis-driven inquiry and an in-depth exploration of meaning, aligning with the pragmatic ethos of this research.

The primary mechanism for analysing how these values influence climate change attitudes through communication will be framing techniques, primarily ‘emphasis framing’ which emphasises a certain aspect of a message to try and alter perceptions on the overall attitude towards the content. However, given that the communication of climate change values is constantly occurring in the news-media, real-world (data collected from non-experimental settings) observational study is necessary to assess whether there are differences in moral language used by digital news-media organisations. Since real-world and survey-based study methods were the best fit for this research, I opted for one observational study design that incorporates a content analysis, alongside two experimental study designs.

The content analysis (Chapter 4) includes a mixed methods approach, with a qualitative assessment of the context within which moral messaging was deployed. Though quantitative methods can be used in studying languages, the complex context dependant nature of the research material led me to incorporate a qualitative method design when attempting to understand the influence of morals on public attitudes towards climate change in the media. The other two studies (Chapter 5 & 6) rely on quantitative analyses, using survey experiments of US participants. The United States is therefore a particularly appropriate country, given the stronger presence of climate change scepticism and populism when compared to European populist groups (Huber 2020; IPSOS 2022). The following discussion provides a broad outline of the methods used in the thesis, with greater detail provided in each of the three papers.

The first paper (Chapter 4) addresses RQ1 (To what extent do moral foundations influence climate change attitudes?) and RQ3 (Does moral communication vary across different political issues such as cancel culture and climate change in the news-media, in terms of their moral content and context?). To understand how moral foundations influence climate change in real-world scenarios, I opted for an observational study design, in the form of content analysis of digital news-media articles, similar to research undertaken previously in moral research (Hopp et al 2021; Kennedy et al. 2023; Lucas and Park 2023). Content analyses allow for real-world applications of MFT (Hoewe et al. 2022). Databases created from content analysis also have the benefit of being easily replicated in subsequent research or used as a supplementary dataset in future work (Hopp et al. 2021 eMFD). However, observing climate change messaging in a vacuum would not shed light on how this communication compares to other contentious topics, as well topics that are less polarised (RQ3). Therefore, to answer RQ3, this paper provides a content analysis of climate change/global warming; political correctness/cancel culture; and space/astronomy news by digital media platforms in the United States and United Kingdom. The Lexis-Nexis database was selected for its large and varied database, which has been used in a variety of applications (e.g. Boynton and Glenn 2016; Park 2019).

The digital news platforms for the US and the UK are ideal case studies as they have some of the highest partisan divides of western democratic nations (Fletcher 2022; Silver 2022), while also having to some extent overlapping audiences, with The Guardian receiving 5.8 million daily users in the US in 2020 (Smith 2021). Overlapping audiences reduces concerns of generalisability between the US and UK datasets. The six digital news platforms used in this study are chosen based on varied audience ideologies. Two digital news-media organisations were taken from the US (New York Times; CNN) and four were taken from the UK (The Guardian; The Times; The Telegraph; Daily Mail). Availability of data on Lexis-Nexis determined the DNM options that were selected (for example, Fox News digital articles were unavailable). In 2019, The Guardian was the most read online news media in the UK at 5.2 million weekly readers, with the Daily Mail following closely at 4.1 million weekly readers, and the two other

UK digital news-media organisations had over 2 million weekly readers (Thorpe 2019). In the US, the NYT is the second most used news website, and CNN is the fourth (Similarweb 2024). A high user base is a better indicator of public perceptions than more niche news organisations with smaller audiences, even if those organisations were more ideologically skewed (thus yielding potentially more interesting results). For this reason, I focussed on the news organisations with larger audiences.

Climate change/global warming was the chosen left-leaning issue (IPSOS 2022), and political correctness/cancel culture was the selected right-leaning issue (Norris 2023). Although astronomy and space were considered liberal leaning in the Shi et al. (2017) paper, including ‘space technology’ and ‘space programs’ as search terms incorporates conservative interests in analysing production operations and manufacturing processes (McCright et al. 2013). Space was also utilised as a neutral topic in prior research (Nisbet, Cooper and Barrett 2015). The dates included in this research spanned the 10 years between Jan 2011-2021.

Articles were screened for words denoting Care/Harm and Fairness/Cheating; Ingroup/Loyalty; Authority/Subversion; Sanctity/Degradation in accordance with the Moral Foundations Dictionary (MFD) (Appendix B) (Graham, Haidt & Nosek 2009; Graham et al. 2011), as displayed in Appendix C. As with the Murray, Sandlin and Tatalovich (2024) study, this content analysis identifies the ten subcategories (five virtues and five vices) of MFT words identified in the MFT dictionary. Each of these ten moral categories was analysed separately for each of the three topics (climate, cancel culture, space) and for each of the six digital news media organisations. In total, 360 rounds of screenings were undertaken, with a total number of digital news articles screened being 75,289. Manually screening each paper also added the benefit of removing false positives. The total number of articles including at least one moral foundation term were included in the study. Lexis-Nexis highlights the sections within an article that have relevant words in the screening, rather than the article’s entirety.

The two experimental studies were designed to assess both moral foundations and Manichean morality’s impact on climate change attitudes. The first experiment (Chapter 5) attempts to

provide evidence to answer RQ1 (To what extent do moral foundations influence climate change attitudes?); RQ2 (Do moral values shape preferences for different types of policy solutions on climate change); and RQ4 (Are moral values more significant than ideology in influencing climate change attitudes?). Specifically, this study examines the effects that binding and individualising moral cluster emphasis frames have on familiar and unfamiliar climate change mitigation technologies; while accounting for the potentially confounding effects of ideology, climate change scepticism, and demographics in influencing the effectiveness of the moral foundation frames. Emphasis framing addresses competing frames within the same message by emphasising a certain value that is most congenial to the audience (Chong and Druckman 2007). In this case, I focus on in-group moral foundations over climate change messaging. Participants were recruited from the Prolific Academic survey sampling organisation on August 2022, in which participants from the US (N=817, 410 male, 396 female, 11 non-binary/third gender) participated in the online survey experiment, which lasted less than 15 minutes. Respondents were randomly assigned to one of four groups (N=204-5). Participants were given the instruction, “An independent policymaker wants your opinion on an important topic. Read the following policy statement carefully and then state your level of agreement/disagreement with the proposal”. Each of the four groups was then required to read a statement based on their agreement/disagreement with a statement on either wind turbines generation or stratospheric aerosols (SAs) (7-point agree/disagree Likert scale)¹.

The moralised language for each of the four experiments groups was selected from the extended Moral Foundation Dictionary (eMFD) (Hopp et al. 2021). The eMFD utilises a crowdsourced annotation procedure constructed from text annotations generated by a large sample of human coders, which the authors concluded “more accurately predicts the presence of morally relevant article topics compared to previous dictionaries” (Hopp et al. 2021, 243). For each framed statement, there are seventeen words from the appropriate section within the

¹ I am researching the difference in effectiveness of two competing framing conditions, so a neutral frame group is not required in this study (Gamliel and Peer 2010; Nobel 2021; Sanford et al. 2023)

eMFD, eleven positive words (i.e., freedom, compassion) and seven negative words (i.e., harm, cruelty). Each set of seventeen words was compiled to form either a binding or individualising moral foundation group: with words relating to loyalty/betrayal, authority/subversion, and sanctity/degradation being associated with binding moral foundations, and care/harm, and fairness/cheating being used to describe individualising moral foundations. Two groups were

randomly assigned the binding moral foundations and the other two groups were assigned individualising foundation statements. Each group was given the following original statement: *"An independent policymaker wants your opinion on an important topic. Read the following policy statement carefully and then state your level of agreement/disagreement with the proposal:"*

Responses to these four frame conditions form the dependent variables of the experiment. The remainder of the survey contained items used to create independent variables (IVs) which measured respondents' ideology, climate change attitudes and demographic variables: age, gender, education, and ethnicity. The most pertinent independent variable was a respondent's ideology. Political ideology was measured using an eight-item political attitudes scale (Nail et al. 2009), with a 1-7 Likert range. The eight questions related to ideology were specific to the US context: including the death penalty, gun ownership, and abortion, as well as their thoughts on the Democratic and Republican parties.

Climate change value questions were included to gauge two separate attitudes towards climate change in line with Capstick and Pidgeon's (2014) dichotomy discussed previously: epistemic and response scepticism. These values were evaluated through three questions measuring their belief in global warming, whether it was human caused (anthropogenic), and whether the US should do anything about climate change. Factor analysis revealed that the items used to measure types of climate scepticism all fitted one factor, and therefore the responses to all three climate change value questions were grouped as one variable. To control for demographic variables, information was collected on participant age, ethnicity, gender, and education. Education was controlled for using degree attainment.

The second experiment (Chapter 6) also addresses RQ2 (Do moral values shape preferences for different types of policy solutions on climate change?), and RQ4 (Are moral values more significant than ideology in influencing climate change attitudes?). The focus however is shifted from MFT to Manichean populist moral values in relation to supporting a carbon emission reduction policy in the US. As with the other experimental study, four groups were then required to read a statement based on their agreement/disagreement with a neutral or populist-framed statement² (7-point agree/disagree Likert scale). The frames were each modelled as continuous dependent variables, so that a low score was associated with agreement with the statement, while a high score was associated with aversion to the statement. Two groups were randomly assigned the senate support for emissions regulations and the other two groups were assigned individualising foundation statements. Each group was given the following original statement:

“A US citizen has made the following statement regarding a recent Senate decision:” this was followed by either a neutral description, or the ideational populist messaging, followed by: *“Do you agree with the decision of the Senate to vote in favour of the Bill?”*

The framing scenarios avoid referencing ‘climate change’ to reduce activation of thoughts on climate change impacting responses (Feldman and Hart 2018). Lastly, to reduce the impact of the strong and growing partisanship within the United States (Iyengar et al. 2019), none of the framing groups was given information as to the party affiliations of the message. A US citizen is referenced to accentuate that this opinion does not stem from outsiders, a common concern amongst populists (Mudde 2004). The remainder of the survey measured respondents’ populist attitudes, ideology, climate change attitudes and demographic variables: age, gender, education, and ethnicity. Populism was measured using the eight Akkerman et al (2014) populism survey questions, and a 1-7 Likert range. To avoid creating dichotomous populist, and non-populist

² Populist framing involves messaging which makes populist ideas applicable, by merging societal issues into a moral opposition between ‘us’ and ‘them’ (Hameleers, 2017; Dekeyser and Roose 2023).

category that has received criticisms in the literature (Huber, Jankowski and Juen 2022), a scale of populist sentiment was used. The eight questions related to political attitudes were specific to the US context: including the death penalty, gun ownership, and abortion, as well as their thoughts on the Democratic and Republican parties.

3.1. Ethical Considerations

Ethical implications of this thesis were considered throughout the construction of the research aims and methodologies, as well as in presenting and discussing the results. The ELMPS ethics group in the Social Science Faculty at the University of York reviewed the experimental studies to ensure that they followed strict ethical guidelines and approved them to be conducted on participants. Prolific Academic ensured that participants were appropriate for the study, whilst also maintaining anonymity. Participants could quit the survey if the content of the survey was upsetting. I ensured that I employed inclusive and carefully selected language throughout to convey respect for all people, specifically when discussing sensitive issues including age, ethnicity and gender. Some of the more potentially offensive terms involving topics of purity and disgust were carefully selected, and only included where necessary to convey the results, or to discuss prior contributions in the literature.

Chapter 4: Righteous Journalism: Examining the use of moral foundations by digital news-media on climate change and cancel culture in the UK and US

(Under review at: Global Environmental Change)

4.1. Abstract

Issue polarisation remains persistent in both the US and UK, particularly over contentious topics like climate change and cancel culture, in which ideological groups assign widely different degrees of concern. These divisions present in digital news-media have primarily been explained via ideological differences. However, moral attitudes have increasingly been theorised to be an important variable in maintaining/increasing issue polarisation, distinguishable from the influence of ideology. Moral foundations theory categorises the complex array of intuitive emotions we feel and could explain the means by which contentious issues are communicated. By using the Moral Foundations Dictionary on the Lexis-Nexis database, I conduct a content analysis on 75,289 news articles from six US and UK digital news-media organisations. Evidence across all six digital news-media organisations largely supports the theory of ideological asymmetry in moral language on contentious topics, in accordance with ideological differences expected within the theory of moral foundations. The difference in the number of moralised articles within a news organisation increases the further from the ideological centre, as well as the extent to which the moral words are used to garner support for in-group topics and deride outgroup topics. These results support the use of moral foundations theory as a means of understanding issue polarisation in the new-media.

Key Words

Moral foundations theory, issue polarisation, moral foundations dictionary, digital news-media, climate change, political correctness, cancel culture, space.

4.2. Introduction

There are numerous studies showing the potential polarising effects of media relating to partisan identities (E.g. Allcott et al. 2020; Boxell, Gentzkow and Shapiro 2017; Latham et al. 2022), as well as fuelling issue polarisation (Barret Hendrix and Sims 2021). However, less is known about the ways in which media creates a response within their audience, enough to influence attitudes on topics, beyond simply identifying with an in-group individual or group. Appealing to a person's morality or informing them of moral transgressions by others is a tactic of persuasion used across the globe (Graham et al. 2011, Graham, Haidt and Nosek 2009; Haidt 2012). Attitudes with moral significance have been shown to be influenced more by counter attitudinal messaging than practical messaging (Luttrell, Phillip-Muller and Petty 2019). There is also evidence that moral identity can shape individuals' cognitions, so that the cognitive dissonance between morals and attitudes is muted (Welsch 2021).

Moral foundations theory (MFT) is a popular theory which categorises the complex array of intuitive emotions into distinct groups (see Graham et al. 2009; 2011; 2013; Haidt 2008; 2012; Hatemi, Crabtree and Smith 2019). Two of the categories related to care/harm and fairness/unfairness are categorised as individualising foundations (emotions focussing on emotions towards individual experience). The other three moral foundations (authority/dissent, in-group/outgroup, and purity/depravity) are clustered together as binding foundations (morals related to group cohesion). Previous studies have shown that conservatives tend to place greater emphasis on the binding moral foundations including loyalty, authority, and sanctity, whereas liberals are more likely to endorse the individualizing moral foundations of care and fairness (Graham et al. 2009; 2013; Haidt and Graham 2007; Graham, Haidt, and Nosek 2009).

There is evidence that digital news-media (DNM) tends to make content for the ideological perspectives of particular audiences (Fletcher 2022), but it is less clear if digital news-media organisations use moral language in line with a niche audience in a similar way. Furthermore, given that people's views are not as dissimilar as people think (Yudkin, Hawkins and Dixon 2019), I suggest in this study that DNM moralise topics in such a way as to maintain a sense of moral threat or urgency towards ingroup values, or against outgroup values. In this vein, I conducted a content analysis on words within the Moral Foundations Dictionary (Graham and Haidt 2012) on digital news-media, to ascertain whether there is an ideological asymmetry in moral language on contentious topics (climate change and cancel culture).

Using six digital-news media platforms of varied ideological stances from the US and UK, this study contributes to the literature on moral foundations theory and media issue polarisation in three ways. First, by focussing the moral foundations dictionary (MFD) on a core left wing issue - climate change (IPSOS 2022) - and right-wing issue - cancel culture (Norris 2023) - across the ideological spectrum of news in the US and UK, I attempt to shed light on whether digital news-media moralise topics of moral significance in line with MFT's ideological asymmetry of moral values. Second, individuals on the ideological extremes tend to display more unsubstantiated fear of outgroups than people closer to the ideological centre (Duffy 2019; Kleinfeld 2023; Mason 2016). To better understand why this occurs and to build upon prior content analyses using MFT (Kennedy et al. 2023; Hoewe et al 2022; Hopp et al. 2021), I aim to improve our understanding of the relationship between moralised discourse and ideological partisan identities by analysing the different frequencies and tone of moral arguments made by digital news-media across the ideological spectrum. Lastly, analysing the context of each article using content analysis will reveal ways in which moral foundation words are used in supported topics as well as topics associated with outgroups.

Results confirm the validity of ideological asymmetry in moral foundation values in accordance with MFT (Graham, Haidt and Nosek 2012). As expected, in-group topics were moralised more than outgroups, and this effect was strongest the further to the left and right of

centre the digital news-media was situated. Interestingly, moral foundations were wielded both as calls to action/outrage for in-group topic articles, whilst being weapons of derision or mockery against outgroup topics. This was the case particularly for news organisations furthest from the ideological centre. I conclude by identifying ways to further improve the use of MFT in media communication of contentious topics, as well as the importance of conducting research on social media news sites with more influence on younger cohorts, which are seeing concerning signs of increased polarisation (ONS 2022).

4.2.1. Polarisation & News Media

Polarisation is theorised to be motivated by partisan sorting and partisan identity because social identities have been shown to affect judgment and behaviour (Mackie, Devos and Smith 2000; Smith, Seger, and Mackie 2007). However, there is less theoretical justification for a direct relationship between social identities and issue position extremity. Therefore, as sorting drives social polarization, it is theoretically possible for issue position extremity to remain relatively constrained. This bifurcated view of polarization reveals the potential for Americans to grow increasingly politically rancorous and uncivil in their interactions, even in the presence of comparatively moderate issue positions (Mason 2015). Partisan identity may drive anger and enthusiasm in the presence of party-based threats and reassurances, but not all issue-based messages (Mason 2016). Social sorting, however, drives anger and enthusiasm in response to all threats and reassurances, suggesting that well-sorted partisans are more reliably reactive to political messages (Mason 2016). Partisanship can even reduce the accuracy of any survey data on economic conditions. Prior research has demonstrated that people express views about issues in line with their political identity, even if they conflict with the evidence on that issue (Zaller 1992; Norris and Inglehart 2019). Similar research found that topics being placed into political groups through party sorting seems to occur only as citizens become familiar with elite cues (Guber 2013).

Partisan identity can drive heightened levels of polarisation against outgroup ideologies

(Iyengar, Sood, and Lelkes 2012), even if groups do not have differing policy attitudes (Mason 2018). Other research has reported that people self-identifying on the furthest ends of the ideological spectrum have the largest perception gap about accuracy of the views of the other side (Yudkin, Hawkins and Dixon 2019). Communication from both sides reduces perceived threat about breaking democratic norms and reduces support for partisan violence (Mernyk et al. 2023), though this effect is not permanent, probably due to participants reverting back to news sources that provide information to the contrary (Duong et al. 2023). As in the US (Mason 2015;2016; 2018). When it comes to issue polarisation, people in the UK misrepresent the opposing side's views on topics like the NHS, and probably have more in common than the polarised discourse suggests (Duffy 2019).

There is growing evidence that social media polarises individuals and groups. For example, Allcott et al. (2020) found that paying a randomly selected “treatment group” of American Facebook users to stop using it resulted in them being less polarised than participants who did not receive payments and continued to use social media. The authors argued the payments were a necessary means to maintain participant compliance.. However, social media does not seem to be the sole cause of polarisation, since the increase in polarisation in the US predates the rise of social media (Boxell, Gentzkow and Shapiro 2017). In addition, it would seem logical for the most active users of social media to be the most polarised, yet older cohorts (who make the least use of social media) were found to be the most polarised (Boxell, Gentzkow and Shapiro 2017; Latham et al. 2022). Mainstream news media may therefore be responsible for partisan sentiments amongst the public, using similar persuasive techniques deployed in social media. This general pattern of persuasion has been demonstrated by experimental studies showing that consumers are more likely to engage with news that shows them more partisan content in line with prior beliefs (Bryanov et al. 2020). Rathje et al. (2023) found that the psychological pull of pandering to one's own “in-group” by attacking the other side of a social and political divide is a significant – and often neglected – factor for why so many believe and choose to spread misinformation or disbelieve accurate news.

A University of Oxford and Reuters Institute Digital News report (Fletcher 2022) found that the partisanship between news organisations is much greater in the US than in the UK. The US polarisation was so severe that there were no centre-right news organisations in the US report (Fletcher 2022). However, when including Norway and Germany, the results also showed that the UK news media is significantly more polarised than its European counterparts (Fletcher 2022). Therefore, both the US and UK news organisations are useful case studies when considering the association between social polarisation and media communication.

4.2.2. Moral Foundations Theory

Ideology is a key variable in the relationship between partisan attitudes and support for certain contentious issues. However, ideology as a variable in research does not fully explain the variations in attitudes within ideological groups (Graham et al. 2013; Koleva et al. 2012). It has been argued that morality also plays a key role in forming and cementing certain values within groups of people (Graham et al. 2009; 2011; 2013; Haidt 2008; 2012; Hatemi, Crabtree and Smith 2019). Moral values are important elements in the formation of other attitudes in the real world (Haidt 2012), with consequences for political values. For example, attitudes with moral significance changed more when faced with moral counter attitudinal messaging compared to practical messaging (Luttrell, Phillip-Muller and Petty 2019). Further research found that when making judgements about other people's characteristics, information about the target's morality can be more influential than information about their competence or sociability (Luttrell, Sacchi and Brambilla 2022). There is also growing evidence that moral identity also shapes individuals' cognitions, minimizing cognitive dissonance between morals and attitudes (Welsch 2021).

A great variety of scales are used in moral psychology to measure stages of moral reasoning (Rest, Narvaez, Thoma, & Bebeau 1999) and moral identity (Aquino & Reed 2002). Although these scales measure different aspects of morality, they all share the assumption (explicit or implicit) that the moral domain is limited to concerns about individuals harming or unfairly treating other individuals (Graham et al. 2011: 366). Haidt and colleagues sorted this diverse array of intuitive moral emotions into five moral codes prevalent worldwide; care/harm,

fairness/ cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation (Haidt 2012; Graham et al. 2013). This framework and subsequent related research (see Graham, Haidt, and Nosek 2009; Graham et al. 2011; 2013; Haidt 2008; 2012) came to be defined as moral foundations theory (MFT). Further research into MFT found that individuals' reliance on moral foundations is predictive of what opinions people have on certain moral issues (Strimling et al. 2019). These psychological modules (moral foundations) have been found to guide social and political values (Hatemi, Crabtree and Smith 2019). The findings supporting MFT laid the groundwork for moral foundations theory to emerge as the most widely used theory in predicting political opinions and moral judgements (Feldman 2021). MFT is however not restricted to five moral foundations. Haidt discusses the addition of liberty/oppression (2012), while four moral domains claimed to be absent from MFT - family, reciprocity, heroism, and property³ (Curry, Jones Chesters, Van Lissa 2019).

These five moral foundations (Appendix A) were not distributed evenly amongst groups. A series of studies found that liberals consistently showed greater endorsement and use of the harm/care and fairness/reciprocity foundations compared to the other three foundations (ingroup/loyalty; authority/subversion; sanctity/degradation), whereas conservatives endorsed and used the five foundations more equally (Graham, Haidt & Nosek 2009). For example, feelings about pornography, shunned by staunch conservatives, strongly correlated to the purity foundation (Koleva et al. 2012). These two sets of moral foundations have been further categorised into concepts that have aided research seeking to better understand moral differences within and between groups. The first concept, termed 'individualising' values, was founded upon the 'ethic of autonomy,' concerned with personal rights and freedoms and is associated more with the ideological left. The two foundations associated with individualising values are fairness (equality and justice based on altruism) and care (avoiding harm and

³ This research does not take a stance on the appropriate number of moral foundations, instead applying moral psychology to political science and social psychology with foundations that have been tested in studies since 2009.

avoiding inflicting harm on any other individual or group), both of which incentivise behaviour outside of perceived group membership (Yudkin et al 2021).

The other set of values associated more strongly with the ideological right is the concept of 'binding' moral values, which are based up 'coalition psychology', governing community and group behaviour (Yudkin et al. 2021). Binding values help in cooperative settings as the three foundations incorporated into this group are loyalty (sacrifice individual motivations for a collective group); authority (stronger support for power structures and traditions); and purity, which can include a defence of both physical and perceived blights (i.e. apostasy or sinful behaviour). The term binding is therefore appropriate, as these morals 'bind' individuals into cohesive groups (Malka et al. 2016). This asymmetry between ideological groups has important implications for understanding how people across the ideological spectrum prioritise and respond to moral concerns. Accounting for these moral asymmetries across ideological groups helps explain why liberals and conservatives often disagree on moral issues, allowing for more effective communication on important but divisive topics like climate change.

Results of a study mapping moral belief systems in the US and New Zealand showed support for MFT frame clusters, since liberals' moral systems displayed greater segregation between individualizing and binding foundations than conservatives (Turner-Zwinkels et al. 2021), in line with MFT ideological asymmetries amongst liberals but not conservatives. Support for individualising and binding moral groups was also found in a meta-analysis examining the relationship between moral foundations and personal values (Feldman 2021).

Ideology has been demonstrated to be a psychological trait that drives moral decision making (Jost 2021). Notably, preexisting political values have repeatedly been found to cognitively "charge" evaluative assessments (Jost 2003; 2021). This theory suggests that ideology leads to judgments of right and wrong which remain consistent with preexisting ideological worldviews. The main critique of MFT is that it is determined by ideology, rather than being the driving force behind shaping peoples' world views (Smith et al. 2017). In this

view of attitude creation, people use morality to justify their preexisting political values at least as much as, if not more than, using morality to inform them (Hatemi, Crabtree & Smith 2019).

In support of the ideological primacy in value creation, one study found little evidence that changes in moral foundations account for changes in political attitudes, and therefore MFT is not likely to be an explanation of the causes of ideology (Smith et al. 2017) (the authors did however stress that MFT retains considerable interest for framing investigations of the consequences of ideology). The Smith et al. (2017) results were challenged on multiple grounds relating to the methods used in the study (Clifford 2017). However, Hatemi, Crabtree & Smith (2019) tested whether moral intuitions drive political beliefs or if political beliefs drive moral intuitions and found consistent evidence supporting the hypothesis that ideology predicts moral intuitions rather than the reverse.

At the level of individual moral foundations, MFTs relationship to ideology becomes more nuanced. For example, one study reported that when judging someone violating moral foundations of care/fairness, political liberals disliked the person more than did conservatives. Whereas when the moral foundations of loyalty/authority/purity were violated, conservatives disliked the person more than liberals (Smith et al. 2019). MFT has also been linked with public opinion on important topics. Strimling and colleagues reported that public opinion on a given issue tends to move at a rate related to how much better harm–fairness arguments connect with one position than with the opposing position. This finding adds to the literature by indicating why gay rights, gender equality and racial equality are gaining support faster than opinions in favour of abortion rights, affirmative action and suicide, for which harm-and-fairness considerations are much less clear-cut (Strimling et al. 2019).

Partisanship's association with MFT also differs from the ideological primacy model, in which the loyalty foundation predicted the strength of partisan identity (Clifford 2017). Clifford (2017) concluded that some people are more inclined to form strong group attachments than others, and hence more likely to become strong partisans. This effect remained after controlling for patriotism, which itself did not predict partisan strength (Clifford 2017). Even those who

critique MFT as a predictor of ideology argue that their results do not reduce the importance of the relationship between these two concepts, and even argue that their connection is even more useful to furthering our understanding of value attainment/maintenance (Hatemi, Crabtree & Smith 2019).

4.3. MFT and Content Analyses

Most research on MFT has involved individual-level studies based on experimental designs or opinion surveys (Kertzer et al., 2014; Navarrete & Fessler, 2006). More recently, however, content analyses have been undertaken to better understand real-world applications of MFT. Content analysis is a means of analysing large datasets to search for real-world trends (Kennedy et al. 2023; Lucas and Park 2023; Murray Sandlin and Tatalovich 2023). Content analysis of speeches by figures like Zelensky and Churchill shows how leaders shift their moral rhetoric when their nations are under attack (Murray, Sandlin and Tatalovich 2024). They consistently use the harm foundation relating to destruction and the loss of life, while also emphasising the loyalty and authority foundation, likely in attempt to rally people against the enemy (Murray, Sandlin and Tatalovich 2024). A similar MFT study found that political ideology was strongly associated with the moral discourse in mission statements (Lucas and Park 2023). Another study using a content analysis found that refugees were described using language relating to the care/harm moral foundation, while immigrants were described in terms of loyalty/betrayal. These findings illustrate that stereotypes are communicated through moral language (Hoewe et al. 2022). The authors argued that this process of attitude formation on immigrants and refugees was largely morally driven, group perceptions (Hoewe et al. 2022). Given the importance of news-media in discussing contentious topics like immigration, the Hoewe et al. (2022) study sheds some light on the potential influence of the media in the weaponisation of morals in attitude formation.

Research linking the media and their use of moral foundations has also been gaining traction. Incorporating a post hoc analysis on moral concerns on social media, Kennedy et al.

(2023) revealed that in comparison to nonmoral categories, the relationship between hate and loyalty was strong across most of the 25 languages examined. The study also found that online (Gab) posts containing the purity foundation were more than 14-times more likely to contain 'human degradation' language than those that did not contain the purity foundation (Kennedy et al. 2023). Another study has used a content analysis in tandem with their extended moral foundation dictionary (eMFD) (Hopp et al. 2021) to focus on the moralised rhetoric of news media organisations in the US. They found that the far-right digital news-media organisation used the most binding moral words, while the far-left news organisation used the most individualising moral foundations (Hopp et al. 2021). However, the Hopp and colleagues (2021) study incorporated media analysis only as a means of testing the dictionary's validity. Content analysis of this type looking into MFT and the news-media in general did not investigate the specific contexts of the words being used, often assuming the connections between a foundation and the topic being discussed (Murray, Sandlin and Tatalovich 2024). This study seeks to build on this research by using content analyses to improve our understanding of how the newsmedia utilise moral foundations when discussing polarising topics like climate change (IPSOS 2022) and political correctness/cancel culture (Norris 2023).

If the results in this study are to support the assumptions within the theory of moral foundations (Graham et al. 2009; Haidt 2012) then there should be clear evidence of divergent support for moral foundations between the ideological left and right, in which the right hold all five moral foundations as opposed to the two individualising foundations held by people with left wing attitudes. Therefore, I would expect that:

- **H1:** Right-leaning news-media articles will have a similar number of articles containing binding and individualising moral foundations.
- **H2:** Left-leaning news-media articles will have more articles containing individualising moral foundation words than binding moral foundation words.

Using a large sample of social media communications concerning polarising issues in public policy debates (i.e. gun control, climate change), Brady and colleagues (2017) found the effectiveness of moral messaging was bound to the in-group, increasing diffusion within liberal and conservative networks, but less so between them (Brady et al. 2017). If moral messaging increases message contagion within an in-group, then it should also be likely that in-group topics are moralised more than other topics.

Since people on the ideological extremes tend to display more unsubstantiated fear of outgroups than people closer to the ideological centre (Duffy 2019; Kleinfeld 2023; Mason 2016), I would expect that digital news-media on the ideological extremes moralise more than other digital news-media closer to the centre. Another important aspect of this studies contribution is to ascertain if ingroup topics are moralised more than outgroup topics. Using a large sample of social media communications concerning polarising issues in public policy debates (i.e. gun control, climate change), Brady and colleagues (2017) found the effectiveness of moral messaging was bound to the in-group, increasing diffusion within liberal and conservative networks, but less so between them (Brady et al. 2017). If moral messaging increases message contagion within an ingroup, then it may also be the case that ingroup topics are moralised more than other topics. However, there is also the potential that outgroup topics are moralised to an even greater extent in digital news-media if the issue is perceived as a moral threat so great as to warrant moral counterarguments. Related to this question, regardless of ingroup/outgroup moralised content, a topic perceived as much more neutral like space (Nisbet, Cooper and Garrett 2015; Shi et al. 2017) should be contain the least moral content regardless of the DNMs ideological skew. I do not, however, make the claim that there will be directionality of negative content in the media language over time, given strong evidence to the contrary in a recent study finding no such universal trend (Pipal et al. 2024). With the prior points taken into consideration, I expect that:

- **H3:** Digital news-media furthest from the ideological centre will have more articles containing MFT words than digital news-media closer to the ideological centre.

- **H4:** Left-leaning digital news-media articles discussing climate change are more likely to use MFD words than right-leaning digital news media articles.
- **H5:** Right-leaning digital news-media articles discussing culture/political correctness are more likely to use MFD words than left-leaning digital news media articles.

Pursuing these hypotheses will help shed light on whether digital news-media moralise topics of moral significance in line with MFT's ideological asymmetry of moral values. This paper also aims to improve our understanding of the relationship between moralised discourse and ideological partisan identities by analysing the different frequencies and tone of moral arguments made by digital news-media across the ideological spectrum. In addition to these contributions, I analyse the context of each moralised article to supplement our knowledge of the ways in which morals are used to strengthen ingroup value cohesion, whilst admonishing or demonising outgroup values.

4.4. Methods

Given the aims of this paper are to test whether news media utilise moral foundations to moralise topics of moral significance, I selected a content analysis study design similar to research in the field (Hopp et al 2021; Kennedy et al. 2023; Lucas and Park 2023). As previously discussed, content analyses allow for real-world applications of MFT (Hoewe et al. 2022; Kennedy et al. 2023; Lucas and Park 2023). Databases created from content analysis also have the benefit of being easily replicated in subsequent research or used as a supplementary dataset in future work (Hopp et al. 2021 eMFD). Specifically, this paper provides a content analysis of climate change/global warming; political correctness/cancel culture; and space/astronomy news by digital media platforms in the United States & United Kingdom.

I also incorporate a mixed-methods approach, since the contexts in which the words were used in the journal articles were examined, and trends in the data were discussed within the broader context of the topic. The Lexis-Nexis database was selected for this content analysis.

The Lexis-Nexis database has been shown to have many applications. Some of these use cases include finding evidence that the media can guide economic voting (Park 2019); agenda setting of policies by the news-media on topics like surveillance influences opinions on those issues (Boynton and Glenn 2016); and on how the news-media cover political scandals to the benefit of some and condemnation of others (Newmark, Vaughan and Pleites-Hernandez 2019). Its large database and variety of sources make it a great information source for news-media content analyses.

The digital news platforms for the US and the UK are ideal case studies as they have some of the highest partisan divides of western democratic nations⁴ (Fletcher 2022; Silver 2022), while also having to some extent overlapping audiences, with The Guardian receiving 5.8 million daily users in the US in 2020 (Smith 2021). The six digital news platforms used in this study are chosen based on varied audience ideologies, as shown in the Fletcher (2022) study, were selected based on their range on the ideological spectrum⁵. Fletcher (2022) asked participants which media participants used regularly and then asked them a series of questions to gauge their ideological leanings, and created a chart used which was the basis for this study. Two digital news-media organisations were taken from the US (New York Times; CNN) and four were taken from the UK (The Guardian; The Times; The Telegraph; Daily Mail). Availability of data on Lexis-Nexis determined the DNM options that were selected (Fox News digital articles were unavailable). Popularity is also important. In 2019, The Guardian was the most read online news media in the UK at 5.2 million weekly readers, with the Daily Mail following closely at 4.1 million weekly readers, and the two other UK digital news-media organisations had over 2 million weekly readers (Thorpe 2019). In the US, the NYT is the second most used news website, and CNN is the fourth (Similarweb 2024).

As described above, climate change/global warming was the chosen left-leaning issue

⁴ South Korea has notable levels of partisanship, higher than the UK (Silver 2022), yet the language barrier was a limiting factor in using South Korea as a case study.

(IPSOS 2022), and political correctness/cancel culture was the chosen right-leaning issue, for recent evidence has demonstrated that cancel culture concerns have increasingly become a right-wing, particularly since the 2010s onwards (Norris 2023). Evidence within the academic sphere points to this trend, with Lukianoff and Schlott 2023 highlighted a concerning Foundation for Individual Rights and Expression FIRE report (2022) which stated that 72% of conservative professors said they worried about losing their jobs or reputations because of being misunderstood or taken out of context, as opposed to 40% of liberals. These concerns are echoed in the UK in which in 2023, 70 professors and over 30 other academics from the 'big four' London universities formed the "London Universities' Council for Academic Freedom" (LUCAF). The group formed in response to what they claim is the recent suppression of free speech and open enquiry in universities, especially amongst conservative views (King's College London 2023).

Both political correctness and cancel culture needed to be included because there was a change in term popularity around 2017 (Greenspan 2020) in the US which my dataset needed to account for. Finding neutral topics in this highly partisan environment is difficult.

Topics truly free from polarisation, described as 'purple' disciplines like palaeontology (Shi et al. 2017), were not numerous enough to be an appropriate neutral variable in this research.

Although astronomy and space were considered slightly liberal leaning in an analysis of ideological topics e (Shi et al. 2017), including 'space technology' and 'space programs' as search terms balances the topics, since prior research found that conservatives show more interest in production operations and manufacturing processes (McCright et al 2013) and in engineering more generally (Kahan 2016). Space was also utilised as a neutral topic in prior research (Nisbet, Cooper and Barrett 2015). The dates included in this research spanned the 10 years between Jan 2011-2021. Due to the 10-year period, terms like political correctness and global warming were replaced in large part by cancel culture and climate change respectively. To account for this change, both sets of terms were included within the search parameters.

Articles were screened for words denoting Care/Harm and Fairness/Cheating; Ingroup/Loyalty; Authority/Subversion; Sanctity/Degradation in accordance with the Moral Foundations Dictionary (MFD) (Appendix B) (Graham, Haidt & Nosek 2009; Graham et al. 2011), as displayed in Appendix C. As with the Murray, Sandlin and Tatalovich (2024) study, this content analysis identifies the ten subcategories (five virtues and five vices) of MFT words identified in the MFT dictionary. Each of these ten moral categories were analysed separately for each of the three topics (climate, cancel culture, space) and for each of the six digital news media organisations. In total, 360 groups of moral foundations were screened, with a total number of digital news articles screened being 75,289. After the initial screening, each article was screened and assessed in more detail to pick out relevant words in the appropriate contexts. Letters, obituaries, and Q&As were removed from the analysis, as were any print publications, which would often be duplicates of digital articles. Opinion pieces were included in this research. A University of Austin Texas report found that only 13% of readers even notice an opinion label, causing opinion pieces to effectively fuse with the rest of news organisations journalism (Peacock, Cynthia and Stroud 2019). Manually screening each paper also added the benefit of removing false positives. For example, the word 'safe' is used often in text to say 'it is safe to say', which is not connoting a desire to be safe, whilst the word 'authority' is included in the names of hundreds of organisations.

Though stem words were used, some of the words were removed for irrelevancy. For example, the stem word of 'harm' also includes 'harmless', 'harmony', 'harmonious' etc. During the screening process notes were taken when trends appeared in a DNM's articles relating to specific words and contexts. The total number of articles including at least one moral foundation term were included in the study, rather than a percentage of total articles. Lexis-Nexis highlights the sections within an article that have relevant words in the screening, rather than the article's entirety. Therefore, the contexts between and within digital news-media datasets could vary widely enough that a percentage of the original screening may not be an accurate

representation⁵. The ideological skew of each paper is displayed from the further left (The Guardian) to the furthest right (The Daily Mail) in each of the figures within this paper, with CNN and the Telegraph representing the second most left and right leaning organisation respectively⁶.

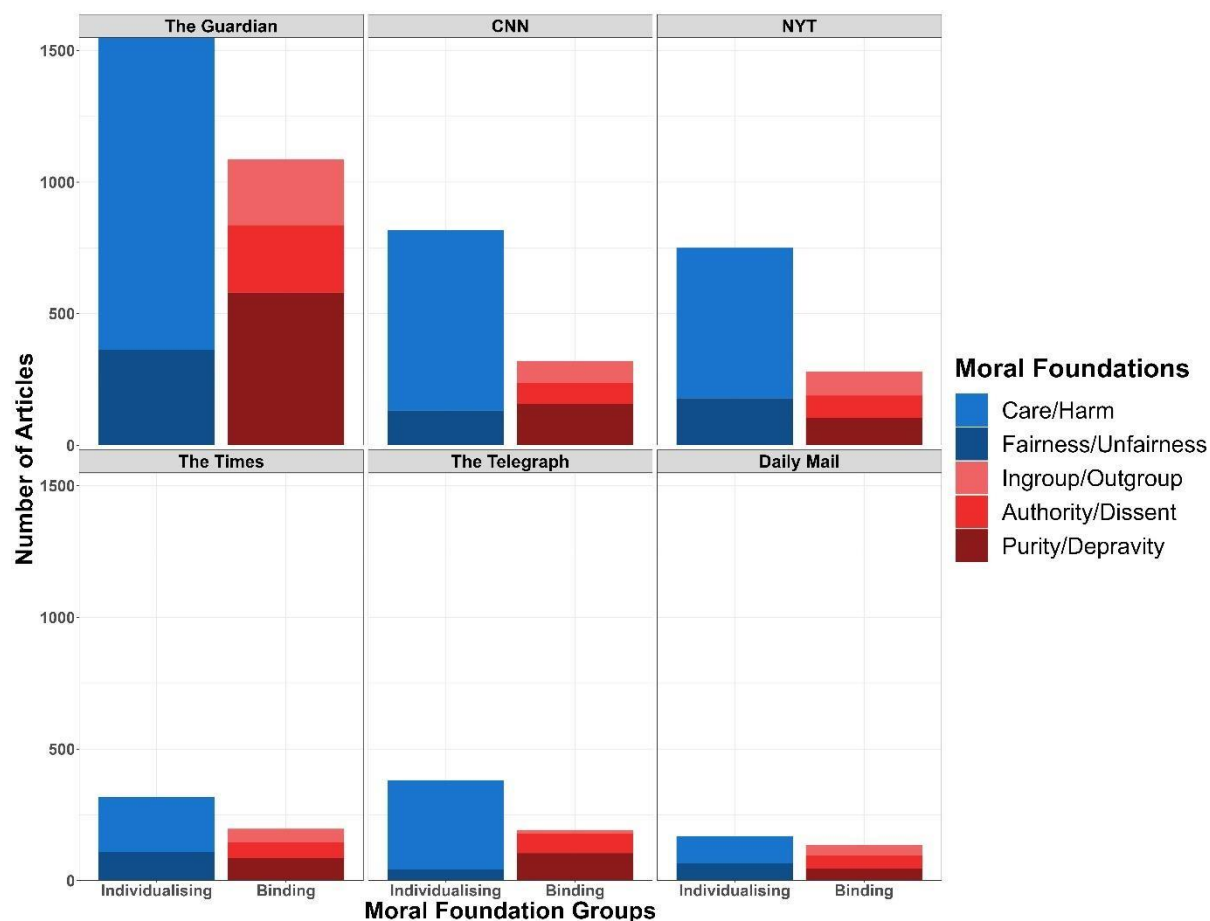
4.5 Results and Discussion

Climate Change

In the case of climate change (Figure 1), the evidence supports both H1 and H2. The distributions between binding and individualising moral foundations aligns with MFT (Haidt 2012), whereby the divergence between individualising and binding moral foundations occurring in the left-leaning DNM is less apparent in the other media organisations results. If not for the reference to ‘dirty fossil fuels’ relating to the purity foundation, The Guardian binding moral foundation tally would be around 500 articles, less than one third of the individualising moral foundation articles. However, the extensive use of ‘dirty fuels’ suggests this moral framing is effective on a liberal audience. Yet, this discrepancy may be an issue with the moral foundations dictionary more than the theory itself, since ‘dirt’ is often used to discuss unfair illegal practices, as is the case with “dirty money”. In this case, ‘dirty’ would belong in the individualising word repertoire. The care/harm foundation makes up the bulk of the left-leaning results, which is unsurprising given the threats posed by climate change, from physical damages, economic concerns, as well as harms from stress caused by climate anxiety (Dodds 2021).

⁵ The total number of articles in the initial screening and subsequent screening can be found in Appendix C.

⁶ The confidence interval table and figures can be found in Appendix E.



Climate Change

Figure 4.1. Bar charts representing the number of articles discussing climate change, divided into the two moral foundation cluster groups.

The evidence presented in Figure 1 gave only partial evidence for H3 (Digital news media furthest from the ideological centre will have more articles containing MFT words than digital news-media closer to the ideological centre). Though The Guardian matched expectations, The Daily Mail (the most right-leaning DNM in the dataset) showed the opposite pattern. On the other hand, H4 (left-leaning digital news-media articles discussing climate change are more likely to use MFD words than right-leaning digital news media articles) received strong supporting evidence from the climate change dataset (Figure 1). In general, left leaning DNM with articles containing moralised words far outnumbered their right-leaning counterparts in all instances, both in the total number of articles, and articles as a percentage of total relevant articles (Figure 2), with exception of the Daily Mail, which had the lowest number of climate change articles in general.

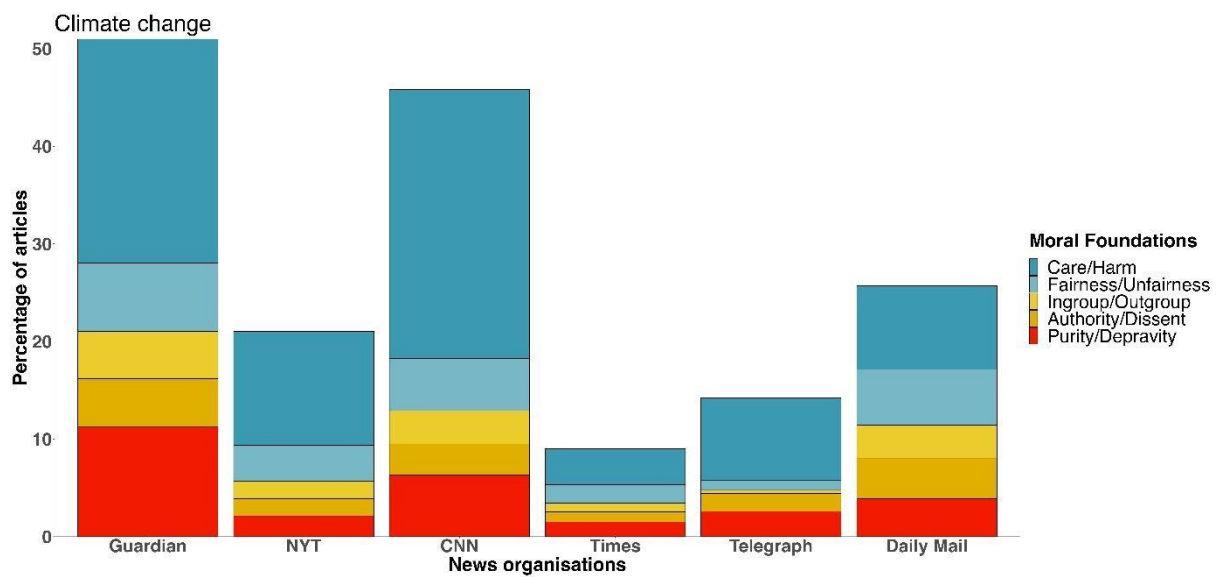


Figure 4.2. Bar chart representing the percentage of climate change articles using the moral foundation clusters.

Individualising Foundations Context

Amongst the left-leaning DNM organisations (CNN, NYT, & The Guardian), the moral discourse was very similar and in similar contexts. They would utilise ‘care’ and ‘safe’ to describe a world for future generations, whilst the threatening words of ‘suffering’ and ‘harm’ referred to threats to the planet, people, and wildlife. The other individualising foundation words like ‘unfair’ and ‘unjust’ reflected frustration at the lack of climate change mitigation progress, or a desire for countries and companies to do their ‘fair share’. Unsurprisingly, a very common word was ‘justice’, used in the contexts of ‘climate justice’, ‘social justice’ and ‘environmental justice’. Most of these contexts appear to be moral signalling to their audience that climate change is a core moral value for their group. The NYT and The Times had the most nuance, with ‘bias’ included to describe an ‘anti-nuclear bias’ amongst environmental groups and activists with the NYT, and climate and social justice being common in The Times, highlighting positive youth movements in the UK.

Right-leaning papers had many fewer moralised articles, but those included were surprisingly nuanced given the contentious topics. The lack of US right available DNM

organisations skews this result and should be viewed solely within a UK context. As with the left-leaning DNM, care/harm positive moral words focus on the importance of ‘protecting’ and ‘safeguarding’ future generations. However, those with moral authority differed in the right leaning DNM articles. Rather than highlight activists, movements and scientists, the speeches and comments by the UK royal family exceed any other group or individual, especially the now King Charles. These articles often also included the binding foundation of authority – that of having a ‘duty’.

Threat words like ‘harm’ were contrastingly deployed both toward the ‘harm’ to the environment but also the harm done by climate activists, especially in The Daily Mail. Furthermore, ‘suffering’ was often used to by the Daily Mail to emphasise the electorate facing negative consequences from climate policies, while ‘unfair’ was directed at the constraints to society from climate change action/policies. Similar trends appear for ‘bias’ in which they argue that the mainstream media, and in particular the BBC, are ‘biased’ against sceptics and will only give time to pro-climate change science speakers. Overall, the right-leaning DNMs used moral words in a contradictory manner. They signal to their audience that the abstract notion of the environment and planet is a moral concern, yet any means of addressing it, advocating for it, or creating policies relating to it, are anti-group moral values.

Binding Foundations Context

The binding moral foundation was used by left-leaning organisations. However, unlike right leaning DNM, it was almost always weaponised against outgroups. CNN discussed the authority foundation to dub the EPA as ‘loyal foot soldiers’ for Trump, whilst ‘betray’ was levied at the Trump administration more generally. ‘Deception’ was directed at oil and gas companies or political figures failing on climate change. In The Guardian ‘defiance’ and similar terms were popular, primarily used to ‘defy’ the status quo of inaction by elites. There were a few exceptions to this trend. The NYT would mention ‘authority’ of the government to enact climate policies and regulations. While ‘duty’ was the most common word and mainly referred to a duty to act (moral duty), but in a few cases it meant a ‘duty’ to resign under Trump (antagonistic rhetoric as with

most cases). The other main exception was with the 'purity'. The environment (Arctic, reefs, forests) is 'pure' and 'pristine'.

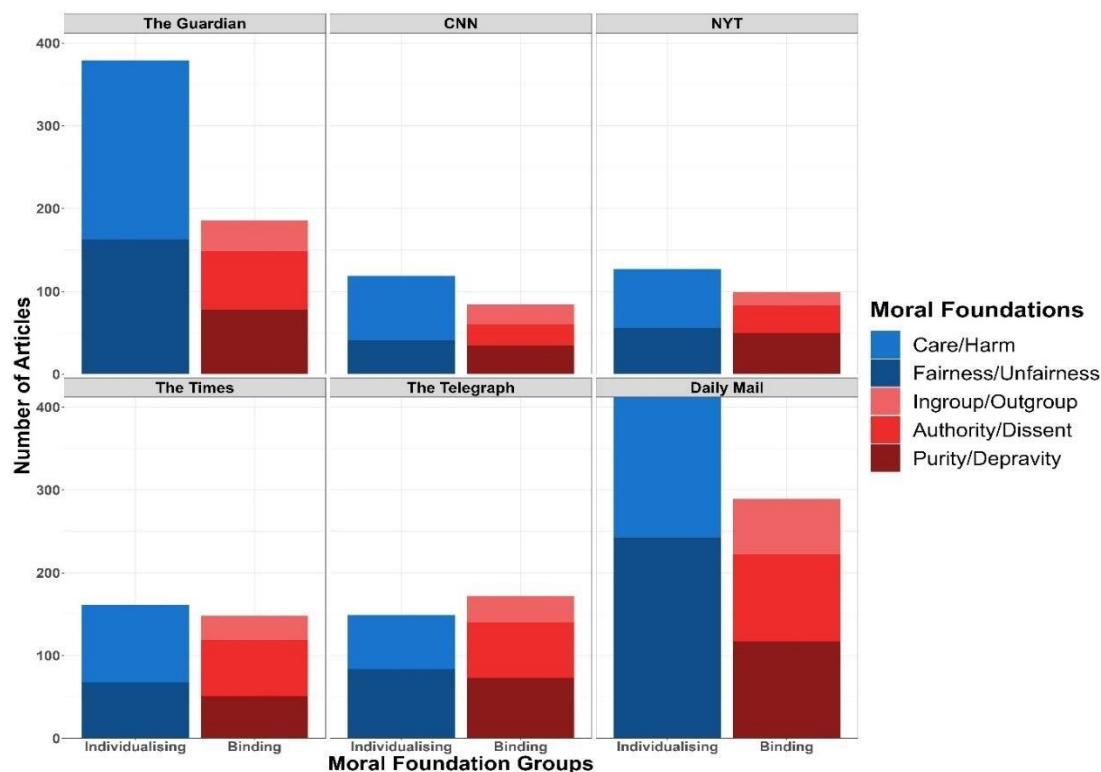
The Times being closest to the ideological centre, reported that conservatism & conservation can be natural 'allies' in tandem with their audience having a 'sacred duty' to 'protect' the planet. However, they also push back against what they call climate censorship by jesting that disagreeing with certain climate assumptions brands you a 'heretic', in addition to mocking people for 'virtue signalling' by green posting or using Greta as an icon. In fact, 'virtue signalling' is used often by all ideological groups discussing both climate change (including The Guardian) and cancel culture articles, and always to mock outgroups. As with the Guardian, the Times use 'dirty' energy and coal often as most common word within the purity foundation.

Across all six digital news-media organisations the only agreed upon moral context was having a 'duty' to act to help the environment, though this was often linked to other antagonisms depending on the context (as mentioned previously). Within the UK context, the right-leaning The Telegraph used 'supremacy' to argue that the burden on climate change falls upon the supreme powers of the US and China. Terms like 'defy' and 'dissent' linked to political correctness in which The Telegraph claims the liberal world sees sceptics as 'heretics' who 'defy' 'doctrine'. In this sense, The Times was often a diluted version of the rhetoric in DNM further to the right. The Daily Mail went to greater moral extremes than The Telegraph. Terms like 'betrayal' and 'deception' are pointed at climate policies which they say have negative consequences for consumers. These terms were also used against Volkswagen for 'deceiving' its customers regarding their emission scandal. The largest difference in the purity foundation was that 'dirty' was used not against fossil fuel companies, but against Green Party plans and environmental groups/scientists who have 'dirty secrets' on the effectiveness of future green technologies and policies. Finally, 'Disgusting' was levied at climate activists, and there was very little support for climate change related issues. These results strongly indicate that beyond a general duty to protect the planet, right-leaning DNM used the binding group cohesion moral

values to indicate to their audience that climate change policy, activism or science is antithetical to their moral values – the direct opposite to the left-leaning papers from both the US and UK.

Political Correctness/Cancel Culture

In the second contentious topic, political correctness/cancel culture, The Guardian and The Daily Mail (the ideologically furthest from the centre) somewhat support the moral differences of ideological groups stipulated in MFT (Figure 3). The left-leaning Guardian has just under double the articles using individualising foundations to binding moral foundations (379 versus 196), though the range between these figures should be larger under the MFT framework to fully support H1. More consistently with MFT, however, the Daily Mail had similar levels of both foundation clusters (411 articles with individualising foundation words and 289 binding foundation words) (H2). CNN shows a similar pattern to the Guardian, whilst the Telegraph again is in line with H2 and the results of The Daily Mail.



Political Correctness/Cancel Culture

Figure 4.3. Bar charts representing the number of articles discussing political correctness and cancel culture, divided into the two moral foundation cluster groups.

The political correctness/cancel culture dataset presents evidence in support of H3. DNM organisations furthest from the ideological centre contained the largest numbers of articles including MFD words. All DNM, with the exception of the Guardian, fit the trend that would be expected for supporting the theory, that right-leaning digital news-media articles discussing culture/political correctness are more likely to use MFD words than left-leaning digital news media articles (H5). As anticipated, climate change and cancel culture are moralised in articles from the two digital news-media companies on either ideological end when compared to media closer to the centre (H3).

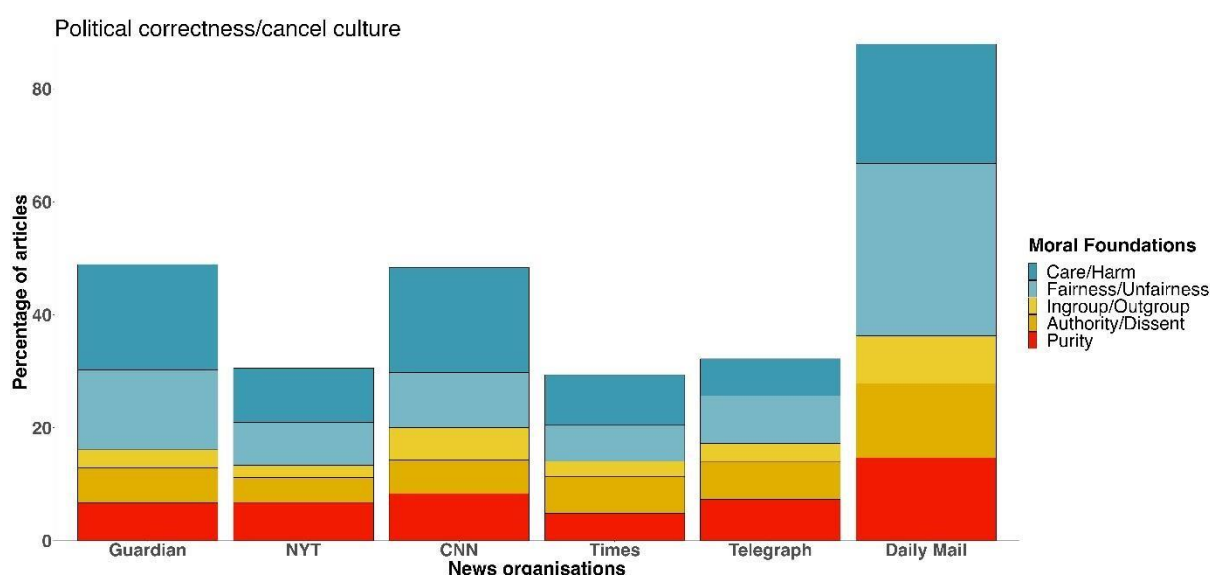


Figure 4.4. Bar chart representing the percentage of political correctness/cancel culture articles using the moral foundation clusters.

As would be expected according to MFT, the left-leaning papers do tend to utilise the individualising moral foundations more than the right-leaning digital news-media organisations, which have a broader distribution (though this difference is minor). The Daily Mail result aligns perfectly with MFT – with the most right-leaning DNM organisation including all 5 moral foundations to a greater degree than left-leaning organisations. On the other hand, Figure 4 offers surprising results, as the percentages of articles containing moral foundation words are largely similar except for The Daily Mail. The relatively high percentage of articles including

moral foundation words across the ideological spectrum suggests that political correctness and cancel culture do in fact matter to both the left and right. The key differences in context of the moral language used in the articles is more revealing as to the ideological differences in moral discourse.

As expected, cancel culture was a more popular term in the US and political correctness was more popular in the UK (Greenspan 2020). The general trend of the US left-leaning news organisations is to use derogatory moral terms aimed at supporters of the terms cancel culture and political correctness. Though a few articles expressed concern over cancel culture, the majority of the relevant articles used moral terms employed by the right-leaning news to admonish the idea of cancel culture in particular. The Guardian's results were more contradictory. Early articles tended to support the idea that political correctness was a serious issue, but this attitude shifted dramatically from 2016-2017 onwards.

Individualising Foundations Context

The Guardian deployed the words relating to violence in a range of contexts, from physical to emotional, using 'unacceptable' speech. When discussing the other individualising moral foundation fairness, the Guardian refers to justice and equality for minority groups stated to be threatened by free speech of all kinds. For example, in CNN and The Guardian, equality is referenced as a counterpoint, implying that free expression can be deployed as cover for social inequality.

The three centre-right and right-leaning organisations incorporated individualising moral foundations to mock the perceived moral 'safe spaces' - a primarily liberal term to refer to spaces (virtual or physical) that are free from what they perceive to be 'harmful' speech or ideas. Similarly, The Daily Mail argues the case that mainstream media and organisations 'care' more for their own interests over free expression. 'Equality' was often included as an implication of hidden agendas, and of a one-sided system against white men. 'Fair' is again regularly deployed to seek fairness for men in a variety of situations.

In right-leaning DNM, words like 'suffering' or 'harm' were utilised to either mock groups they deem to not truly face any harms from speech, or to describe the 'suffering' of those who are attacked by the groups they perceive as 'mobs'. In The Telegraph and Daily Mail in particular, political correctness is seen to 'destroy' 'enemies' through suppression of thought and ideas. 'Prejudice' was used to highlight religious prejudice or prejudice against men. 'Bias' was also common, referencing media, political or liberal bias. Both the Daily Mail and Telegraph also discuss 'prejudice' against right-wing groups by the BBC who they deem to be too left-leaning.

Binding Foundations Context

The Guardian demonstrated support for those who ignore political correctness accusations, often arguing that it is a shield for bad behaviour. In the US news organisations, Donald Trump is mentioned on several occasions as a source of unacceptable speech that should not be protected. They also tended to 'denounce' perceived racist or hateful speech. 'Traitors' was levied against those who resisted the call for the removal of confederate statues in 2020.

The foundations of ingroup/outgroup and authority/dissent are areas with clear partisan divides. Those 'denounced' vary depending on the DNM being read. Left-leaning news articles 'denounce' those who use speech they deem inappropriate, whilst the centre and right-leaning DNM denounce those who they argue have tried to stifle free expression, often aimed at on Christian groups 'defying' and 'dissenting' against gay rights movements. The Daily Mail argued that 'patriotism' in the form of song and, chants, are shunned or banned from public life. 'Tradition' and 'duty' utilised to promote the protection of traditions, and that their audience has a moral duty to protect free speech.

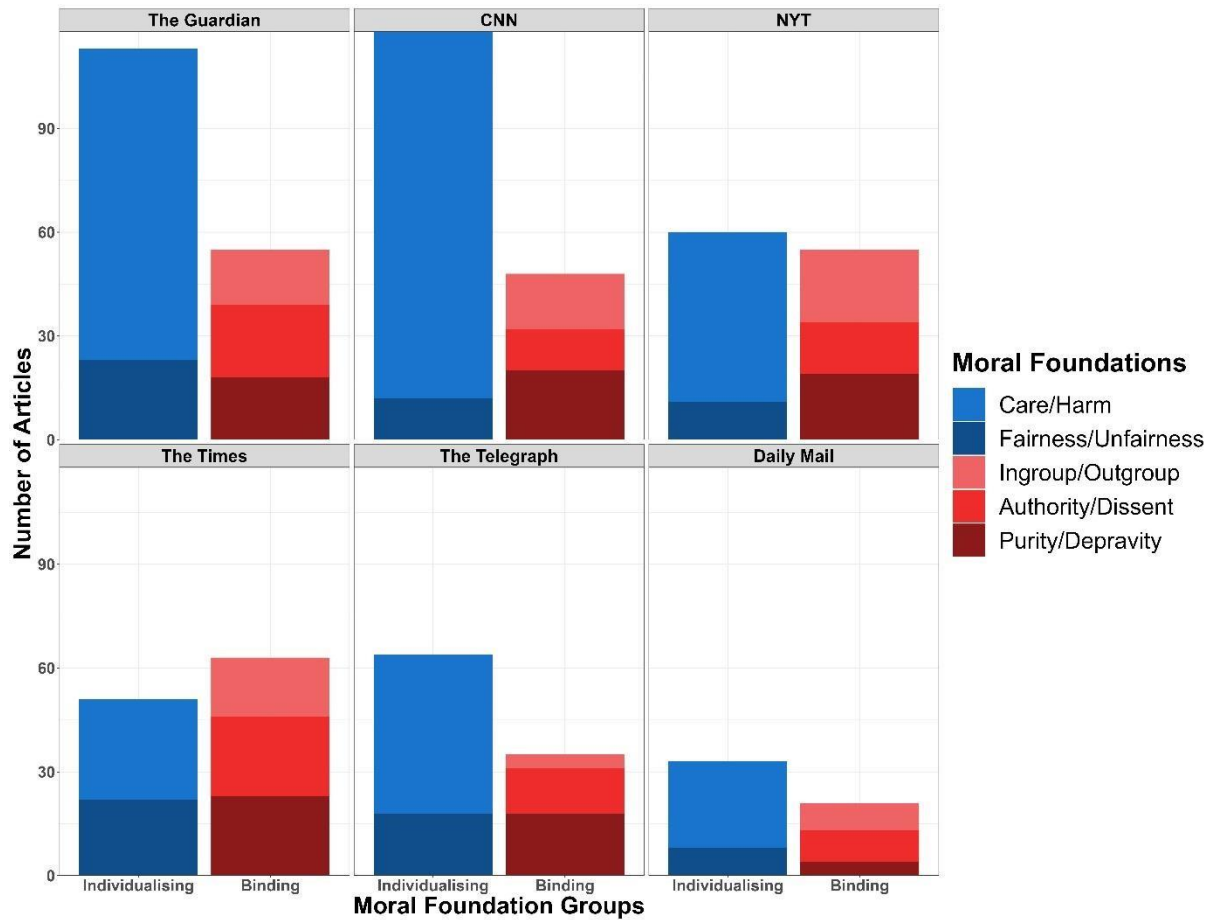
CNN use 'virtue signalling' to argue that accusations of virtue signalling masks other Republican motivations, and such signalling is seen from the other ideological side. On the right, 'virtue signalling' is used to mock opponents on the left, while The Daily Mail uses the term to define those seeking to silence or cancel people (particularly on social media) so that they may

gain more moral esteem within their group. The Times articles were more closely aligned to the right-leaning DNM moral contexts than in the climate change articles, showing more concern about cancel culture and political correctness than the left-leaning DNM.

‘Sacred’ is used both to mock the right’s passion for free speech, whilst also contradicting this view by at times ‘cherishing’ free speech. The NYT follows a similar route of argument, using moral words to mock cancel culture and political correctness concerns. The disgust foundation in left-leaning DNM was levied at individuals and groups like the Charlottesville rally goers who the NYT argued deserve cancellation ‘Disgusted’ and ‘repulsed’ mainly refer to conservative attitudes or things that should be stopped, though a few papers discuss ‘disgust’ at those attacking alternative views (in The Guardian). ‘Indecent’ was used to describe the cancellation of a recently deceased person based on certain comments (NYT). In general, similar to The Times with climate change, The New York Times was more centrist in its views on cancel culture and political correctness than the media outlets on their ideological side.

‘Disgusting’, ‘dirty’ etc. in right-leaning DNM were used regularly. This includes framing conservative groups as ‘disgusted’ by modern and progressive culture. The culture wars are called dirty, and that typically the left must rise above this impure discussion. In contrast, the Daily Mail utilises ‘dirty’ when highlighting words that they claim are off limits to society. ‘Disgusted’ was also framed towards consequences of ‘politically correct’ movements, one such movement being toilets for all genders.

Space and Astronomy



Space and Astronomy

Figure 4.5. Bar charts representing the number of articles discussing space and astronomy, divided into the two moral foundation cluster groups.

The results from the space/astronomy content analysis (Figure 5) also aligns with expectations. In five of the six news organisations moral foundation distributions concur with expectations in H1 and H2. Left-leaning news organisations other than the NYT showed a clear preference for individualising moral foundations. Second, all six DNM organisations had fewer moralised articles than any of the other two topics. This disparity in moralised articles is consistent even when accounting for articles including MF words as a percentage of total articles (Figure 6). The percentage of articles relating to space that included moral foundation words ranged from only around 0.1 to 3% for all the digital news-media organisations in the study.

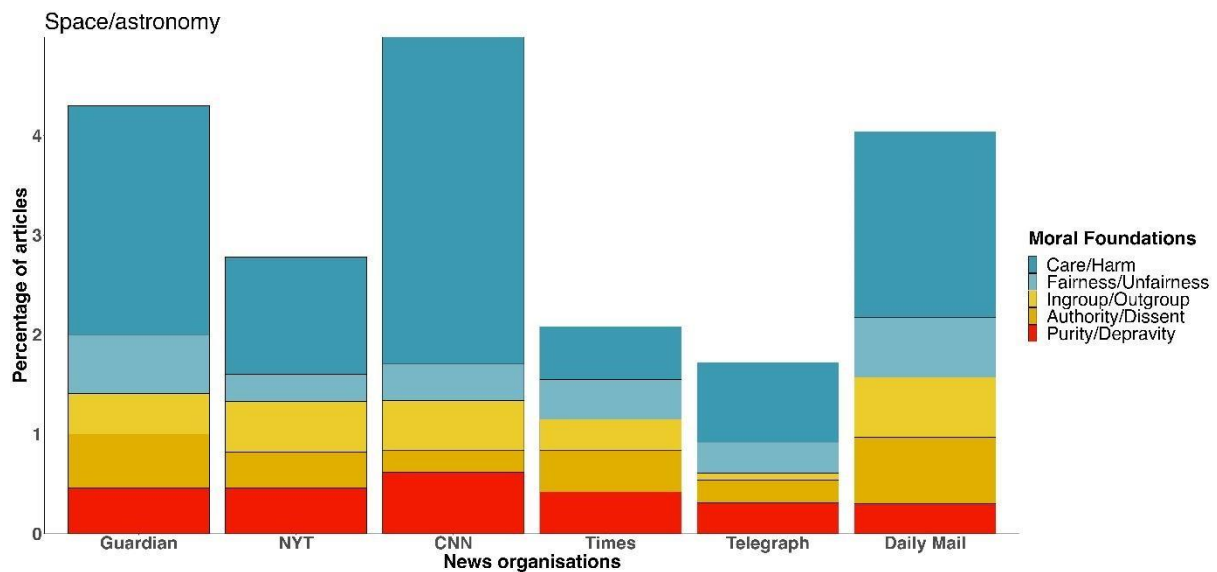


Figure 4.6. Bar chart representing the percentage of space/astronomy articles using the moral foundation clusters.

The DNM organisations from the US showed interesting results in the case of astronomy and space. CNN and the NYT had more binding moral words than the right-leaning media. This difference is clarified with examples such as CNN citing former Vice President Mike Pence discussing space ‘supremacy’. The US will play a much greater role in space in the future than the UK, so it seemed logical to find words relating to in-group and authority more prevalent in the US. As with some climate change examples, when purity foundation words were used in left leaning media, it was to discuss the purity and sacredness of other non-white groups. For example, CNN and NYT mentioned the problem of a telescope being constructed on ‘sacred land’ of indigenous groups in Hawaii. In contrast, The Times and Telegraph used purity foundations to discuss the ‘sanctity’ of space, and the ‘humbling’ science of space. Individualising foundations also followed this ideological trend. Injustices in left-leaning media referred to female scientists or minority groups, though in general relevant articles were fewer than with the other topics.

A common theme saw right-leaning DNM linking space and climate change articles to cancel culture/political correctness. This was also the case with the neutral topic. The strangest example of this connection was the Daily Mail discussing ‘gender neutral aliens’ and gender differences in science, drawing political correctness into the seemingly disconnected topic of

astronomy and space exploration. Further research would be required to determine the cause of these connections. It could be that an economic desire to increase audience capture for less divisive topics drives these links, or perhaps the very act of moralising an article causes entrenched ideological standpoints (like cancel culture) to become salient when writing about a seemingly unrelated story.

4.6. Conclusion

The results somewhat support the hypotheses in this paper, that news organisations typically moralise discussions in line with Haidt and Graham's theory about moral foundations (H1 and H2), though the effect is stronger in the climate change articles than articles on cancel culture and political correctness, in which the most left-leaning organisation, the Guardian, did not fit expected patterns. As expected, the DNM furthest from the ideological centre moralised the most on topics relating to their in-group issue of concern for both binding and individualising frames (H3), suggesting a connection between ideology and moralised discourse beyond the results in the Hopp et al. (2021) paper. Furthermore, exceptions to H3 seemed to prove the rule. When DNM did use moral foundation words in outgroup topics, they would mostly be weaponised to insult or belittle opposing values held by outgroups, especially in the case of binding moral foundations. Another interesting finding was that the frequency of moralised articles drops sharply the closer the DNM organisation is the ideological centre, regardless of topic. Support for the two hypotheses regarding climate change (H4) and political correctness/cancel culture (H5) was present in the data, except for The Guardian. However, as with H1 and H2, climate change (H4) matched expectations more than political correctness/cancel culture, in which the Guardian, the most left wing of all the organisations conflicted with expectations, as they had both a large number of articles, whilst those article words were distributed amongst all five foundations, contrary to MFT expectations (H5). Yet as mentioned previously, the context of these moral words were an exception that proved the rule, since the moral words were used primarily to antagonise outgroup views.

The findings suggest that whether consciously or unconsciously, digital news-media may use more moralised content for specific topics that they deem morally significant (both for ingroup and outgroup topics) and thus increase moral messaging for these topics. Though The Guardian contained moral language beyond numerical expectations, analysis into the context of these words supports prior research claiming that the most ideological polarised are the most reactive to contentious information (see Mason 2016), and this use of outgroup moral language to attack other groups could help explain the perception gap between ideological extremes and their accuracy of outgroup views (Yudkin, Hawkins and Dixon 2019). Journalists and writers may moralise topics that they hold to be morally significant to them, creating the same effect. More research is needed to understand the directionality of this relationship: are DNM organisations moralising content to meet existing demand, or is their choice in rhetoric an attempt to capture a larger audience base by incorporating ingroup moral messaging?

Kennedy et al. (2023) paired the Moral Foundations Dictionary and a computational technique called Distributed Dictionary Representations (DDR). DDR was built upon word counting methods, expert-defined dictionaries (lists of related words), and word embeddings learned from large text corpora and operationalize dictionaries (Kennedy et al. 2023). This computer science-driven methodology expansion used in the context of contentious topics would further improve our understanding. Additionally, although the differences between the UK and the US in both MFD article frequency and context were minor, examination of more ideologically extreme US DNM organisations like Fox News and Huffington Post would shed a different light on the country comparisons. Using nations with less polarised media, like Germany and Norway (Fletcher 2022), would also provide interesting non-Anglosphere countries comparisons.

Another key variable to consider is the timescale of articles being examined. The media landscape has been changing rapidly in parts of the world. Newman et al (2022) reported that interest in the news dropped from 70% to 47% in the UK and from 67% to 47% in the US.

Similar trends were found in Argentina, Spain and Brazil (Newman et al. 2022). This decline suggests that moral framing is coming from other sources (i.e. social media) presenting world events, but their audience may not consider it as news. Further research into the use of moral language in social media apps could help us understand how these moral divides influence social media. In addition, using only data from 2016 onwards would have improved results given the rapid transformation of the media landscape in that time. The New York Times in particular drifted further to the left and towards politically correct viewpoints after 2016 (Bennet 2024), yet the 2010-2015 years will have moderated this change. Therefore, the case studies, form of communication and timescale could each yield results that would help expand on the contributions in this paper.

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4.8. Appendices

4.8.1 Appendix A

Table 4.A1. Each of the five base moral foundations paired with a brief description.

Care/harm	Ability to feel (and dislike) the pain of others. It underlies virtues of kindness, gentleness, and nurturance.
Fairness/cheating	Related to the evolutionary process of reciprocal altruism. It generates ideas of justice, rights, and autonomy.
Loyalty/betrayal	Virtues of patriotism and self-sacrifice for the group. It is active anytime people feel that it is “one for all, and all for one.”
Authority/subversion	Virtues of leadership and followership, including deference to legitimate authority and respect for traditions.
Sanctity/degradation	Underlies the widespread idea that the body is a temple which can be desecrated by immoral activities and contaminants (an idea not unique to religious traditions).

4.8.2 Appendix B

Moral Foundations Dictionary:

Harm: safe!, peace!, compassion, empath!, sympath!, care, caring, protect!, shield, shelter, amity, secur!, , benefit!, , defen!, guard!, preserve, harm!, suffer!, war, wars, warring, fight!, violen!, hurt!, kill, kills, killer!, killed, killing, endanger!, cruel!, brutal!, abuse!, damag!, ruin!, ravage, detriment!, crush!, attack!, annihilate!, destroy, stomp, abandon!, spurn, impair, exploit, exploits, exploited, exploiting, wound!.

Fairness: fair, fairly, fairness, fair!, fairmind!, fairplay, equal!, justice, justness, justify!, reciproc!, impartial!, egalitar!, rights, equity, evenness, equivalent, unbiased!, tolerant, equable, balance!, homologous, unprejudiced!, reasonable, constant, honest!, unfair!, unequal!, bias!, unjust!, injust!, bigot!, discriminat!, disproportion!, inequitable, prejud!, dishonest, unscrupulous, dissociate, preference, favoritism, segregate!, exclusion, exclude!.

Ingroup: together, nation!, homeland!, family, families, familial, group, loyal!, patriot!, communal, commune!, communit!, communis!, comrad!, cadre, collective!, joint, unison, unite!, fellow!, guild, solidarity, devot!, member, cliqu!, cohort, ally, insider, foreign!, enem!, betray!, treason!, traitor!, traitor!, disloyal!, individual!, apostasy, apostate, deserted, deserter!, deserting, deceiv!, jilt!, imposter, miscreant, spy, sequester, renegade, terroris!, immigra!.

Authority: obey, obedien!, duty, law, lawful!, legal!, duti!, honor!, respect, respectful!, respected, respects, order!, father!, mother, mother!, mothering, mothers, tradition!, hierarch!, authorit!, permit, permission, status, rank, leader, class, bourgeoisie, caste!, position, complaint!, command, supremacy, control, submi, allegian, serve, abide, defer, defer, revere!, venerate!, comply, defian! , rebel!, dissent, subver, disrespect, disobey, sedition, agitate, insubordination, illegal!, lawless! , insurgent, mutinous, defy!, dissident, unfaithful, alienate, defector, heretic!, nonconformist, oppose, protest, refuse, denounce, remonstrate, riot!, obstruct.

Purity: piety, pious, purity, pure!, clean!, steril!, sacred!, chast!, holy, holiness, saint , wholesome!, celiba!, abstention, virgin, virgins, virginity, virginal, austerity, integrity, modesty, abstinen!, abstemiousness, upright, limpid, unadulterated, maiden, virtuous, refined, intemperate, decen!, immaculate, innocent, pristine, humble, disgust!, deprav!, disease!, unclean!, contagio!, indecen!, sin, sinful!, sinner!, sins, sinned, sinning, slut!, whore, dirt!, impiety, impious, profan!, gross, repuls!, sick!, promiscu!, lewd!, adulter!,

4.8.3. Appendix C

Table 4.A2. Lexis-Nexis screening data, including topics, dates of article publication, moral foundations, and the search terms for each moral category.

Topics	Climate Change	Space and Astronomy	Cancel Culture
Index Terms	Climate Change; Global Warming; Climate Change Regulation and Policy	Astronomy & Space; Space Exploration; Space Programs; Space Technology	Political Correctness; Cancel Culture
Date	01/01/2011-01-01-2021	01/01/2011-01-01-2021	01/01/2011-01-01-2021
Care	safe! OR compassion OR empath! OR sympath! OR care OR caring OR protect!	safe! OR compassion OR empath! OR sympath! OR care OR caring OR protect!	safe! OR compassion OR empath! OR sympath! OR care OR caring OR protect!
Harm	harm! OR suffer! OR violent! OR hurt! OR abuse! OR damage! OR exploited	harm! OR suffer! OR violent! OR hurt! OR abuse! OR damage! OR exploited	harm! OR suffer! OR violent! OR hurt! OR abuse! OR damage! OR exploited
Fairness	fair OR fairness OR justice OR equality OR equity OR tolerant OR unprejudiced!	fair OR fairness OR justice OR equality OR equity OR tolerant OR unprejudiced!	fair OR fairness OR justice OR equality OR equity OR tolerant OR unprejudiced!
Unfairness	unfair! OR bias! OR unjust! OR unjust! OR inequitable OR prejud! OR exclusion	unfair! OR bias! OR unjust! OR unjust! OR inequitable OR prejud! OR exclusion	unfair! OR bias! OR unjust! OR unjust! OR inequitable OR prejud! OR exclusion
Ingroup	homeland! OR loyal! OR patriot! OR cadre OR "unite" OR solidarity OR ally	homeland! OR loyal! OR patriot! OR cadre OR "unite" OR solidarity OR ally	homeland! OR loyal! OR patriot! OR cadre OR "unite" OR solidarity OR ally

Outgroup	enem! OR betray! OR treason! OR traitor! OR treachery OR disloyal! OR deceiv!	enem! OR betray! OR treason! OR traitor! OR treachery OR disloyal! OR deceiv!	enem! OR betray! OR treason! OR traitor! OR treachery OR disloyal! OR deceiv!
Authority	obedien! OR "duty" OR "honorable" OR "supremacy" OR "tradition" OR	obedien! OR "duty" OR "honorable" OR "supremacy" OR "tradition" OR	obedien! OR "duty" OR "honorable" OR "supremacy" OR "tradition" OR
	hierarch! OR "authority"	hierarch! OR "authority"	hierarch! OR "authority"
Dissent	"defiance" OR dissent OR traitor OR defy! OR dissident OR heretic! OR denounce	"defiance" OR dissent OR traitor OR defy! OR dissident OR heretic! OR denounce	"defiance" OR dissent OR traitor OR defy! OR dissident OR heretic! OR denounce
Purity	pure! OR sacred! OR integrity OR modesty OR virtue OR pristine OR humble	pure! OR sacred! OR integrity OR modesty OR virtue OR pristine OR humble	pure! OR sacred! OR integrity OR modesty OR virtue OR pristine OR humble
Depravity	disgust! OR deprav! OR indecen! OR filth OR repuls! OR defile OR dirt!	disgust! OR deprav! OR indecen! OR filth OR repuls! OR defile OR dirt!	disgust! OR deprav! OR indecen! OR filth OR repuls! OR defile OR dirt!

4.8.4 Appendix D

Table 4.A3. List of Moral Foundations and their numerical occurrence within the digital news media sources.

Digital News Media	Moral foundations									
CNN	Care	Harm	Fairness	Unfair	Ingroup	Outgroup	Authority	Dissent	Purity	Depravity
Climate Change										
Articles post-search	2485	2485	2485	2485	2485	2485	2485	2485	2485	2485
Articles after analysis	428	258	81	51	56	29	59	20	42	115
Space & Astronomy										
Articles post-search	3231	3231	3231	3231	3231	3231	3231	3231	3231	3231
Articles after analysis	88	18	6	6	11	5	7	0	18	2
PC										
Articles post-search	420	420	420	420	420	420	420	420	420	420
Articles after analysis	39	39	30	11	12	12	9	16	15	20
New York Times										
Climate Change										
Articles post-search	4887	4887	4887	4887	4887	4887	4887	4887	4887	4887
Articles after analysis	302	269	117	62	58	32	58	27	28	76
Space & Astronomy										
Articles post-search	4141	4141	4141	4141	4141	4141	4141	4141	4141	4141
Articles after analysis	21	28	6	5	11	10	13	2	14	5

PC										
Articles post-search	740	740	740	740	740	740	740	740	740	740
The Guardian										
Climate Change										
Articles post-search	5167	5167	5167	5167	5167	5167	5167	5167	5167	5167
Articles after analysis	655	531	221	142	147	103	136	120	120	460
Space & Astronomy										
Articles post-search	3920	3920	3920	3920	3920	3920	3920	3920	3920	3920
Articles after analysis	60	30	9	14	10	6	20	1	17	1
PC										
Articles post-search	1155	1155	1155	1155	1155	1155	1155	1155	1155	1155
Articles after analysis	136	80	83	80	23	14	30	41	51	27
The Times										
Climate Change										
Articles post-search	5708	5708	5708	5708	5708	5708	5708	5708	5708	5708
Articles after analysis	118	92	66	42	35	16	33	27	40	46
Space & Astronomy										
Articles post-search	5501	5501	5501	5501	5501	5501	5501	5501	5501	5501
Articles after analysis	10	19	14	8	12	5	16	7	23	0
PC										
Articles post-search	1052	1052	1052	1052	1052	1052	1052	1052	1052	1052
Articles after analysis	58	35	33	35	15	14	37	31	32	19
The Daily Mail										
Climate Change										
Articles post-search	1179	1179	1179	1179	1179	1179	1179	1179	1179	1179
Articles after analysis	59	42	16	51	11	29	26	23	18	28
Space & Astronomy										
Articles post-search	1339	1339	1339	1339	1339	1339	1339	1339	1339	1339
Articles after analysis	18	7	5	3	3	5	3	6	4	0
PC										
Articles post-search	797	797	797	797	797	797	797	797	797	797
Articles after analysis	101	68	116	127	31	36	78	27	56	61
The Telegraph										
Climate Change										
Articles post-search	4016	4016	4016	4016	4016	4016	4016	4016	4016	4016
Articles after analysis	189	149	9	33	2	11	48	26	28	76
Space & Astronomy										
Articles post-search	5758	5758	5758	5758	5758	5758	5758	5758	5758	5758
Articles after analysis	20	26	3	15	1	3	10	3	15	3
PC										
Articles post-search	997	997	997	997	997	997	997	997	997	997
Articles after analysis	53	12	31	53	18	14	27	40	40	33

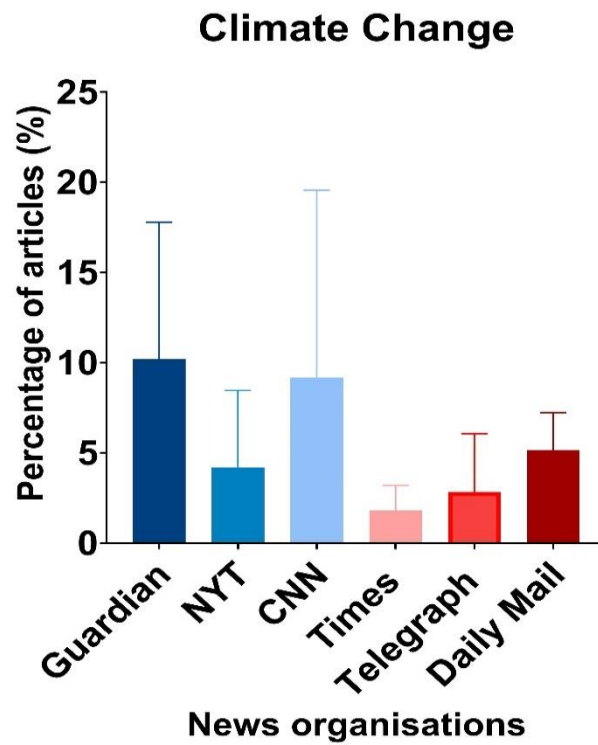


Figure 4.A1. Bar chart representing the percentage of climate change articles using the moral foundation words, with confidence intervals.

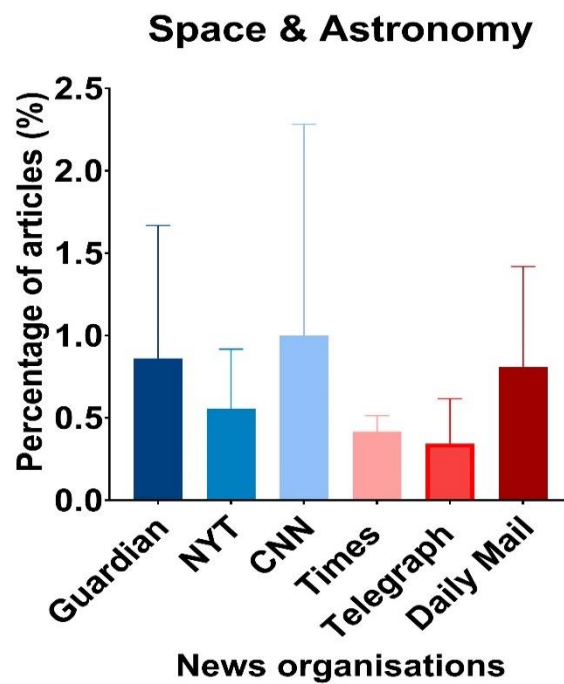


Figure 4.A2. Bar chart representing the percentage of space and astronomy articles using the moral foundation words, with confidence intervals.

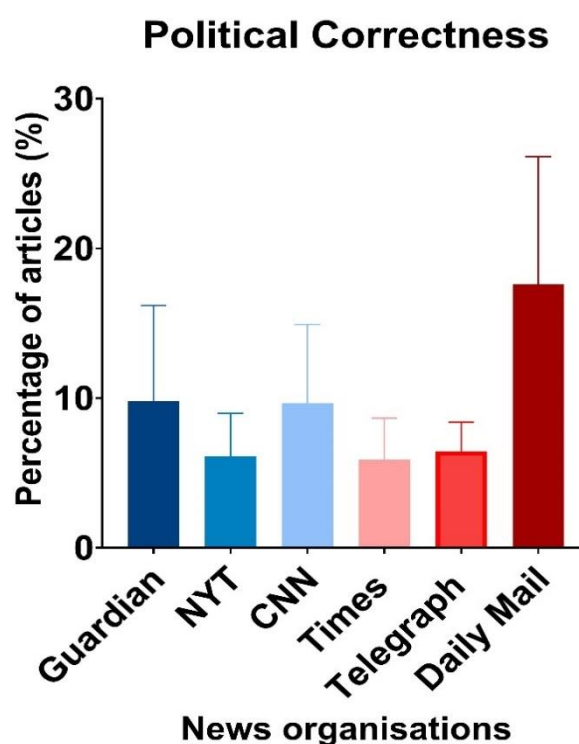


Figure 4.A3. Bar chart representing the percentage of political correctness/cancel culture articles using the moral foundation words, with confidence intervals.

Table 4.A4. Confidence interval table of all groups and digital news-media organisations.

	Guardian	NYT	CNN	Times	Telegraph	Daily Mail
Number of values	5	5	5	5	5	5
Minimum	4.838	1.739	3.179	0.8935	0.3237	3.393
Maximum	22.95	11.68	27.61	3.679	8.416	8.567
Range	18.11	9.945	24.43	2.786	8.093	5.174
95% CI of median						
Actual confidence level	93.75%	93.75%	93.75%	93.75%	93.75%	93.75%
Lower confidence limit	4.838	1.739	3.179	0.8935	0.3237	3.393
Upper confidence limit	22.95	11.68	27.61	3.679	8.416	8.567
Mean	10.2	4.211	9.167	1.804	2.844	5.14
Std. Deviation	7.584	4.249	10.39	1.119	3.229	2.097
Std. Error of Mean	3.391	1.9	4.647	0.5004	1.444	0.9378
Lower 95% CI of mean	0.7832	-1.064	-3.734	0.4152	-1.166	2.536
Upper 95% CI of mean	19.62	9.487	22.07	3.194	6.853	7.744

Lower 95% CI of geo. mean	3.758	1.158	2.136	0.7914	0.3814	3.062
Upper 95% CI of geo. mean	19.05	8.361	18.7	3.155	7.448	7.675

Chapter 5: Moral foundation framing's influence on support for familiar and unfamiliar climate change mitigation policies in the United States

(Out for review at: Mitigation and Adaption Strategies for Global Change)

5.1. Abstract

Climate change remains a divisive issue in the United States, with varying levels of support for mitigation policies, particularly among conservatives. Efforts to shape climate change messaging using framing techniques have struggled to shift pro-environmental attitudes due to deeply entrenched values. This study examines the effectiveness of emphasis framing using Moral Foundations Theory, to influence public attitudes toward climate change policies, testing moral foundation framing on both a familiar (wind power) and unfamiliar (stratospheric aerosols) mitigation strategy in a US general population survey. Results from the experiment offer a mixed outlook. In general, stratospheric aerosols received less support than wind power, whilst contrastingly muted the negative sentiment towards climate change mitigation do not provide substantial evidence supporting the efficacy of moral foundations framing for climate change policy support. Contrary to expectations that liberals would support a climate change mitigation policy regardless of context, liberals seemed unsure of SAs irrespective of ingroup moral framing. Challenges in conducting framing studies are discussed, alongside suggestions for future framing research that may remedy these challenges.

Key Terms

moral foundations theory, climate change scepticism, climate change mitigation policies, moral framing

5.2. Introduction

Climate change represents a significant global threat (IPCC 2021). Democratic countries require overwhelming support from the public to enact policies that mitigate or reverse the factors contributing toward anthropogenic climate change. Despite the gravity of the global challenge,

climate change action faces stiff resistance from the vocal minority of climate change sceptics, who either believe the science is false/manipulated, or that even if true does not justify the resources required to address climate change (Capstick and Pidgeon 2014). Identifying and addressing the causes of climate change scepticism is therefore of paramount importance. Climate change scepticism is not distributed evenly throughout the populations of countries. Factors that seem to predict a higher likelihood of climate change scepticism in a group or individual include certain demographics, such as white, older men (McCright, Dunlap and Marquart-Pyatt 2016), conservatives (particularly in the US) (Huber 2020), right-wing populism (Lockwood 2018), in addition to issues with (mis)communication of science/policies relating to climate change (Kahan 2015).

Moral Foundations Theory (MFT) has been utilised to try to bridge the gap between moral psychology and emphasis framing – framing a message in a manner that emphasises a particular point of view (Chong and Druckman 2007). MFT has been applied to contentious topics, including environmental issues like climate change (Koleva et al. 2012; Nisbet, Markowitz, and Kotcher 2012; Wolsko et al 2016), social justice (Silver, Goff and Iceland 2021; Goff, Silver and Iceland 2022) and cultural issues like religion (Kitamura and Matsuo 2021). MFT has also been applied in climate scepticism research. Conservatives and liberals respond to stimuli differently, given their varied moral values (Haidt 2012; Graham et al. 2013), causing ideological groups to be drawn to forms of communication in line with their intuitive responses.

To better understand the influence of moral foundations on climate change attitude formation/maintenance, this paper aims at investigating individual-level differences in climate change attitudes by drawing on Moral Foundations Theory (MFT). Specifically, to frame a familiar climate change mitigation technology (wind power) with technology largely unfamiliar to the US public (stratospheric aerosols). By using an unfamiliar topic to most people, such as stratospheric aerosols (SAs), I aim to disentangle ideological entrenchment on an issue from the effect of moral foundation framing. To collate these interconnected issues into a cohesive body of research, this study seeks to understand the importance of issue salience (Behr and Iyengar

1985) in the influence of moral messaging on a controversial and deeply consequential topic like climate change.

5.2.1. Climate Change Scepticism and Ideology

Climate change scepticism appears to be on the rise (IPSOS 2022), and thus understanding the types of groups and individuals most likely to form sceptical attitudes towards climate change science and mitigation policies, is the first step in finding solutions to scepticism toward climate change science. Within the literature, a climate change sceptic can range from scepticism towards the science of global warming, to scepticism toward policy and technological solutions to climate change. These different forms of scepticism can be usefully divided into two categories of sceptic: epistemic sceptics - sceptical of the science of global warming - and response sceptics - sceptical that governments have the ability to, or even should, respond to climate change and its effects (Capstick and Pidgeon 2014).

As a predictor variable, political ideology has been shown to explain a significant amount of climate scepticism and support for environmental protection (Dunlap et al. 2016; McCright and Dunlap 2013; Guber 2013; McCright et al. 2016). The consensus of research points to rightwing ideology's strong association with lower support for climate-related regulations and policies, whilst left-wing ideology favours state intervention and supports climate-related regulations and policies (Huber 2020). Bolsen, Druckman and Cook (2015) reported that party identification and political ideology were important factors in determining individuals' beliefs about global warming, since the predicted probability of expressing belief in global warming ranks at 72 percent for Democrats and 57 percent for Republicans. The effect of political orientation on climate change attitudes in the US is so strong that it moderates the relationship between educational attainment and views on climate change: educational attainment is positively associated for Democrats with views on climate change consistent with scientific consensus, but the association is weaker or negative for Conservatives and Republicans

(McCright et al. 2016).

There is some evidence that the association between climate scepticism and conservatism is particularly strong in the United States: one study found positive correlations between climate scepticism and ideology were stronger and more consistent than in 24 other nations (Hornsey, Harris and Fielding 2018). However, links between climate change scepticism and far-right movements in Europe and Latin America are also well established (Forchtner 2019; Whitmarsh 2011). Recently, right-wing populism has been shown to a variable in climate change attitudes, orthogonal to ideology (Huber 2020; Lockwood 2018). It is difficult to pinpoint the reasons why conservatives are more likely to be sceptics than liberals. In one study of right-wing populists, Jylhä and Hellmer (2020) reported no connection between climate change denial and anti-establishment attitudes, arguing that ideological worldviews could be the core differentiator with liberals. A more substantial finding from the US was that the perceived threat to society from what were referred to as 'environmentalists', consistently and uniquely accounted for any connection between conservatives and climate change scepticism (Hoffarth and Hodson 2016).

The relationship between ideology and climate change science is further complicated when taking a broader look at the relationship between conservatives and their support for science. For instance, conservatives have been found to be less trusting than liberals of scientific findings that have an impact on society, such as science with the potential to impact education or the environment. However, conservatives display greater trust in science analysing production operations and manufacturing processes than their liberal counterparts (McCright et al. 2013). For example, liberals are less trusting of nuclear power generation, despite it having a much lower accident rate than almost all other forms of energy generation (Kahan 2015; Feldman and Hart 2018). This distinction between knowledge and belief acquisition is an important and often overlooked theme within research on climate change scepticism. If climate scepticism reveals a conflict of values, not a lack of education (see Kahan 2016), then greater attention should be paid to value acquisition and maintenance, since as Wolsko (2017) argues,

“... there may actually be nothing inherently anti-environmentalist about conservative values.”
(p. 285).

5.2.2. Moral Foundations Theory

Given the persistence of climate change scepticism, academics have studied a variety of potential factors explaining a rejection of scientific consensus amongst a considerable number of people in liberal democracies. One such avenue of research centres around the relationship between climate change scepticism and morality. Attempts at educating people through accurate information regarding the science of climate change have met with resistance (Hart and Nisbet 2012; Sauer et al. 2021), leading researchers to suggest moral values could supersede objective evidence (Cusimano and Lombrozo 2021) help internalise congenial viewpoints and associations (Feldman 2021). Haidt and colleagues identified five moral codes prevalent worldwide: care/harm, fairness/ cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation (Haidt 2012; Graham et al. 2013). This framework, alongside subsequent research using this framework (see Graham, Haidt, and Nosek 2009; Graham et al. 2013; Haidt 2008; 2012), came to be defined as moral foundations theory (MFT). MFT posits that moral judgments are products of reflexive emotional responses produced by psychological modules evolved to “suppress or regulate selfishness and make social life possible” (Haidt 2008, 70). Deliberative moral reasoning is therefore considered a post hoc process that justifies the intuitive disposition within the theory of moral foundations. Further research into MFT found that individuals’ reliance on moral foundations is predictive of what opinions people have on certain moral issues (Strimling et al. 2019), further supporting the theory. These psychological modules (moral foundations) have been found to guide social and political values (Hatemi, Crabtree and Smith 2019).

While studying the relationship between moral foundations and ideology, Haidt and Graham (2007) began finding evidence that conservatives hold moral values that liberals do not recognize as moral concerns (Haidt 2012). Utilizing a straightforward self-report scale to gauge political orientation, Graham et al. (2009) demonstrated that the principles of care and fairness maintain

significant value across the entire political spectrum. On average, liberals indicated a slightly stronger endorsement of these principles compared to conservatives. Conversely, the values of loyalty, authority, and sanctity exhibited a distinct linear progression in importance, ascending from extreme liberals to staunch conservatives (Graham et al. 2009). An additional hypothesis that foundations would predict variation based on overlapping content – for example, people who scored high on the care foundation would be particularly sensitive to issues involving violence or cruelty - was also found to be accurate (Graham et al. 2013). Additionally, a relationship between political conservatism and a stronger negative response than liberals to feeling disgusted by certain sensory stimuli, including unpleasant videos and unpleasant smells has been found in multiple studies (Dodd et al., 2012; Helzer & Pizarro, 2011; Inbar, Pizarro, & Bloom, 2011).

The five moral foundations are often researched as two conceptual groups in order to standardise MFT research. The first group, termed ‘individualising’ values, was founded upon the “ethic of autonomy,” (Yudkin et al. 2021) concerned with personal rights and freedoms and is associated with both political ideologies. The two foundations associated with individualising values are fairness (equality and justice based on altruism) and care (avoiding harm and avoiding inflicting harm on any other individual or group) (Yudkin et al. 2021). Harm/care and fairness/cheating are considered individualising foundations because they benefit the individual and focus on autonomy (Dawson, Han and Choi 2021), as well as incentivise behaviour outside of perceived group membership, appealing to all groups (Yudkin et al. 2021).

The second group of values, which is associated more strongly with the ideological right, is the concept of ‘binding’ moral values. Binding moral values are based on ‘coalition psychology’, governing community and group behaviour (Yudkin et al. 2021). Binding values help in cooperative settings as the three foundations incorporated into this group are loyalty (sacrifice individual motivations for a collective group); authority (stronger support for power structures and traditions); and purity, which can include a defence of both physical and perceived blights (i.e., apostasy or sinful behaviour). The term binding is therefore appropriate, as these morals ‘bind’ individuals into cohesive groups (Malka et al. 2016). Although, say,

sanctity, loyalty and authority are not valued by all conservatives equally, there is substantial evidence that they cluster together amongst conservatives, and not liberals (Graham et al. 2009), to render their groupings useful for research studying both MFT and ideology.

5.2.3. Framing Environmental Issues

When discussing the communication of topics like climate change, framing is a vital concept supported by decades of research on framings' efficacy as a tool in altering attitudes. An extensive body of research on framing (Chong and Druckman 2007; Carnahan, Hao and Yan 2019) has revealed that it is often the messaging and communication of issues that can lead to partisan beliefs (Chong and Druckman 2007). Chong and Druckman define framing as "the process by which people develop a particular conceptualization of an issue or reorient their thinking about an issue" (Chong and Druckman 2007, 102). In studying framing effects, emphasis framing is often utilised (Binder, Childers and Johnson 2015, Bullock and Vedlitz 2017), highlighting in-group speakers or politicians (Kahan et al. 2011, Kahan 2016), or preferencing certain information (Shan, Diao and Wu 2020). However, it is the reorientation of thinking that has captivated the interest of researchers in value formation/maintenance. Framing climate change in order to effect attitude and behavioural change has seen some success (Vries et al. 2016), while framing climate mitigation as providing possible benefits increases support for climate action (Spence and Pidgeon 2010). Supporting this argument, Feldman and Hart (2018) found that simply mentioning "climate change" can cue partisans to respond to clean energy policies in ways that are consistent with their political identities, leading Republicans to resist the policy whilst Democrats show greater support for clean energy policies (Feldman and Hart 2018).

5.2.4. Moral Foundations Framing

Highlighting the benefits of climate change action or the danger of inaction is useful yet lacks value specificity. Neglecting certain values held by other groups in society is prevalent in politics, showcased by the narrow moral framing of environmental communications by political

organisations. For example, Nisbet, Markowitz, and Kotcher (2012) reported a strong emphasis on liberal moral framing in environmental campaigns, arguing instead that groups need to appeal to a greater variety of moral foundations, effectively learning alternative moral languages. Another group of authors made the case that contentious topics like gun control, the death penalty, animals testing, and emissions standards, each relate to the harm/care foundation, suggesting that individuals may evaluate each of these issues through a similar lens, likely suffering (Koleva et al. 2012). This constant exposure to the harm/care foundation has created limitations when utilising this frame in pro-environment messaging. When discussing the Deep-water Horizon event, describing the harm of climate change was more effective than not doing so, although this effect was minor (Clayton Koehn and Grover 2013). The authors concluded that due to the media attention, this topic was already framed in a manner congenial to liberals. Indeed, conservative participants were associated with weaker responses to the experiment (Clayton Koehn and Grover 2013).

Running contrary to individualising frames on environmental issues, binding moral frames yielded positive responses amongst conservatives in the United States in multiple studies. For example, Koleva et al. (2012) reported that the purity frame seemed to affect attitudes about global warming, reflecting an innate feeling that the environment is sacred. Feinberg and Willer (2013) reported that reframing pro environmental rhetoric in terms of purity largely eliminated the difference between liberals' and conservatives' environmental attitudes), in line with findings from Koleva et al (2012). Purity was not the only binding moral frame with efficacy in attitude change: when combining multiple binding frames (in-group loyalty, respect for authority etc.) Kidwell et al. (2013) demonstrated that persuasive appeals congruent with conservatives' 'binding' moral concerns increased conservatives' intentions to recycle, in addition to their actual recycling habits (Kidwell et al. 2013, 359). In a similar vein, pro-environmental messages framed as patriotic increased high system justifiers' intentions to engage in conservation behaviours and willingness to sign a pro-environmental petition. Feygina, Jost and Goldsmith (2010) reported that it was possible to eliminate the negative effect of system justification on environmentalism by

encouraging people to regard pro-environmental change as patriotic (loyalty) and consistent with protecting the status quo (authority).

Framing through moral foundations has been shown to also supersede education framing. Studying the types of messaging that would change undergraduates' perceptions of climate change, Sauer and colleagues concluded that the "engaging science lecture" frame did not support change in students' perceptions on climate but appealing to student respect for authority produced positive results (Sauer et al. 2021). Lastly, a series of three experiments examining the extent to which variations in the moral framing of pro-environmental messaging affected conservation intentions, climate change attitudes, and donations to an environmental organization (Wolsko, Ariceaga and Seiden 2016) found that conservatives shifted substantially in the pro-environmental direction after exposure to a binding moral frame, which incorporated authority, purity and in-group patriotism. One explanation for this divergence between left and right might be that climate change and other environmental concerns are already framed in society through individualising frames. This could explain Feinberg and Willer's (2013) findings - when analysing newspaper op-eds and public-service announcements on YouTube, they found that contemporary environmental discourse was based primarily on moral concerns related to the individualising moral foundations of harm and care.

Deeply entrenched political issues can trigger salient responses amongst participants (Behr and Iyengar 1985; Chong and Druckman 2007; Kahan et al. 2013). As a result, the effects of framing on conservatives are often minor (Feldman and Hart 2018). The central aim of this paper is to assess whether an unfamiliar climate change mitigation policy is more susceptible to moral foundations framing than a familiar climate change policy topic. The following hypotheses seek to address this central question, while accounting for prior research conducted on ideology and climate change attitudes. Any study incorporating moral foundations to influence attitudes and behaviours should also establish whether participant ideology correlates with the moral frames congenial to their group. There is evidence that attitude change will be greater when persuasive messaging is aligned with the context of the recipient's attitude in the relevant

domain (Kahan et al. 2013). Expanding on this theory, Clayton and colleagues (2013) reported that environmental issues circulated in the media entrenched frames espoused by each individual's preferred media source(s). Value entrenchment through communicated frames works both ways - message alignment seemed to boost the efficacy of binding moral messages amongst conservatives, predicting greater environmentalist attitudes (Wolsko, Ariceaga and Seiden 2016).

Given the entrenchment of environmental issues in public discourse, the first two hypotheses test whether a climate change mitigation policy unknown to the majority of the US public has a weaker relationship to participant ideology than the relationship between ideology and support for wind power generation. The unknown policy, stratospheric aerosols (SAs), involves the dispersal of aerosol particles in the stratosphere, reducing levels of solar radiation reaching the surface of Earth. SAs are uncommon in media discourse and culture wars in the United States, giving the technology the potential to circumvent entrenched intuitions around climate change. An unfamiliar policy garnering more support than a familiar mitigation technology like wind power, framed in congenial moral terms, supports the theory that policy support derives from value conflicts rather than distrust in the relevant science. I also anticipate no relationship between ideology and the SA moral frames, since it is assumed that neither liberals nor conservatives will know where to value SAs – establishing a fairly even response distribution for both ideological groupings. I therefore expect that:

H1: Moral foundations framing will be more influential on support for stratospheric aerosols than on support for wind power.

H2: There will be no significant correlation between ideology and stratospheric aerosols.

Regular news media coverage has placed wind power in ideological camps, in which its liberal proponents have already framed the technology through moral foundations relating to

their congenial moral frames of caring and fairness (Feinberg and Willer 2013). The individualising foundations of caring/harm, and fairness/injustice are arguably more easily applied to climate change communication, since climate change threatens to harm the most vulnerable people and nations regardless of group affiliation (Welsch 2021). Welsch (2020) provides evidence consistent with such a view - support for climate-related regulations is positively related to a stronger endorsement of the individualising moral foundations of caring and fairness (as well as loyalty) unless concern for more local or regional environmental challenges is controlled for. Therefore, the theory underpinning the final hypotheses assumes that since climate change has been primarily framed through individualising foundations, binding moral foundations should increase support for climate change mitigation policies that have not become strongly connected to a political group. However, since SAs have not been framed through any of the moral foundations, the variability between moral foundations and stratospheric aerosols support will be low. These additional considerations lead to the following expectations:

H3: Binding moral frames will garner more support for climate change mitigation policies than individualising frames amongst climate change sceptics.

H4: There will be low variability between framing groups regarding support for stratospheric aerosols.

5.3. Methodology and Data

To address the hypotheses, an experiment was designed to assess what effects binding and individualising moral cluster frames had on familiar and unfamiliar climate change mitigation technologies; while accounting for the potentially confounding effects of ideology, climate change scepticism, and demographics in influencing the effectiveness of the moral foundation frames. Participants were recruited from the Prolific Academic survey sampling organisation on August 2022, in which participants from the US (N=817, 410 male, 396 female, 11

nonbinary/third gender) received monetary payments of around \$2.60 for participation in the online survey experiment, which lasted less than 15 minutes. Respondents were randomly assigned to one of four groups (N=204-5). Participants were given the instruction, “An independent policymaker wants your opinion on an important topic. Read the following policy statement carefully and then state your level of agreement/disagreement with the proposal”. Each of the four groups were then required to read a statement based on their agreement/disagreement with a statement, with two groups randomly assigned wind turbine frames while the other two remaining groups assigned the stratospheric aerosols frame (SAs) (7-point agree/disagree Likert scale)⁷. The former US president Donald Trump regularly criticised wind turbines, citing bird collisions, and claiming wind turbines cause cancer (Plumer 2019). This partisan rhetoric towards wind energy makes it an appropriate choice to assess conservative aversion to climate change mitigation policy. The frames were each modelled as continuous dependent variables, so that a low score was associated with agreement with the statement, while a high score was associated with aversion to the statement

The moralised language for each of the four experiments groups was selected from the extended Moral Foundation Dictionary (eMFD) (Hopp et al. 2021). The eMFD utilises a crowdsourced annotation procedure constructed from text annotations generated by a large sample of human coders, which the authors concluded “more accurately predicts the presence of morally relevant article topics compared to previous dictionaries” (Hopp et al. 2021, 243). For each framed statement, there are seventeen words from the appropriate section within the eMFD, eleven positive words (i.e., freedom, compassion) and seven negative words (i.e., harm, cruelty). Each set of seventeen words was compiled to form either a binding or individualising moral foundation group: with words relating to loyalty/betrayal, authority/subversion, and sanctity/degradation being associated with binding moral foundations, and care/harm, and fairness/cheating being used to describe individualising moral foundations. Participants were

⁷ I am researching the difference in effectiveness of two competing framing conditions, so a neutral frame group is not required in this study (Gamliel and Peer 2010; Nobel 2021; Sanford et al. 2023)

randomly assigned to one of four groups. Two groups were given the binding moral foundation statements and the other two groups were assigned individualising foundation statements. Each group was given the following original statement: *“An independent policymaker wants your opinion on an important topic. Read the following policy statement carefully and then state your level of agreement/disagreement with the proposal:”*

Following on from the statement was the moral foundations framing condition randomly assigned to that group (appendix 1).

Responses to these four frame conditions form the main independent variables (IVs) of the experiment. The remainder of the survey contained items used to create non-experimental independent variables measuring respondents’ ideology, climate change attitudes and demographic variables: age, gender, education, and ethnicity. Age was coded into three clusters. This had the advantage of reducing issues of number count for different more separated age groups, whilst having the disadvantage of potentially masking effects with such large age cohort groupings. Similarly, gender was split into three categories (male, female, non-binary/other). Ethnicity was coded for using 8 ethnicity groupings particularly relevant to the US (i.e. Hispanic/Latino, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander). The most pertinent independent variable was a respondent’s ideology. Political ideology was measured using an eight-item political attitudes scale (Nail et al. 2009), with a 1-7 Likert range. The eight questions related to ideology were specific to the US context: including the death penalty, gun ownership, and abortion, as well as their thoughts on the Democratic and Republican parties. All eight questions were each incorporated into a confirmatory factor analysis (see supplementary material) and were shown to be an appropriate measurement of ideology⁸. All of the ideology questions had a strong measure of scale reliability (Cronbach’s α =

⁸ Liberals and conservatives are used to describe left/right ideology in this experiment. This comparison should not be transferred outside of the US context, since nations that define left and right utilise different value scales (i.e., abortion and gun control are low salience issues in many European nations).

0.85). Attitudes towards climate change were included as an additional variable, given the need to assess attitude change amongst those most averse to climate change technologies.

Climate change questions were included to gauge two separate attitudes towards climate change in line with Capstick and Pidgeon's (2014) dichotomy discussed previously: epistemic and response scepticism. These values were evaluated through three questions measuring their belief in global warming, whether it was human caused (anthropogenic), and whether the US should do anything about climate change. Factor analysis revealed that the items used to measure types of climate scepticism all fitted one factor, and therefore the responses to all three climate change value questions were grouped as one variable. To control for demographic variables, information was collected on participant age, ethnicity, gender, and education. Education was controlled for using degree attainment. The three education labels were created from the original five variables to reduce the number of variables given the relatively low group numbers. The *2-Year Degree* and *4-Year Degree* responses were combined to create the new variable *2–4 Year Degree*; and *Postgraduate Degree* was created by merging the *Master's* and *Postgraduate Degree* response.

5.4. Results & Discussion

To determine whether moral foundations framing will be more influential on support for stratospheric aerosols than on support for wind power. (*H1*) an ANOVA test was carried out. However, the ANOVA did not yield a statistically significant result ($F = 1.14, p > 0.05$). Contrary to expectations, Fig.5.1 displays the opposite trend: the median support for the stratospheric aerosols policy was lower in both framing conditions (at “slightly disagree”) than the wind power policy frames (at “neither agree nor disagree”).

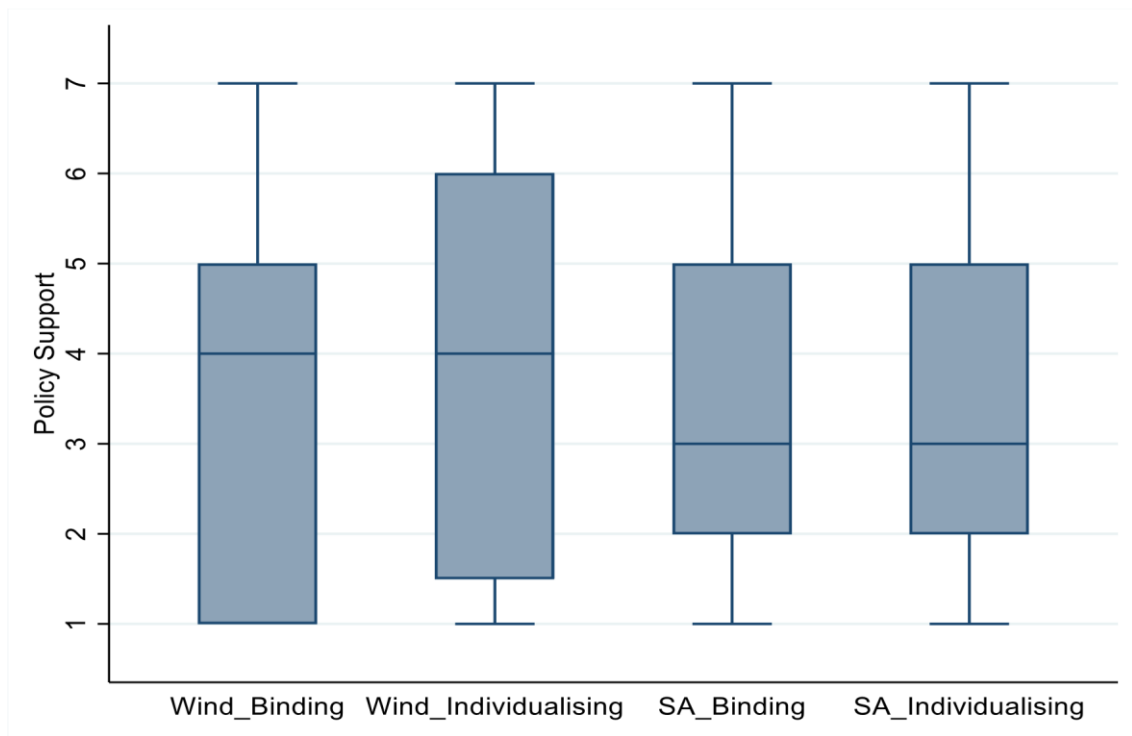


Fig.5.1 Box plot representing the median levels of support for the four framing condition groups, with 7 representing “strongly agree” and 1 representing “strongly disagree”

Table 5.1 consists of four ordinary least squares regression models, with each dependent variable represented as a scale. Each of the four framing conditions in the study is represented by a regression model. To test the relationship between ideology and the types of climate change mitigation policy (*H2*) I selected ideology as the first independent variable in the models, represented as a left-right scale.

Table 5.1. Moral foundation framing linear regression models.

	Wind Binding	Wind Individualising	SA Binding	SA Individualising
<i>Ideology</i>				

Left-Right Scale	0.0513*** (0.0102)	-0.00964 (0.0150)	-0.00931 (0.0188)	-0.0109 (0.0141)
<i>Climate Change Scepticism</i>				
Not Sceptic-Sceptic Scale	0.151*** (0.0293)	0.0341 (0.0369)	-0.00421 (0.0469)	0.0716 (0.0399)
<i>Age</i>				
35-54	0.171 (0.180)	-0.0363 (0.304)	-0.0640 (0.294)	0.495 (0.266)
55+	-0.279 (0.270)	0.618 (0.352)	0.00868 (0.354)	0.880** (0.335)
<i>Education</i>				
Medium	-0.174 (0.175)	-0.435 (0.288)	-0.0527 (0.285)	0.137 (0.277)
High	-0.182 (0.382)	-0.292 (0.349)	0.710 (0.366)	-1.010** (0.320)
<i>Gender</i>				
Male	-0.332 (0.181)	0.238 (0.263)	0.171 (0.258)	0.225 (0.232)
<i>Ethnicity</i>				
White	0.269 (0.190)	0.156 (0.351)	0.160 (0.297)	0.519 (0.289)
Constant	0.545 (0.300)	2.967*** (0.464)	4.267*** (0.462)	3.267*** (0.407)
Observations	205	204	204	204
R^2	0.322	0.046	0.030	0.149
Adjusted R^2	0.294	0.007	-0.010	0.114

Note. A positive coefficient in Table 1 indicates a positive relationship between an independent variable and aversion to the climate change mitigation policy statement, while a negative coefficient indicates that the independent variable is associated with support for the climate change policy statement.

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Ideology was associated with the wind policy binding moral group (Table 1), whilst not showing an association with support for the wind individualising frame group. Therefore, the results relating to the first hypothesis are mixed. Regarding ideology and the unfamiliar climate policy, Table 1 provides supporting evidence toward *H2*. The relationship between ideology and wind power was absent in the SA's frames, suggesting that a participant's ideology was not a clear indicator as to their climate change mitigation policy attitudes. Both sets of findings provide supporting evidence to some degree for *H1* (moral foundations framing will be more influential on attitudes towards stratospheric aerosols than on attitudes towards wind power). Ideology was muted in the case of SAs, which was not the case for one of the wind power policy groups. Demographic factors were only relevant for the SA individualising frame group: participants with a postgraduate degree supported the SA policy when framed through individualising moral language, whereas people aged 55 and over rejected the SA policy within the same individualising moral foundation frame.

A similar pattern emerged for the ideology variable when analysing climate change values in Table 5.1, relevant in addressing *H4* (There will be low variability between framing groups regarding support for stratospheric aerosols). Neither SA groups displayed any significant relationship with climate change scepticism. On the other hand, climate change scepticism was negatively associated with support for the wind policy when framed through the binding moral foundation cluster.

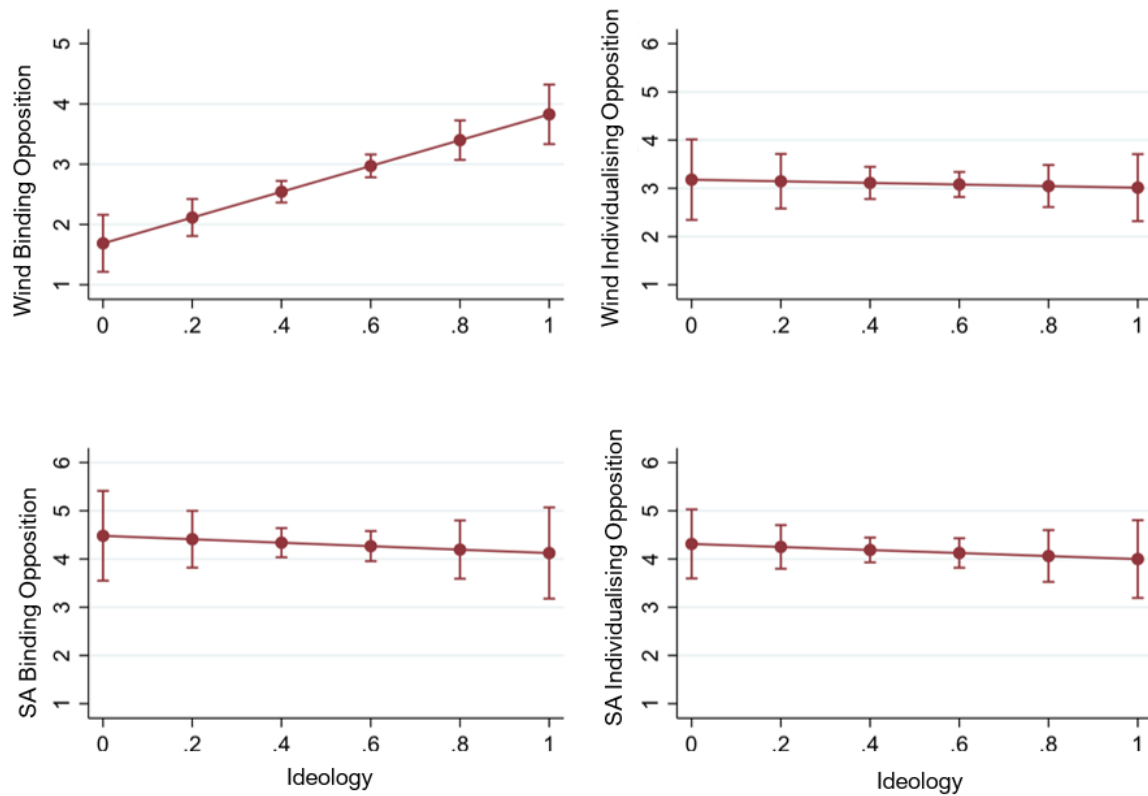


Fig.5.2 The marginal effects of ideology on the opposition toward the moral foundation frames, with a range of 0-1 representing the left-right scale, **with the x-axis representing the left/right ideology scores from left to right, and a y-axis represented by “strongly agree” (1) to “strongly disagree” (7) scale.**

The marginal effects of ideology on the moral foundation frames are displayed in Fig.5.2. Both responses to the stratospheric aerosols frames were less supportive of both of the wind power policy frames, suggesting that the unfamiliar topic seemed to reduce the efficacy of moral foundation framing. Fig.5.2 reveals that the binding moral foundation frame wind policy group differed significantly from the individualising group. Rather than display the expected preference for care and fairness foundations participants displayed in prior research (Graham et al. 2013; Wolsko 2017), liberal respondents were more strongly associated with the binding moral frame. The wind binding group interaction plot presented the typical divide between conservatives and liberals in the United States (Pew Research Center 2019). The individualising foundation cluster for the wind policy in Fig.5.2 revealed a relatively even distribution of values between liberals and conservatives. This finding was surprising, as conservatives were slightly

more supportive of the wind power policy than liberals, conflicting with most other research into climate change attitudes (Koleva et al. 2012; Feinberg and Willer 2013).

. Although correct in the assumption that conservatives would value both moral arguments relating to the unfamiliar climate policy, it also provides contrary evidence to the research finding that binding foundations such as purity (Koleva et al. 2012) and loyalty (Clifford 2017) are more effective than individualising foundations, in addition to research that found conservatives are swayed more by pro in-group moral messaging than liberals (Hurst and Stern 2020). Fig.5.2 also casts doubt on the influence of moral foundations framing on the ideological positions of conservatives, since all the data points to a rejection of the SAs policy. In contrast to prior research, the unfamiliar SAs policy frames fostered less support from liberals, who were far more supportive of the wind frames. From this data I would argue that moral foundations framing played a minimal role in attitude change for the unfamiliar climate change technology.

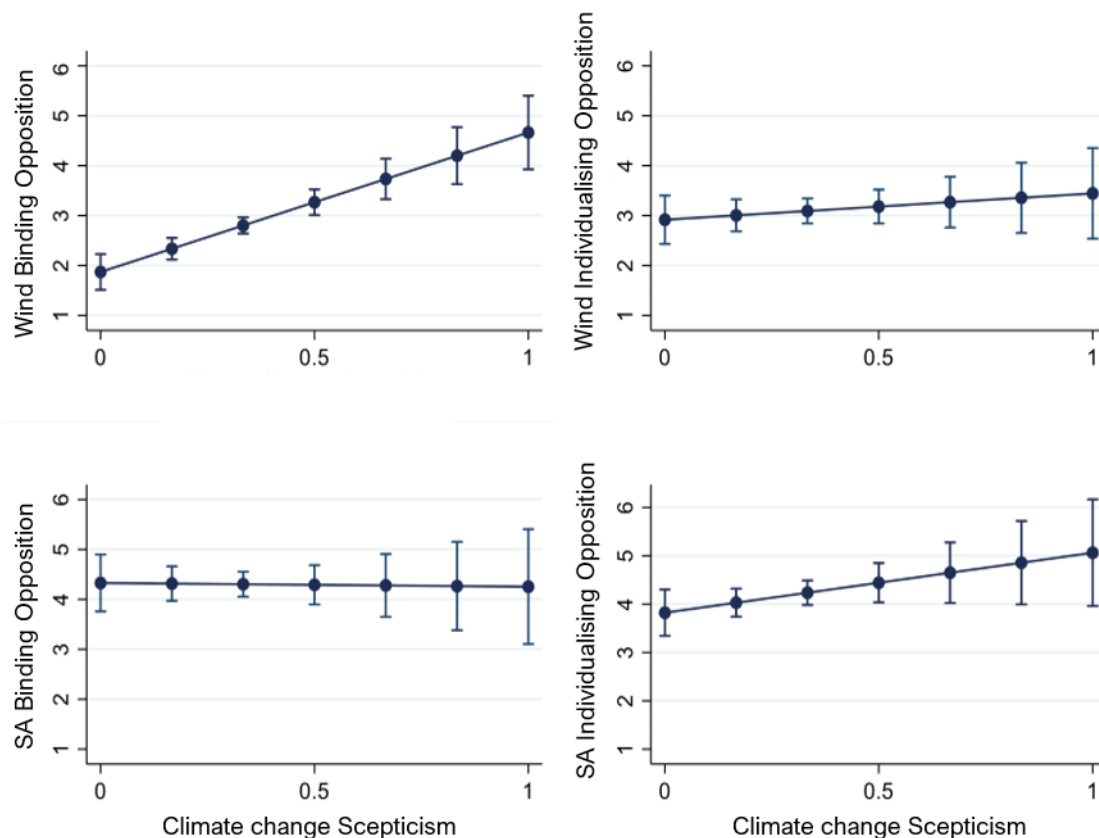


Fig.5.3 The marginal effect of climate change attitudes on support for the moral foundation frames, with the x-axis representing a climate change scepticism range of 0-1 representing a non-

sceptic to sceptic scale, and a y-axis represented by “strongly agree” (1) to “strongly disagree” (7) scale.

Fig.5.3 present the marginal effects of climate change attitudes on the moral foundation frames. Regarding *H3* (binding moral frames will garner more support for climate change mitigation policies than individualising frames amongst climate change sceptics), the SAs charts in Fig.3 represent mixed results. The individualising frame appealed less to climate change sceptics than the binding moral frame cluster for SAs, though this effect was minor. For wind power, this effect was reversed, with individualising being more effective. =Fig.5.3 also presents findings supportive of *H4*. Both individualising and binding moral frames are relatively flat, especially in the SA binding group.

The main takeaways from both Fig.5.2 & 5.3 are that the unfamiliar climate change mitigation technology (SAs) had the opposite effect from what was outlined in *H1*. Moral foundations framing was less influential on SAs than wind power. Regarding climate change sceptics, the binding foundation was less effective garnering support for wind power, but more effective within the SAs group (*H3*). Furthermore, in line with expectations there was low variability between moral foundation groups and support for SAs (*H4*). Fig. 5.3 also reveals that climate change sceptics were not persuaded to consistently support climate change mitigation technologies, regardless of frame.

5.5. Conclusion

When summarising the results, the efficacy of moral foundations is called into question in both the familiar wind power, and unfamiliar stratospheric aerosols cases. Interestingly there was uncertainty from both liberals and conservatives who maintained answers around the unsure mark. This uncertainty is encouraging, in which the public base their policy preferences on knowledge rather than appealing to ingroup values. However, this result could also be caused by priming participants through simply mentioning climate change, which has occurred in prior research (Feldman and Hart 2018). If both sets of policies cued participants with intuitive feelings on climate change, then discussing a new climate change mitigation strategy could have

been ineffective amongst conservatives and sceptics, whilst the lack of familiarity with stratospheric aerosols could have also turned away some liberals and non-sceptics. Studies using unfamiliar topics should consider avoiding climate change labelling throughout the experiment.

In contrast to the wind power policy, stratospheric aerosol policy support displayed almost no difference between individualising and binding frame clusters and their interaction with ideology. The distribution also saw the unfamiliar climate topic receive less support than both wind frame groups from liberals. This result also supports the theory that liberals require trust and knowledge in the specific climate change mitigation technology before supporting any policy relating to it.

This paper discussed some of the potential causes behind the relationship between SAs framed through the individualising cluster and education. The disparity between support for climate change and age is a well recorded phenomena in the United States (Ballew et al. 2019) and other western nations, such as New Zealand (Milfont et al 2021), where belief in, and support for, tackling climate change is negatively associated with an increase in age. Links between high levels of education and support for the unfamiliar climate change policy is still debated within the literature. There is conflicting evidence for (Zhang et al. 2022) and against (Kahan et al. 2013; Powdthavee 2021) the argument that more education fosters values of pro-climate change action. However, since neither age nor education results were present in the wind individualising frame, the relationship between moral framing and these demographic variables is uncertain, and could be attributable to the SAs technology, rather than the frame. Other factors worthy of consideration when discussing climate change scepticism include arguments made in the wider literature into climate change attitudes. For instance, aesthetic arguments (wind turbines being ‘eyesores’), or concerns surrounding negative environmental effects (Haikola and Anshelm 2016) such as bird collisions, have been relevant variables in other studies on climate change scepticism.

It is important to consider these results within the limitations of the study. The observed effects may be influenced by various factors, and other unaccounted variables, such as political engagement, levels of partisanship, career background (see Bolsen, Druckman and Cook 2015). Questions that could gauge political awareness (Zaller 1992) would help better understand the role ideology plays in influencing the emphasis frames. In addition, the sample was not representative of the US population, and those who seek out surveys to participate in do not necessarily reflect the general population. Another notable design choice to not include a 'don't know' option, means the study cannot parse whether the number of 'neither agree nor disagree' responses were participants were trying to express confusion around the frame. Another key limitation of online based surveys is on regulating time spent on each section by participants. Although the survey was timed, it would still have been possible for participants assigned the SAs frame to search the terms online briefly before responding. Results from a larger survey revealed that of the 35 knowledge items spread across five waves, 23 percent of participants looked up answers to at least one question (Munzert et al. 2022). Although this experiment did not contain any knowledge questions, the possibility that stratospheric aerosols were researched before answering should still be considered when working from the assumption that stratospheric aerosols are unfamiliar to respondents.

Another important caveat is the minor effects that only one brief frame can have on a participant. A meta-analysis of 138 experiments finds that framing exerts only a medium-sized effect on political attitudes (Amsalem and Zoizner 2022). It is therefore unlikely that a single emphasis frame unaccompanied by other stimuli (such as images or videos) could sufficiently influence climate change sceptics whilst climate change messaging is salient in the experiment. Longitudinal studies of climate change mitigation framing further advance the field in better understanding the influence moral foundations framing has on conservative participants. On the other hand, these findings do point towards a minor influence of moral framing in reducing negative attitudes towards climate change mitigation technologies, and therefore climate change action.

In sum, this paper contributes to the ongoing discussion as to the primacy of either ideology or moral foundational values in their ability to influence public attitudes on contentious political debates, like climate change mitigation. The results from this study have been contradictory towards expectations of moral foundations's effects on climate change attitudes;; the results instead supporting the traditional left-right issue divisions. To assess the strength of these results, further investigation, using larger datasets, paired with other stimuli (audio, visual etc.) is required, before moral foundations framing should be considered in a social/policy setting. Given this current evidence, moral foundations used in a societal setting appear as likely to cause resistance to climate change mitigation policies, as they are to benefit them.

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5.7. Appendices

Appendix 1:

Table 5.A1. Moral Foundations Frames of each of the four groups.

Wind Binding Moral Foundations Frame	<p>This policy will bring an end to the violation and betrayal of our damaged planet!</p> <p>Wisely embracing the construction of wind turbines will support the planet and keep our nation clean. Wind turbines reduce greenhouse gas emissions, stabilising the burdened health of the atmosphere. Once in place, these turbines will solve the disastrous rises in global temperature.</p> <p>This virtuous policy will be an act of charity to innocent future generations, giving them dignity to live in a revived climate. Not pursuing wind turbines would be an act of environmental exploitation. It is therefore my view that we should build more wind turbines in the United States.</p>
Stratospheric Aerosols Binding Moral Foundations Frame	<p>This policy will bring an end to the violation and betrayal of our damaged planet!</p> <p>Wisely embracing the release of aerosols to the stratosphere will support the planet and keep our nation clean. Similar to volcanic ash, these particles reflect the Sun's, rays, stabilising the burdened health of the atmosphere. These aerosols, once in place, will solve the disastrous rises in global temperature.</p> <p>This virtuous policy will be an act of charity to innocent future generations, giving them dignity to live in a revived climate. Not pursuing stratospheric aerosols would be an act of environmental exploitation. It is therefore my view that we should use stratospheric aerosols in the United States.</p>
Wind Individualising Moral Foundations Frame	<p>This policy will bring an end to the suffering and harm of our tortured planet!</p> <p>Carefully committing to the construction of wind turbines will protect the planet, ensuring our safety. Wind turbines reduce greenhouse gas emissions, rescuing the threatened integrity of the atmosphere. Once in place, these turbines will prevent damaging rises in global temperature.</p> <p>This fair policy will show compassion for future generations, giving them freedom to live in a welcoming climate. Not pursuing wind turbines would be an act of</p>

	<p>environmental cruelty. It is therefore my view that we should build more wind turbines in the United States.</p>
<p>Stratospheric Aerosols Individualising Moral Foundations Frame</p>	<p>This policy will bring an end to the suffering and harm of our tortured planet!</p> <p>Carefully committing to the release of aerosols to the stratosphere will protect the planet, ensuring our safety. Similar to volcanic ash, these particles reflect the Sun's rays, rescuing the threatened integrity of the atmosphere. These aerosols, once in place, will prevent damaging rises in global temperature.</p> <p>This fair policy will show compassion for future generations, giving them freedom to live in a welcoming climate. Not pursuing stratospheric aerosols would be an act of environmental cruelty. It is therefore my view that we should use stratospheric aerosols in the United States.</p>

Chapter 6: Populism and Climate Change Scepticism: Assessing the influence of populism framing on support for carbon emission regulations in the United States

(Out for review at: Communication Research)

6.1. Abstract

Right-wing populism's relationship to climate change scepticism has received growing attention in research on climate change attitudes. Recent literature suggest that populism enhances the association between ideology and climate change scepticism. Efforts to foster more support for climate change mitigation through framing techniques have previously centred around ideology as a method of attitude change. Using the debate around populism being a thin/thick ideology as a conceptual basis of populism, I assess whether populism framing influences US participant support for carbon emission regulations in the United States. Results from this framing experiment provide evidence supporting the theory that populism enhances the association between ideology and climate change scepticism, rather than being an orthogonal variable. However, populism framing increased negative sentiment towards further carbon regulations. Using verbal framing techniques like speeches to better simulate populist rhetoric is encouraged, to improve our understanding of populist framing's influence on climate change attitudes.

Keywords

populism, populism framing, climate change mitigation, climate change scepticism, carbon emission regulations.

6.2. Introduction

Climate change remains one of the most pressing challenges that many nations grapple with in the 21st century. For democratic societies to effectively combat this global crisis, they rely heavily on widespread public support to implement policies aimed at mitigating or reversing the

factors driving anthropogenic climate change. However, a vocal minority of sceptics continues to pose staunch resistance to necessary measures in tackling climate change. A US Gallup Poll between 2001 and 2019 reported that in 2001 30% stated that global warming was exaggerated. By 2019 this figure had risen to 35% (Kamarck 2019). One global survey found that the number of climate sceptics grew by 6% from 2019 to 2022, to reach 37% (IPSOS 2022), whilst the United States stands out as being more sceptical of climate change than other western countries (Pew Research Center 2019). Climate change sceptics, characterized by their disbelief in the veracity of climate science or the belief that the resources required to address climate change do not align with its potential severity (Capstick and Pidgeon 2014), constitute a formidable barrier to climate action. Within democracies, their rejection of the scientific consensus, as embodied by the Intergovernmental Panel on Climate Change (IPCC 2022), often translates into the obstruction or rejection of policies that aim to facilitate nations in reaching the targets set forth in the 2015 Paris Agreement (United Nations 2015). Consequently, it becomes paramount to identify and address the underlying causes of climate change scepticism to propel progress toward a sustainable future. Various factors emerge as reliable predictors of a higher likelihood of climate change scepticism. Such factors include right-wing ideology (McCright et al. 2016), and more recently, right-wing populism (RWP) (Häkkinen and Akrami 2014; Lockwood 2018; Neumayer 2004). Understanding these dynamics and addressing them appropriately is essential to fostering a broader consensus on climate action.

The core aim of this paper is to understand whether populism attitude activation (see; Bos et al. 2020; Busby, Gubler and Hawkins 2019; Castanho Silva and Wratil 2021) can be used as a tool to activate climate change attitudes amongst US citizens, as well as assessing whether these effects differ from existing ideological differences in the US towards climate change policies (McCright and Dunlap 2013; McCright et al. 2016). Specifically, populism activation messaging is used as a communication tool to persuade US participants both for and against carbon emission regulation policies. The expectations of this study design will be that though ideology will still be correlated with support/rejection of climate change (McCright, Dunlap and

Marquart-Pyatt 2016), populism activation messaging will increase support for carbon emission regulations and dampen negative sentiment towards carbon emission regulations amongst conservatives.

The results of these experiment aim to 1) contribute to enhance the understanding of how populist activation messaging influences an ideologically entrenched attitude like climate change policy; and 2) to contribute to the debate on whether populism should be defined as a thin/thick-centred ideology, when considering value formation an ideologically divisive topic like climate change in the US.

6.2.1. Climate Change Scepticism

The association between climate change and conservative attitudes is well documented (McCright et al. 2016). An important factor has been shown to be lower risk perceptions of the dangers posed by climate change (Leiserowitz 2006). Justifying socio-economic inequalities and the status quo have also linked conservative attitudes to climate change (Jylhä and Akrami 2015; McCright et al. 2016). Psychological factors like dominance and low empathy have also been associated with climate change denial (Jylhä and Akrami 2015). Motivated reasoning is also an important element. One study found that conservatives pay less attention than liberals to climate related words when reading the same text (Whitman et al. 2018). Populism's role in creating/maintaining climate change attitudes has received less attention than the role of conservatism in this respect.

To address the gap in within the literature involving populism's role in climate change attitudes, recent research has found positive associations between climate change scepticism and populist sentiments (Huber 2020). Participants who exhibited strong populist sentiments were less likely to believe in human-induced climate change and were more likely to oppose environmental protection (Huber 2020). Results from the US reporting that populist attitudes enhance the effects of partisanship reiterate the British findings (Huber 2020). The most conclusive evidence comes from Yan, Schroeder and Stier (2021), who used web tracking data in

France, Germany, Italy, Spain, the US, and the UK involving 150 million website visits across 8893 websites, paired with a survey containing questions about political attitudes and attitudes towards climate change. The authors found that right-wing populism was indeed associated with climate scepticism (Yan, Schroeder and Stier 2021). The connection between RWPs and climate change scepticism has also been shown within the European Union. In a survey of all 28 EU member states, Jahn (2021) reported that once in power, populist parties have a profound impact on GHG emissions, toward both the magnitude of the effect, and the time lag between the installation of a populist government and its effect. Jahn concluded that no other European party causes such a rapid effect on GHG emissions when in power (Jahn 2021, 12).

Populism, and right-wing populism (RWP) in particular, has garnered much attention within academia and in news-media, especially after the election of Donald Trump in the USA. Since 2016, there have been successful right-wing populist movements in Europe, Latin America, and Asia. Publications linking populism and climate change scepticism has been gaining traction (Lockwood 2018; Huber 2020), with much of the literature focussed instead on climate change scepticism's associations with far-right parties (Forchtner 2020). However, those who have considered the connection believe climate change to be an example of an international issue facing populist backlash against globalising forces (Lockwood 2018; Norris and Inglehart 2019). Huber, Fesenfeld and Bernauer (2020) found that populism enhanced the partisan trend regarding climate change attitudes in the United States. Once individuals perceive climate change issues as elite projects that do not align with the will of the people, climate-related and environmental politics will face resistance from voters (Huber 2020), which could be exploited by populist leaders who frame intergovernmental aims as threats to 'the people' (Engesser et al. 2016; Matthes and Schmuck 2017).

A commonly used definition of populism is that it is an often pragmatic and reactionary form of politics that normalises itself in mainstream politics by latching onto an ideology for a few thinly defined core idea (such as economic growth for right-wing populist groups (Mudde 2004; Norris and Inglehart 2019). This attachment to vague policy ideas has been termed a thin-centred

ideology (see Mudde 2004). paired with a Manichean moral view of the world (Mudde 2017). In this paper I employ a similar definition by focusing on the ideational definition of populism: A definition based upon the Manichean moral distinction of the good people contrasted with the evil elites (who precisely is considered an elite member varies between groups and nations) (Mudde 2004; Mudde 2017; Hameleers, Bos and de Vreese 2017), that also relies on a thin-centred ideology. In the ideational approach, populists consider themselves as part of a moral community (Kazin 1998; Osuna 2020), comprised of the 'pure people', referring to a subset of the population who support the populist leader and/or party (Mudde and Kaltwasser 2017). Populism also includes an element of distrust, with populism having been shown to be positively associated with conspiratorial beliefs (Eberl, Huber and Greussing 2021) by a proliferation of distrust toward anyone who is not perceived to be the 'real people' (Mudde 2004). This lack of trust in elites not viewed as the 'real people' is an important factor connected RWP and climate change scepticism. One study reported that low trust in environmental institutions amongst right-wing populists was strongly associated with climate change scepticism, and this lack of trust was mediated by anti-elitist and even anti-migration attitudes (Krange, Kaltenborn and Hultman 2021).

Anti-science attitudes and populism have also been shown to have similarities. Anti-science attitudes, often revolve around distrust of the scientific 'elite' (i.e. universities) and related organisations (i.e. IPCC). Anti-intellectualism utilises the same means of communication among populist groups, whereby an 'illegitimate elite' claiming sovereignty over science conflicts with people demanding control of science and science-related decision making (Mede and Schafer 2020). This anti-science trend has clear consequences for climate change mitigation support. Climate scientists have been accused of being part of the 'elite groups' who mislead the public, describing climate research as "mob science", concealing the "truth" (Sarathchandra and

Haltinner 2020), as well as suggesting that experts are less trustworthy than ‘regular’ people (Motta 2018).

Thin-centred ideologies combine with ideological traditions of other parties because they require grounding in concepts familiar to large portions of the population (Mudde & Kaltwasser 2013), giving the party a sense of credibility and anchoring the party to an ideological side for the purpose of attracting a vote share (Norris and Inglehart 2019). RWP tends only to value economic policies (and society as a whole) that are exclusionary, focussing on reduced welfare, restrictive immigration, and less funding for international organisations (Vasilopoulos and Jost 2020). The centrality of global agreements like the Paris Agreement (2015) requiring government pledges and funding can therefore help to explain the suspicion right-wing populists show towards climate change mitigation policies. An important caveat regarding the role of ideology in determining populist attitudes has gained traction in recent years. One critique of a ‘thin’ ideology stresses the primacy of a party’s emphasis on radical collectivist positions, over any ideological positions espoused by the group (Huber, Jankowski and Juen 2022). Schroeder (2020) echoes a similar argument, that if researchers continue to treat populism as ‘thin’, they miss the main thrust of populism as an independent force, including its causes and how it sustains itself (Schroeder 2020). Populist attitude regional disparities support this concern, as showcased in a comparative analysis of populist voting patterns in Greece and Chile (Hawkins, Kaltwasser and Andreadis 2021). Assessing the ‘thickness’ of populist ideology in relation to forming climate change policy attitudes is a core element of this paper.

Finally, top-down and bottom-up explanations for explaining the association between political attitudes and climate change share motivated cognition as, to some degree, an explanatory variable. Motivated cognition (reasoning) involves the unconscious tendency to process information in a manner that will arrive at conclusions that suit an end; whether that be in support of moral values (Haidt 2012); winning arguments (Mercier and Sperber 2018); or to reaffirm group identities (Kahan 2017). Research into motivated cognition often refers to the dual process model of the brain - the automatic intuitive self and the conscious reasoning that

occurs later (Lodge & Taber 2013; Kahneman 2011). Lodge and Taber (2013) state that people are prone to accept facts and arguments which they agree with, discounting or counterarguing with ideas that challenge their convictions; agreeing or disagreeing is decided upon by initial feelings, automatically triggered by the early stages of thinking about an issue (Lodge & Taber 2013). Kahan (2015) makes a compelling case that the contamination of the sciencecommunication environment with forms of cultural status competition (used extensively by populist parties) forces diverse groups into acquiring knowledge in a manner that protects their perceived cultural-identity protectors (Kahan 2015). Liberals and conservatives alike have been shown to take part in partisan-motivated reasoning of this variety, becoming more trusting of scientists (Nisbet et al. 2015) and policies concerning the research they produce (Bolsen, Druckman and Cook 2015) when the political context in which information is presented matches their prior partisan commitments (Motta 2018).

6.2.2. Climate Change Framing

When discussing the communication of ideas, and the influence of motivated cognition, framing is a vital concept supported by decades of research of efficacy in altering attitudes (Chong and Druckman 2007; Carnahan, Hao and Yan 2019). An extensive body of research on framing has revealed that it is often the messaging and communication of issues that can lead to partisan beliefs (Chong and Druckman 2007). Chong and Druckman define framing as “the process by which people develop a particular conceptualization of an issue or reorient their thinking about an issue” (Chong and Druckman 2007, 102). In studying framing effects, emphasis framing is often utilised (Binder, Childers and Johnson 2015; Bullock and Vedlitz 2017), highlighting ingroup speakers or politicians (Kahan et al. 2011; Kahan 2016), or preferencing certain information (Shan, Diao and Wu 2020). However, it is the reorientation of thinking that has captivated the interest of researchers into value formation/maintenance. Framing climate change to effect attitude and behavioural change has seen some success (de Vries et al. 2016), while framing climate mitigation as providing possible benefits increases support for climate action (Spence and Pidgeon 2010). Supporting this argument, Feldman and Hart (2018) found

that simply mentioning “climate change” can cue partisans to respond to clean energy policies in ways that are consistent with their political identities, leading Republicans to resist the policy whilst Democrats show greater support for clean energy policies (Feldman and Hart 2018).

Framing using populism could have similar benefits when trying to address divides amongst the public on scientific consensus. The use of populist framing offers a compelling lens through which to analyse and understand climate change scepticism. This framing strategy may shape perceptions amongst populists by portraying the in-group as morally virtuous and exempt from blame, and more importantly, designating an external “they” as ‘evil’ and causally responsible for societal issues (Jagers and Walgrave 2007). Emphasising the divide (real or imagined) between the blameless populace and corrupt elites in a manner that promotes a science, rather than discouraging the scientists (Caiani and Lubarda 2023), could have the potential to alter entrenched climate change sceptic values. A paper by Hameleers, Bos and de Vreese (2017) showed promise for populist framing, providing evidence that emotionalized blame frames influenced populist attitudes. The authors made a clear distinction between “us” and “them,” because they theorised that populists attribute blame using an emotional communication style (Ruzza and Fella 2011; Hameleers, Bos and de Vreese 2017). For example, by emphasising that the enemies are creeping upon the ingroup, a sense of threat should influence attitudes, especially when using anger or fear (Nabi 2003). Anger and fear in particular effect how citizens process information on causal attributions of responsibility for negative outcomes (Hameleers, Bos and de Vreese 2017).

6.2.3. Populist Attitude Framing

This section builds on the literature to formulate a set of hypotheses. The first two hypotheses seek to validate prior research into the connection between ideology and climate change, by showing a liberal preference for climate change mitigation, and a conservative aversion (McCright and Dunlap 2013; McCright et al 2016). One study involving 23 countries concluded that political orientation reduced worry around climate change (Gregersen et al. 2020). Regarding climate change scepticism in particular, a meta-analysis by Hornsey and

coauthors confirms that ‘evidence’ around climate change is searched, remembered, and assimilated in a way that aligns with people’s own political loyalties and worldviews, leading some to disregard scientific consensus around climate change (Hornsey et al. 2016). Given this evidence, I predict that:

H1: Liberal attitudes will be positively associated with support for carbon emission regulations.

H2: Conservative attitudes will be positively associated with support for reducing carbon emission regulations.

Prior contributions to the field of populism framing found that framing political problems in a manner that emphasised inherent traits or behaviours of certain groups prompts populist expressions, while framing the same problems in a situational context did not show the same effect (Busby, Guber and Hawkins 2020). Within another experiment, Busby, Guber and Hawkins (2019) reported that any increase in populism attitudes from the experiment were more prevalent amongst people who began with low populist attitudes. Another populism activation study found that anti-elitism messaging had the greatest efficacy at increasing political persuasion (Bos et al. 2020). If populism as a thin-centred ideology differs from a typical left-right ideology in forming/maintaining attitudes towards climate change, populist framing should influence people with strong populist attitudes to a greater extent than those people with fewer populist sentiments, when concerning climate change policies. The first stage in addressing the validity of this theory is to establish if populist messaging alters climate change values when people with populist attitudes are the target of the frame. Such a test is similar to populist framing used on topics other than climate change (Hameleers, Bos and de Vreese 2017). If this theory is correct, I expect that:

H3: Populist messaging activation will enhance the effect of populist attitudes on climate change values.

Secondly, since it is the political right that has connected populism to climate change scepticism (Lockwood 2018; Huber 2020; Huber Fesenfeld and Bernauer 2020), I anticipate that

populist messaging should be more influential on conservatives with strong populist attitudes than other conservatives with low populist attitudes in their support for climate change mitigation:

H4: Populism will dampen the negative interaction between conservatism and climate change values.

6.3. Methods

To test the expectations in this study, participants were recruited from the Prolific Academic survey sampling organisation on August 2022, in which participants from the US (N=805) received monetary payments of around \$2.60 for participation in the online survey experiment, which lasted less than 15 minutes⁹. Respondents were randomly assigned to one of four groups (N=200-202). Each of the four groups were then required to read a statement based on their agreement/disagreement with a neutral or populist-framed statement¹⁰ (7-point agree/disagree Likert scale). The frames were each modelled as continuous dependent variables, so that a low score was associated with agreement with the statement, while a high score was associated with aversion to the statement.

All groups were given the following initial statement: *“A US citizen has made the following statement regarding a recent Senate decision:”*

Two of the four groups were randomly assigned either the message describing bipartisan senate support for emissions regulations, or the same support for cutting regulations, both of which framed with a neutral message (See Table 6.1). The other two groups were also randomly assigned to each of the carbon emission scenarios as the other groups, but instead of neutral

⁹ The framing conditions statements were asked after a prior framing scenario not related to this study. Buffer questions involving logic puzzles were placed between the questions, to reduce/negate the influence of prior questions upon this survey experiment (see Appendix one).

¹⁰ Populist framing involves messaging which makes populist ideas applicable, by merging societal issues into a moral opposition between ‘us’ and ‘them’ (Hameleers, 2017; Dekeyser and Roose 2023).

messaging, these two groups were exposed to populist framing (Table 6.1). The messaging in the populism frame takes inspiration both from the Manichean moral worldview espoused by many populist parties (Müller 2017); while also taking inspiration from a study involving 15 European countries, which found that an anti-elitist identity frame showed the most potential at persuading voters (Bos et al. 2020).

Finally, all groups received the final sentence, which asked: *“Do you agree with the decision of the Senate to vote in favour of the Bill?”*

Certain associations with climate change perceptions are more consistent across certain regions or countries. For example, effects of certain variables on climate change perceptions were found to be smaller in Central and Eastern Europe, and that some demographic effects are larger in Northern European as compared to Western European countries. This suggests that findings from one country do not always generalize to other national contexts (Poortinga et al. 2019). Additionally, studies utilising framing techniques typically have small effect sizes (Amsalem and Zoizner 2020), so when selecting a region to study, countries with many populist supporters, and climate change sceptics are preferable. The United States is therefore a particularly appropriate country, given the presence of a stronger relationship between climate change scepticism and populism, when compared to European populist groups (Huber 2020). However, results from a US context will not be appropriate to apply directly to other cases. Certain associations with climate change perceptions are more consistent across certain regions or countries. For example, associations between climate change perceptions and demographic and personality were found to be smaller in Central and Eastern Europe when compared to Northern European countries (Poortinga et al. 2019). The framing scenarios avoid referencing ‘climate change’ to reduce activation of thoughts on climate change impacting responses (Feldman and Hart 2018). Lastly, to reduce the impact of the severe and growing partisanship within the United States (Iyengar et al. 2019), none of the framing groups was given information

as to the party affiliations of the message. A US citizen is referenced to accentuate that this opinion does not stem from outsiders, a common concern amongst populists (Mudde 2004).

The remainder of the survey measured respondents' populist attitudes, ideology, climate change attitudes, as well as other demographic variables that could display collinearity with ideology (see Kahan 2017): age (trichotomised into three groups), gender (male, female or non-binary/other), education (trichotomised into three groups of academic attainment), and ethnicity (coded as 8 ethnicity groupings particularly relevant to the US (i.e. Hispanic/Latino, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander)). Populism was measured using the eight Akkerman et al (2014) populism survey questions. The populist survey questions were shown to have a good measure of scale reliability (Cronbach's $\alpha = 0.74$). Political attitudes were measured using eight questions that measured political attitudes (Nail et al. 2009), with a 1-7 Likert range (appendix 2). To avoid creating dichotomous populist and non-populist category that has received criticisms in the literature (Huber, Jankowski and Juen 2022), a scale of populist sentiment was used, rather than claim a participant is a populist/non-populist.

The eight questions related to political attitudes were specific to the US context: including the death penalty, gun ownership, and abortion, as well as their thoughts on the Democratic and Republican parties. All eight questions were each incorporated into a confirmatory factor analysis (appendix 2) and were shown to be an accurate measure of political attitudes¹¹. All the ideology questions had strong measure of scale reliability (Cronbach's $\alpha = 0.85$). Attitudes towards climate change were included as an additional variable; given the need to assess value change amongst those most averse to climate change mitigation. Climate change value questions were included to gauge attitudes towards climate change. These attitudes were measured through three questions; their belief in global warming, whether it was human caused

¹¹ Liberals/conservatives and right/left are used interchangeably within this experiment. However, this comparison would not be valid beyond a US context, since nations that define left and right involve different value scales.

(anthropogenic), and whether the US should do anything about climate change. To control for demographic variables, information was collected on participant age, ethnicity, gender, and education.

Table 6.1. Table consisting of the four randomly assigned group scenarios relating to the US senate and carbon emissions regulations.

Neutral Emissions Regulations in the US	"Both political parties in the Senate voted in favour of a Bill approving further carbon emission regulations. This will be achieved through the use of more restrictive limits on
	carbon emissions. Fossil fuel usage in the United States will decline because of the Bill."
Populist Framing of Emissions Regulations in the US	"Real Americans have been betrayed! Both political parties in the Senate have conspired to vote in favour of a Bill approving further carbon emission regulations. This Bill, created by and for the elites and supported by the complicit mainstream media will be achieved through the use of more restrictive limits on carbon emissions. Fossil fuel usage in the United States will decline because of the Bill."

Neutral Reducing Emissions Regulations in the US	"Both political parties in the Senate voted in favour of a Bill that removes current regulations on carbon emissions. This will eliminate any existing emissions limit. Fossil fuel usage will no longer have any restrictions. Fossil fuel usage will increase in the United States because of the Bill."
Populist Framing of Reducing Emissions Regulations in the US	"Real Americans have been betrayed! Both political parties in the Senate have conspired to vote in favour of an unfair Bill that removes
	current regulations on carbon emissions. This Bill, created by and for the elites and supported by the complicit mainstream media will eliminate any existing emissions limit. Fossil fuel usage will increase in the United States because of the Bill."

6.4. Results & Discussion

I began by examining if the relationship between political attitudes and climate attitudes is independent of other demographic factors. Each of the four framing conditions in the study is represented by a regression model (Table 6.2), and each dependent variable is represented as a scale. When testing the relationship between conservative/liberal attitudes and the dependent variable – the Senate policy statements, both H1 & H2 were supported by the regression

analysis. Left-wing attitudes were associated with support for emissions regulations while inversely, right-wing attitudes were associated with support for emissions regulation reductions. However, this trend was only present for the neutral emissions frames, with the populist frames having no significant relationship to political attitudes.

Populist attitudes are not confined to the ideological right, so it was unsurprising that populism was not strongly associated with any of the frames, with only a minor positive relationship present between populist attitudes reducing emissions regulations under the neutral frame. As anticipated, belief in climate change corresponded with support for emissions regulations, while climate change scepticism coincided with a support to reduce regulations. Finally, none of the four models in Table 2 showed a significant relationship with any of the demographic variables. Of note was the lack of relationship between education and the populist frames. Prior research had argued that populist messaging was more effective on individuals with lower education (Bos et al. 2010; Matthes and Schmuck 2017).

Table 6.2 Linear Regression Models of the Bipartisan Senate Statements Framed through neutral and ideational populist messaging.

Variables	Neutral Emissions Regulation	Populist Emissions Regulation	Neutral Emissions Reg Reduction	Populist Emissions Reg Reduction
<i>Climate Change Attitudes</i>				
<i>Not Sceptic - Sceptic Scale</i>	0.189*** (0.0263)	0.164*** (0.0364)	-0.133*** (0.0355)	-0.190*** (0.0381)
<i>Political Attitudes</i>				
Left-Right Scale	0.0502*** (0.0105)	0.0149 (0.0148)	-0.0485*** (0.0141)	-0.00117 (0.0132)
<i>Populism</i>				
Populist Scale	-0.00664 (0.0117)	0.0165 (0.0172)	0.0346* (0.0159)	-0.00921 (0.0157)
<i>Ethnicity</i>				
White	-0.113	-0.293	-0.348	-0.169

	(0.223)	(0.288)	(0.278)	(0.261)
<i>Gender</i>				
Male	0.0408	-0.0245	0.156	0.153
	(0.168)	(0.240)	(0.227)	(0.212)
	(1.187)	(0.982)	(1.134)	(0.884)
<i>Education</i>				
Low	0.298	-0.0354	-0.133	0.00645
	(0.182)	(0.256)	(0.246)	(0.244)
High	-0.0806	-0.249	-0.109	0.0189
	(0.251)	(0.342)	(0.326)	(0.275)
Age	-0.0462	-0.211	0.275	0.160
	(0.143)	(0.197)	(0.184)	(0.169)
Constant	0.630	1.787*	5.877***	6.402***
	(0.601)	(0.797)	(0.814)	(0.755)
Observations	201	200	203	201
R^2	0.566	0.249	0.299	0.215

The interaction between political attitudes and the support for senate frames (Figure 6.1) shows consistent support for H1 & H2. In keeping with prior research on climate change scepticism (see McCright and Dunlap 2013; McCright et al. 2016; Lockwood 2018) there is a clear divide between support for/rejection of carbon emission regulations, based on a participant's political values. On the other hand, the relationship between liberal attitudes and the framing scenarios conflicted with prior studies. When compared to the neutral scenarios, populism framing reduced the support for emission regulations - popular amongst liberals (McCright and Dunlap 2013) - whilst reducing negative sentiment towards reducing regulations. It is important to note however that these effects were by only a 1-point scale, and therefore a minor effect. All four groups converge around 4-5 (neither agree nor disagree/somewhat disagree) and a centre-right political attitude. The lack of support for either regulations or a cut

in regulations is suggestive of an uncertain moderate position. There are of course other potential causes of this indecision. For instance, carbon emissions regulations involve economic factors that could influence respondents who would otherwise support climate action.

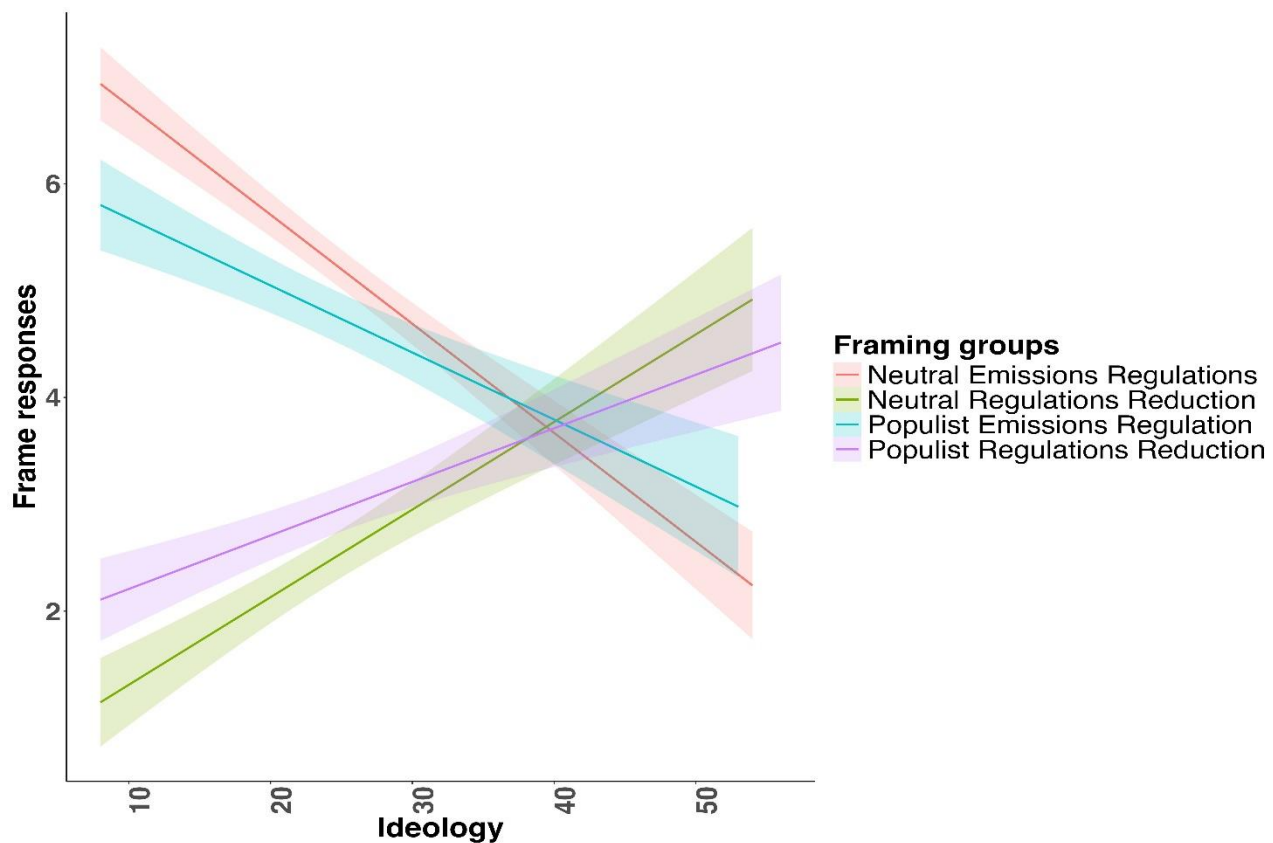


Figure 6.1 Multiple linear regression models representing the interaction between political attitudes on the support for the senate policy frames, with the x-axis representing the left/right ideology scores from left to right, and a y-axis represented by “strongly disagree” (1) to “strongly agree” (7) scale.

After establishing the role political attitudes play in determining perceptions around carbon emission regulations, I next turn to the effects of populism (Figures 6.2 & 6.3). The regression models using all participant populism scores (Figure 6.2) shows a general pattern that populism was negatively associated with carbon emission regulations and positively associated with a reduction in regulations. However, the trend for groups exposed to populist framing scenarios was inconsistent with the populist trend discussed. The populist frame supporting further regulations had a negative influence on participants with a high populism

score, whilst the opposite was true for the frame supporting a reduction in regulations.

Therefore supporting evidence for H3 (populist messaging activation will enhance the effect of populist attitudes on climate change values.) is mixed. Only the negative climate change mitigation outcome (reduced regulations) was positively influenced by the populism frame, whilst support for carbon emission regulations actually decreased for the populist frames.

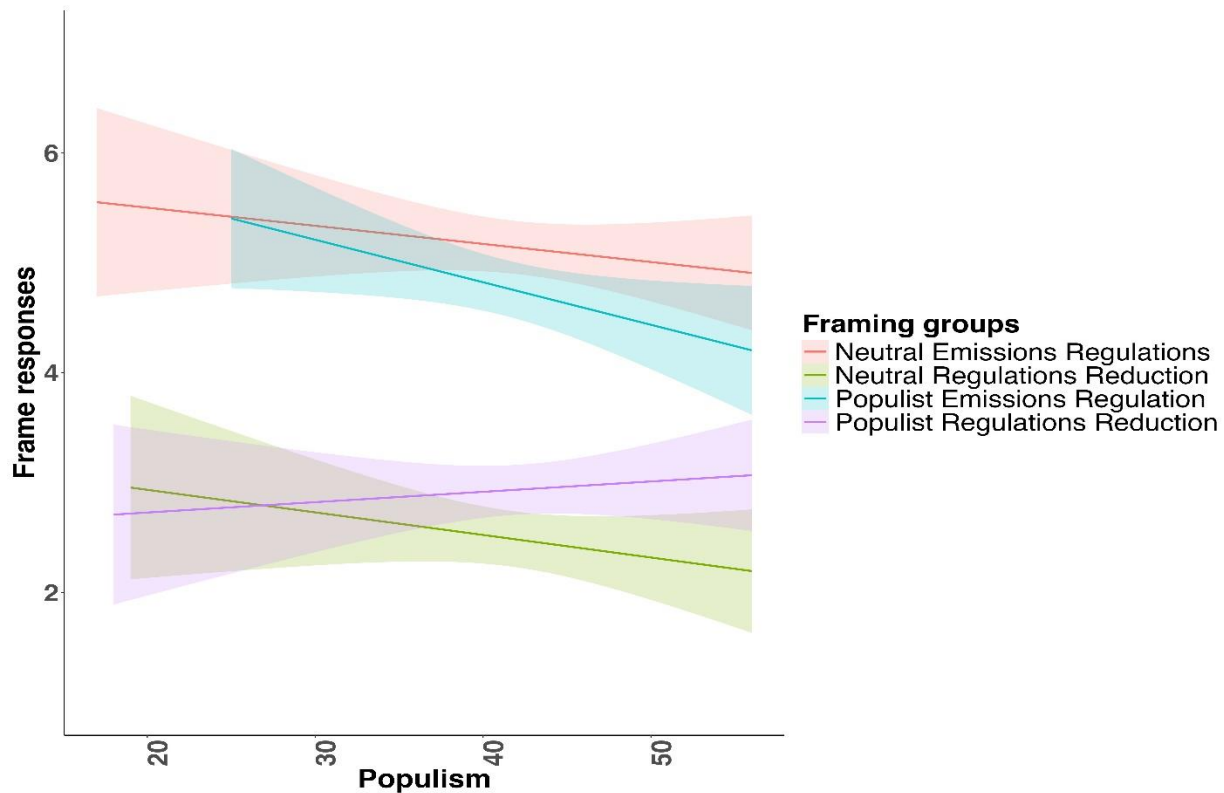


Figure 6.2 Multiple linear regression models representing the interaction of populism attitudes and the support for the senate policy frames. The x-axis represents low populist scores (left) and high scores (right), and a y-axis represented by “strongly disagree” (1) to “strongly agree” (7) scale.

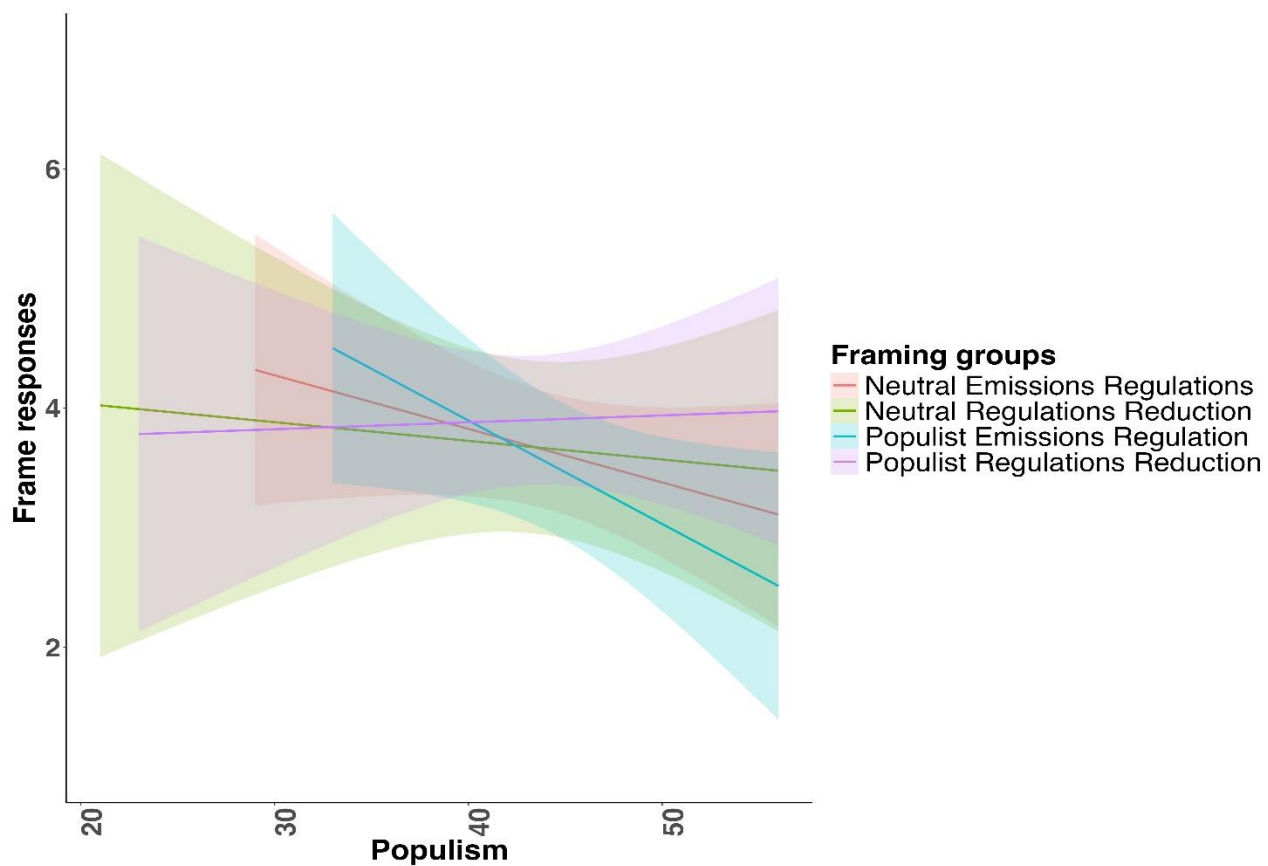


Figure 6.3 Multiple linear regression models representing the interaction between populism attitudes and the support for the senate policy frames of populism amongst people with conservative attitudes. The x-axis represents low populist scores (left) and high scores (right), and a y-axis represented by “strongly disagree” (1) to “strongly agree” (7) scale.

As with H3, support for H4 (populism will dampen the negative interaction between conservatism and climate change values.) is contradictory (Figure 6.3). The increased emission regulations scenarios revealed conflicting results amongst participants with conservative attitudes (Figure 6.3). Low populism scores were more positively associated with more supportive of regulations in the neutral scenario; while high populism scoring participants presented the opposite trend, with the neutral frame garnering more support for regulations than the populist frame. The inverse relationship occurred for the two groups given the policy reducing current regulations: The populist frame increased support for cutting current regulations amongst participants with high populism scores. Though contradictory to the

hypothesis within this study, the results in Figure 3 were in keeping with the work published by Huber Fesenfeld and Bernauer (2020): People with conservative attitudes were more supportive of climate change mitigation, than conservatives with strong populist attitudes. The results also suggest support for Bos et al. (2020) and Hameleers, Bos and de Vreese's (2017) argument, that using anger/anti-elitist messaging is persuasive in casting blame towards outgroups, in this case anti-emission regulations, yet this effect might be absent when attempting to point the anger towards ingroup values.

6.5. Conclusion

Results from this study offer mixed support for my hypotheses. The data showcasing the effect of ideologies on climate change values through the carbon emissions experiment provide strong support for H1 & H2: political attitudes were associated with climate change values typical of the conservative-liberal divide in other studies (McCright and Dunlap 2013; McCright et al. 2016). Furthermore, it is clear from the data that ideology and climate change values had the greatest impact on decision making, regardless of framing.

The results also show that populist messaging can somewhat increase partisanship amongst right-wing populists in the United States, though this effect is minor. Results from the populist regression analysis are in line with Huber, Fesenfeld and Bernauer's (2020) findings: populism acts as an enhancement of partisan divides on climate change, rather than a unique dimension, in line with the expectations in the study (H3). Contrary to prior findings supporting H4, in which a moderating effect on conservatism by populism was expected in practice, a negative influence of populist framing on support for climate change mitigation amongst people with conservative attitudes was present. By contrast, populist framing increased support for the anti climate change mitigation policy, suggesting that populist attitudes are more ideologically rooted than a 'thin-centred' ideological definition would suggest (Lockwood 2018), and less related to the type of communication being utilised to emphasise a stance on a particular issue like climate change.

The findings in this paper should be paired with an awareness of the study's constraints. To gain deeper insights into the influence of ideology, incorporating questions assessing political awareness (Zaller 1992) would prove beneficial. Furthermore, the non-representative nature of the sampled population should be noted, as individuals voluntarily participating in surveys may not accurately reflect the broader demographics of the United States. It is also important to state that the United States may not be a representative benchmark for other nations, including those in the Western world (Fisher et al 2022). Though online surveys with payments offered access to a demographically diverse sample of participants, the issues of participant streamlining may have been a factor in the mixed results. Though a minimum time was required to complete the survey, participants may have streamlined their responses in order to receive payment with minimum effort.

Additionally, when discussing carbon emissions, macroeconomic factors affecting participants might influence responses. However, given the ideological consistency in the results, it is unlikely to have played a significant role in decision making. Lastly, the framing technique had drawbacks. The difficulty of using a bipartisan framing method stems from stylistic definitions of populism arguing that 'the enemy' was clearly defined, such as liberal elites in the case of RWPs in Brazil (Rodarte, Kim and Lukito 2023). Without targeting specific elites, the frame loses some of the impact that a typical populist political statement might have.

Despite the listed setbacks, populism has the potential to be a useful medium in understanding partisan differences on climate change, at least within a US context, but the method of communicating these ideas must be more involved than a single message frame on a single day. I encourage climate change scepticism to be addressed with a set of strategies that is more precise than focussing only on the partisan divided, narrowing the scope of inquiry to group traits. A group's radical collectivist positions (Huber, Jankowski and Juen 2022); the relationship between climate change and other contentious topics like immigration (Krange, Kaltenborn and Hultman); and the form of communication being used to persuade (Kahan 2015), each offer insights beyond a left/right dichotomy of climate change attitudes. A

contribution of this study is in raising the concern that sceptics of scientific consensus may be unmoved by communication on climate science, requiring instead an approach emphasising core values (i.e. moral and political).

The emergence and reemergence of RWP parties in tandem with persistent climate change scepticism supports the concerns raised in this and similar studies. There is evidence throughout the democratic world that the absence of overwhelming support for climate change action has prevented or diluted policies on climate change mitigation, stalling progress towards a 1.5-2 degree warming cap (IPCC 2021). More research is needed to understand what form of value messaging promotes climate change science acceptance and increases support for climate change mitigation action. Longitudinal studies are important if we want to understand the potency of framing on constructing new values. Finally, since the importance of a charismatic leader is common in populist parties, verbal communication, perhaps from audio of an in-group political figure, would be a significant improvement from relying on text alone, as it could improve message congruence if the words within the frame were aligned with the perceived intentions and actions of the communicator of the frames. Without message congruence, an inevitable amount of message mistrust would persist even without the use of priming words like climate change. This avenue of research is crucial if democratic nations aspire to garner greater support for climate change mitigation efforts in democratic nations.

6.6. References

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6.7. Appendices

6.7.1. Appendix 1 Survey Questions

The following questions will be asked to all 4 groups who participated in the first section directly after the initial experiment. Each answer has a grade of 1 – 7

Populist morality: A rigid morality involving a Manichean struggle, in defiance of elites who seek to subdue the ‘real’ people.

Akkerman’s et al., 2014 paper will be the format for measuring populism. I have added climate change attitude questions to better suit my research aims. Akkerman and colleagues developed a scale designed to measure three core aspects of populism, namely: idealistic views of “the people”; hostility toward elites; and a Manichean conception of “good” versus “evil”.

PLU = Pluralist attitudes: The pluralism questions focus on the core dimensions that value compromise, different viewpoints, and the need to listen to dissenting voices.

CL = Climate change attitudes: CL questions were incorporated into Akkerman’s et al. study in order to acquire climate change attitudes from participants.

POP = Populist attitudes: The survey questions are designed to capture the full ideology of populism and its conception of democracy, in particular the will of the people and the distinction between the people and the elite. The Manichean nature of the distinction between the people and the elites is also a feature of our survey questions: statements POP5, POP6, and POP7 are intended to emphasize that the distinction between the people and the elite is a battle between good and evil (Akkerman et al. 2014: 1331).

CL1 *Human activities are causing the planet to warm.*

CL2 *Tackling climate change is not important.*

CL3 *Climate change is not a concern for my country.*

POP1 *Politicians in the United States need to follow the will of the people.*

POP2 *The people, and not politicians, should make our most important policy decisions.*

POP3 *The political differences between the elite and the people are larger than the differences among the people.*

POP4 *I would rather be represented by a citizen than by a specialized politician.*

POP5 *Elected officials talk too much and take too little action.*

POP6 *Politics is ultimately a struggle between good and evil.*

POP7 *What people call “compromise” in politics is really just selling out on one’s principles.*

POP8 *Interest groups have too much influence over political decisions.*

The respondents will be asked to rate their agreement with these statements on a Likert scale ranging from 1 (I very much disagree) to 5 (I very much agree).

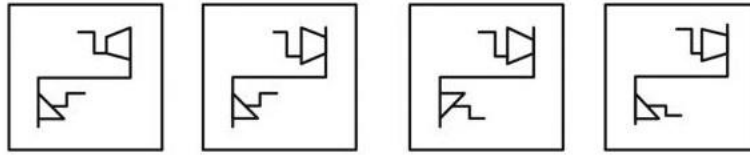
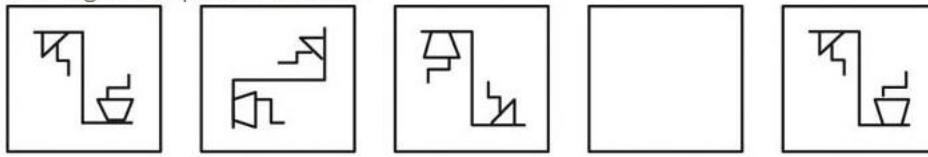
Demographic Questions:

- Age
- Gender
- Ethnicity
- Political orientation (set of questions taken from Wolsko, Ariceaga & Seiden (2016))
- Education.

Buffer Questions

- A bat and a ball cost \$1.10. The bat costs \$1 more than the ball. How much does the ball cost?
- Which figure completes the series?

Which figure completes the series?



1

2

3

4

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4

6.7.2. Appendix 2 Confirmatory Factor Analysis

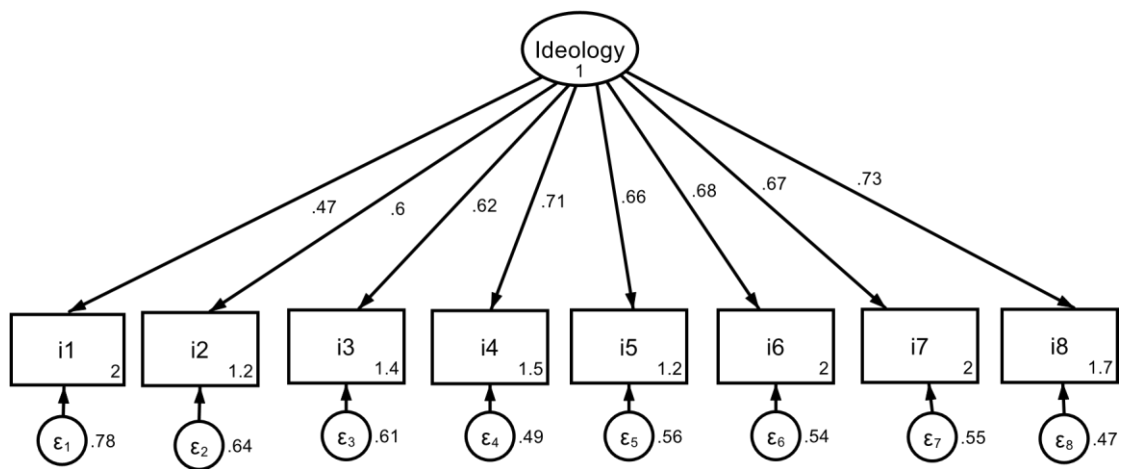


Figure 6.A1. Confirmatory factor analysis of the questions relating to participant ideology, displaying standardised coefficients and values.

6.7.3. Appendix 3 Two-Sample T-Test Results

Table 6.A1. Two-Sample T-Test results table for the two carbon emissions regulation frames.

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
Emission Populist	201	2.860697	.1219758	1.729306	2.620173	3.10122
	200	3.225	.1300246	1.838826	2.968597	3.481403
Combined	401	3.042394	.0894803	1.791842	2.866484	3.218304
diff		-.3643035	.1782548		-.7147394	-.0138676
diff = mean(Emission) - mean(Populist)				t = -2.0437		
H0: diff = 0				Degrees of freedom = 399		
Ha: diff < 0		Ha: diff != 0		Ha: diff > 0		
Pr(T < t) = 0.0208		Pr(T > t) = 0.0416		Pr(T > t) = 0.9792		

Table 6.A2. Two-Sample T-Test results table for the two carbon emissions regulation reduction frames.

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
Reduce_R Populist	203	5.512315	.1284637	1.830327	5.259013	5.765617
	201	5.064677	.1146224	1.625053	4.838653	5.2907
Combined	404	5.289604	.0867452	1.743557	5.119074	5.460134
diff		.4476387	.1722674		.1089811	.7862962
diff = mean(Reduce_R) - mean(Populist)				t = 2.5985		
H0: diff = 0				Degrees of freedom = 402		
Ha: diff < 0		Ha: diff != 0		Ha: diff > 0		
Pr(T < t) = 0.9951		Pr(T > t) = 0.0097		Pr(T > t) = 0.0049		

Chapter 7: Conclusion

7.1. Summary

The main aim of this thesis was to investigate the role of moral values in shaping public discourse and engagement on climate change. To this end, the thesis employed a mixed-methods approach that combined quantitative and qualitative analysis of digital news-media data from the US and the UK. I addressed 4 research questions: (1) To what extent do moral foundations influence climate change attitudes? (2) Do moral values shape preferences for different types of policy solutions on climate change? (3) Does moral communication vary across different political issues such as cancel culture and climate change in the news-media, in terms of their moral content and context? (4) Are moral values more significant than ideology in influencing climate change attitudes? The findings from the three empirical chapters can be integrated as follows:

- (1) In the content analysis (Chapter 4), moral foundation words were used by left-leaning news-media to a greater degree than right-leaning media, and the distributions of these foundations largely matched the expected distributions in prior MFT studies (Graham et al 2009; 2011; 2013). These data support the idea that those on the ideological left are exposed to congenial moral messaging that promotes ingroup topics like climate change (Nisbet, Markowitz, and Kotcher 2012). This is further supported by findings for political correctness/cancel culture and right-leaning news-media, revealing a trend present for both left and right. Moral foundations marginally influenced climate change attitudes. Moral framing had a significant effect on policy preferences for carbon emissions reduction, but not for the unfamiliar climate change mitigation strategy for stratospheric aerosols. These results suggest that moral foundations only had effects on familiar topics, which already have values assigned through other variables such as ideology.
- (2) Whether moral values shape preferences for different types of policy solutions on climate change lacks definitive evidence from the research experiments to support the

efficacy of moral foundation framing. In the moral foundations experiment (Chapter 5), the unfamiliar policy (SAs) had fewer supporters across all respondents but showed a general trend from both liberals and conservatives who were both unsure of, but not opposed to, the mitigation policy. Regarding the familiar wind power technology, the binding moral frame did not reduce conservative resistance to supporting wind power, whereas the individualising frame did seem to have this effect, – in direct conflict with expectations when using the MFT model. When considering populist moral frames (Chapter 6), populist moral messaging enhanced ideological divides on climate change, suggesting that populist attitudes are an enhancement of ideological differences (Lockwood 2018), and therefore, moral values in the context of Manichean populist morals do not significantly alter policy solutions relating to climate change.

- (3) The data suggest that moral communication varies across topics and news outlets. As discussed in the prior section, there was a clear trend in the prevalence of moral language in line with MFT expectations. The context of the messaging also supported moral foundations theory assumptions, as many of the articles relating to an outgroup topic (i.e. cancel culture on the left) were used to mock or criticise the values of the outgroup in support of the issue. Therefore, not only do news organisations appear to use moral messaging for issue support, but also seemingly to reinforce which topics are outside of their supported issues. Whether this dynamic is through a demand from their audience or is being supplied by the organisations to foster more issue polarisation is, however, unclear.
- (4) The most consistent and strong finding within this thesis, highlighted in both Chapter 5 and Chapter 6, is that ideology is a much clearer predictor of climate change attitudes than moral values, and indeed of any other variable tested (such as age or ethnicity). In both regression analyses, ideology correlated with climate change attitudes, and in accordance with expectations (Huber 2020; IPSOS 2022; McCright and Dunlap 2013; McCright et al 2016) that liberals in the US were much more supportive of climate

change policies than conservatives. The primacy of ideology over moral foundations has been theorised in prior research (Hatemi, Crabtree & Smith 2019; Smith et al. 2017), and these findings appear to extend to the formation of attitudes on climate change.

However, although ideology is the most important variable in climate change attitude formation/maintenance, the influence of moral values should not be discounted, especially if consistent moral messaging led to the ideological entrenchment of climate change in the first place (Kidwell et al. 2013; Nisbet, Markowitz, and Kotcher 2012), which now hinders framing effects on conservatives (Feldman and Hart 2018).

Overall, these findings contribute to the literature on moral framing, populism, and climate change communication by demonstrating that both moral values and populist sentiments can influence public opinion on climate change policies, but in different and complex ways. Moral framing can increase support for climate change mitigation technologies among liberals and non-sceptics, whilst having a negative influence on conservatives. Populist framing can increase the polarisation between liberals and conservatives on climate change policies, but it may also generate some contradictory effects among conservatives who oppose the policy but also hold populist attitudes. These results imply that communicators need to be aware of the potential benefits and pitfalls of using moral and populist frames when engaging with diverse audiences on climate change issues. Future research should explore how moral and populist frames interact with other factors, such as trust, knowledge, emotions, and social norms, and how they affect public attitudes and behaviour toward emerging and controversial climate change solutions, such as stratospheric aerosols.

7.2. Wider Research Relevance

The research presented in chapters 4, 5, and 6 has wider relevance for several reasons. First, it contributes to the theoretical understanding of how moral foundations theory can explain the divergent attitudes and behaviour of political actors and citizens regarding climate change. It offers a set of studies which together advance our understanding of the complex interplay between moral values, ideology, and other factors relevant to climate change attitude formation,

applying these variables to experiment-based studies and real-world cases. These studies can be used as a tool for future research that might examine the role of moral psychology in different aspects of political communication, from framing public debates to the moral language used in establishing political agendas on climate change.

Second, the research provides empirical evidence of how news-media can be used whether deliberately or otherwise, to persuade others about their moral positions on contentious topics like climate change, and how this affects the public discourse and the democratic process. It also shows how moral foundations influence the mainstream media coverage of climate change, and how they may fuel further issue polarisation on any given topic (see Mason 2015;2016) using ingroup and outgroup moral signalling. The relevance of these studies towards MFT should also be considered. Although the real-world case found evidence supporting the ideological divergence in moral values, the two experimental studies found mixed results, and drew into question the efficacy of using moral foundations framing in preference to a focus on ideological messaging (Hatemi, Crabtree and Smith 2019). Using only textual frames was also shown to be ineffective for providing substantial changes in opinion, a finding echoed in other research on framing efficacy (Amsalem and Zoizner 2020). Finally, although not explored in this thesis, there may be nothing unique about climate change as an issue (Oreskes and Conway 2022), in which case the complex relationship between climate change attitudes and moral/ideological values may act as a useful comparison for research into other polarised issues (particularly in the US) like abortion.

7.2.1. The Generalisability of the Findings

The findings from Chapter 4, 5, and 6 have potential applications in other western regions where moral arguments are being made towards topics based in science, such as climate change or nuclear power. However, using only the UK and US in this study limits generalisability, especially in non anglosphere nations with different cultures (including moral norms) and languages. Additionally, since Chapters 4 and 5 are grounded in experimental research, they demonstrate

internal validity; however, there are constraints concerning external validity. The findings in this thesis could be a guide to the interactions between ideology, moral values, populism, and climate change. Chapter 4, in particular, could be used as a basis to compare other media in the US and UK, and perhaps other western nations. However, the applicability of the findings may not be universal, as different cultures, countries, and platforms may have different norms, preferences, and moral values. While MFT studies have found generalisability in the past (Graham et al. 2009), caution should be exercised when generalizing the findings to other cases, and further research is needed to test and compare the effects of moral and emotional framing across different contexts and populations. Generalisability caution is especially prevalent for Chapter 4, in which the UK and US news-media are distinct to their respective nations and so the findings should not be generalised to other western democracies without further research.

7.3. Study Limitations

This thesis has several limitations that should be acknowledged and addressed in future research. First, the data collection methods used in this study have some drawbacks. The online survey approach has the advantage of reaching a large and diverse sample of social media users, but it also has some limitations, such as self-selection bias, low response rate, and low engagement (Starr 2012). As described previously, relying upon textual framing techniques leaves open questions about the moral common auditory or visual communication that may be more impactful on triggering the desired emotional responses to the frame. Further limitations of the survey methods were that the sample sizes of the two experimental studies were relatively small (approximately 200 per group). The small sample size reduces the statistical power and the precision of the estimates (Button et al. 2013; Faber and Fonseca 2014). Given these constraints, the results should be interpreted with caution and verified with larger and more representative samples in future studies.

A further key limitation was relying on online survey techniques, since the users were not assessed to ensure adequate attention was given to answering the complex questions within

the survey, other than the standard time-per question analysis used in the survey. Other sampling biases included sampling biases that may occur given the online survey format selected for this research (See Loftus 2021), which is likely to attract certain demographics more than others (Chen et al. 2022). In the case of this research, Prolific Academic attracted more left than right wing participants. Prior research into sampling bias have found that sampling bias can occur when multiple survey format options are not offered, allowing for a more representative sample of people with disabilities (Chen et al. 2022).

As noted above, the generalisability of the findings is another core limitation within this thesis. The scope of the study was limited to two countries in the first paper (the US and the UK) and only the US in the experimental settings. The findings may therefore not be generalisable to other contexts and settings, where the political, cultural, and media environments may differ significantly. Future studies could expand the scope of the research by examining how moral framing influences political communication and climate change attitudes in other countries and on other news-media platforms, as well as how the effects may vary across groups and contexts. Finally, given the qualitative nature of the content analysis, using more reviewers in the screening process may have helped improve the accuracy of the final article count within the results, and provided further analysis of context from the different news sites.

7.4. Directions for Future Research

This study has contributed to the literature on moral foundations framing in a manner discussed previously. However, there are still many avenues for future research to explore this phenomenon more comprehensively and systematically. One possible direction is to include more digital news-media organisations in the scope of analysis, especially those that have more centrist or extremist ideological orientations (such as the further left/right extremes), to examine how they differ or converge in their moral framing strategies. This approach could shed more light on the role of media ideology and bias in shaping the moral discourse on public issues.

Another direction for future research is to test the effectiveness of audio or visual framing methods on the moral responses and opinions of the viewers. This could indicate how different modes and channels of communication can affect and influence the moral judgments. Research using video-framing techniques in other areas of politics like political ads (Brader 2005) have found that by simply using images and music to evoke emotions during an election motivates participation and activates existing loyalties; and can stimulate caution to new information, increasing reliance on contemporary evaluations (Brader 2005). Similarly, another article reported that video and video + text versions of stories led to higher levels of both engagement and sympathy with the characters in the story, with the authors stressing the importance of emotional messaging (Yadav et al. 2011). Though video can be more persuasive than text, Wittenberg and colleagues found that this effect was small when evaluating attitudes and intentions after the study, suggesting context matters when using video or audio formats (Wittenberg et al. 2022). Despite nuances in effectiveness, visual and audio communication within the context of moral messaging on environmental issues could help improve our understanding of the degree to which political actors influence public beliefs around certain value-laden topics like climate change.

Understanding the impact of audio and video content used as a means of communication is needed more than ever with the rapidly evolving development of artificial intelligence (AI). Indeed, the dangers of AI-created misinformation are already being reported (Murphy 2024; Wendling 2024). Open access AI-generated images on open-source software like Stable Diffusion can create highly realistic images and videos of political actors (Adami 2024). This content can be distributed rapidly for the purpose of disinformation and political persuasion (Adami 2024; Murphy 2024). This knowledge would aid policy-makers in quantifying the dangers of AI-related disinformation; if for example respected scientists relevant to climate change were 'deep-faked' into understating the risks of climate change, or denying its existence as a phenomenon, then the need to combat this disinformation could prove invaluable.

When focussing on moral messaging in particular, future research could study the connection between the moral foundations communication and climate change on social media news sites, focussing on how these interactions shape public attitudes. This could illustrate how moral framing can generate and moderate online dialogue and debate on moral issues. Finally, one could explore how the language of moral foundations theory translates into social media conflicts on other contentious topics, such as immigration or abortion, and how these conflicts differ from climate change. This could uncover how moral framing can trigger and escalate online polarisation and mobilization on moral issues.

Regarding the two experiments, further research could investigate the effects of different modalities of framing, such as audio or visual, on the audience's moral judgments and emotions. This could reveal how different sensory cues and stimuli can elicit different moral responses and attitudes from the participants. Future research could also use a larger and more representative sample of a population. This could increase the external validity and reduce the potential sampling bias of the studies. Moreover, future research could use different settings and contexts to manipulate the moral framing of news articles, such as using real-world events or scenarios, rather than hypothetical survey questions. Lastly, future research could use different measures and indicators of moral foundations and political ideology such as behavioural data, rather than self-reported surveys. The influence of different messengers, particularly focusing on conservatives or populist leaders, in shaping support for climate policies could also benefit the field. Additionally, given the significant main effect of technology (wind vs. SA), future studies could explore the underlying mechanisms behind this effect and examine whether avoiding climate-related themes in messaging might help mitigate polarisation.

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