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**Framing for Future – a systematic literature review on
how to convince people with conservative attitudes of
environmentally friendly behaviour**

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Climate change is arguably the greatest crisis of our time. But despite great scientific consensus concerning its anthropogenic causes and expected consequences, measures to mitigate it still do not find sufficient support among the populations of Western democracies. One of the reasons for that is the rejection of pro-environmental behaviour by people with conservative attitudes. Relative to liberals, conservatives tend to report weaker engagement in environmentally friendly behaviours, less support for environmental regulation as well as less concern about environmental problems such as climate change (Wolsko et al., 2016). Following the theory of “motivated reasoning” (Jacquet et al., 2014) this negative correlation is mainly due to the environmental discourse being framed in liberal terms (Hart & Nisbet, 2012) which often contradicts conservative values. Subsequently scholars argue that framing demands for environmentally friendly behaviour in a more conservative fashion could help to break motivational barriers (Feinberg & Willer, 2013). Through a systematic literature review this paper gives an overview of studies investigating this hypothesis. In doing so, we focused on identifying the frames examined in the studies. Results showed that the main frames examined were *moral-*, *(national) security*, *economic-* and *label frames*. Less attention was given to *religious-* *temporal-* and *psychological distance frames*. Further the analysis of bibliographic data showed that the topic is of current scholarly interest, whereby the predominant share of studies is conducted in the US. Methodological analysis showed further that studies often apply attitude focussed effect measurements and fall short of real-world communication conditions through rarely investigating the combination of more than one frame. Moreover, little attention is paid to the study of message sources, repetition, and the use of contemporary media in the transmission of frames. Future research should attempt to fill these gaps, and based on the developed framing typology, attempt to meta-analytically compare the actual effects of the identified frames.

1 Introduction

There is large consensus in the scientific community that climate change exists, and that humans are largely responsible for it (Severson & Coleman, 2015). Nevertheless, climate scientists, policy advocates and journalists have not been able to carry this consensus into the general public and translate it into sufficient action against the expected consequences. While the reasons for this are many, it is known that political ideology plays an important role on an individual level (Liu et al., 2014). More specifically, resistance to climate change adaptation measures is particularly pronounced among people with conservative attitudes (Feygina et al.,

2010; Hornsey & Fielding, 2020). While this is particularly evident in countries like the US, Canada, Australia and the UK, similar correlations have also been found in large parts of Europe (Poortinga et al., 2019). The most popular explanation for this relationship is the so-called "motivated reasoning" (Jacquet et al., 2014). According to this theory, people process information best when they match their pre-existing beliefs, which in turn are highly influenced by political ideologies (Kunda, 1990). Because maintaining the status quo is at the heart of conservative ideology (Jost et al., 2003) and climate change communication often demands exactly the opposite, a fundamental contradiction seems to exist here. Since it is imperative to keep global warming to a minimum which can only be achieved with the consent of larger parts of the population of Western democracies, this contradiction poses a serious problem. One approach which explores solutions to this problem is the one of framing. Also building on motivated reasoning, scholars in this field point out that the environmental discourse is framed primarily in a liberal way and motivational resistances of conservatives could therefore be overcome through a more balanced framing (Wolsko et al., 2016; Feinberg & Willer, 2013). The aim of this paper is to provide a summary insight into this comparatively understudied field of research. Through a systematic literature review, we will provide an overview of the existing literature, while identifying broad trends and knowledge gaps. Thereby we specifically address the question of which frames are examined to convince conservatives of environmentally friendly behaviour.

To this end, we first set out the core values of conservative thinking before discussing the reasons for their adoption. Based on this, we address the difficult relationship between conservatism and pro-environmental behaviour by taking a closer look at the underlying motivational processes. We then present the impact hypothesis of the framing approach in more detail and explain how it can be used to overcome motivational resistance against environmentally friendly behaviour among conservatives. The central part of the work then follows as a systematic search and evaluation of literature which examines exactly this effect hypothesis. In doing so, we will evaluate the identified studies based on bibliographic data and methodologic variables as well as try to establish connections between them based on the frames they contain. The generated results will subsequently be discussed and evaluated with regard to future research. With this paper, I hope to contribute to a better understanding of ways to convince conservatives of environmentally friendly behaviour.

2 Conservatism

2.1 Historical overview from a political science perspective

Conservatism has long been the subject of research in social sciences. Thereby conservatism is cross-disciplinarily defined by “the desire to conserve, reflected in resistance to change” (Heywood, 2017, p. 62). To elaborate the central values of conservatism as a political ideology, a short historical outline will be given at this point.

While some scholars trace the origin of conservative thought back to Plato’s *Republic* (Schuettinger, 1970) most agree that self-conscious conservatism is first articulated in Edmund Burke’s *Reflections on the Revolution in France* of 1790 (Muller, 2001; Heywood, 2017; Huntington, 1957). According to Sigmund (2015) most of the central conservative doctrines, which were developed, can be found in this work. Burke, who developed his principles in opposition to the liberal and radical thinking of the French revolutionaries, emphasized values such as order, tradition, hierarchy, deference, and the need for classical differentials. Further Burke pointed to the importance of social institutions and the weaknesses of individual reason (Sigmund 2015).

Subsequently to Burke the term “conservative” found his way into political discourse across Europe in the beginning of the 19th century. In his following upheaval from roughly 1830 to 1840, the focus of conservative thought was still on the dangers of revolution (Muller, 2001; Vincent, 2009). Throughout the 19th century, conservative ideas became increasingly influential as western societies were being transformed by the societal impacts of industrialization and simultaneously being challenged by rising ideologies such as Liberalism, Socialism, and Nationalism. While these new ideologies represented reform and change, the essence of conservatism was standing in “defence of an increasingly embattled social traditional order” (Heywood, 2017, p. 63). Thereby the nature of conservative thought varied considerably which was reflected in the formation of different conservative traditions: The most important of them will be briefly presented as follows.

One of the older schools of conservative thought is often referred to as *authoritarian conservatism*. This form was mainly influenced by the works of Joseph de Maistre (1753 – 1821) and Louis Gabriel de Bonald (1754 – 1840) who published their works during a time when the French Revolution was in full swing. The central value of this form is the preservation of order, which was believed to supply people with safety and security and could only be achieved through autocratic rule. Subsequently, revolution, reform and change were believed

to weaken the social cohesiveness of communities and to consequently throw society into chaos. Through the 19th and even the 20th century, authoritarian conservatism remained significantly important as an ideological basis for autocratic regimes legitimizing their hierarchical values (Heywood, 2017; Vincent, 2009; Muller, 2001).

In contrast to the almost uncompromising resistance to change of the authoritarian conservatives, *traditional* (Vincent, 2009) and *paternalistic conservatism* evolved (Heywood, 2017). Traditional conservatism places emphasis on values such as custom, convention and tradition and prefers prejudice and practical reason over theoretical considerations. Leadership, authority, and hierarchy are assumed to be natural. From this conservative tradition, which was already more progressive in its attitude toward change, paternalistic conservatism developed. Paternalistic conservatism was characterized by the main lesson that Burke drew from the French Revolution which was, that change can be “natural or inevitable, in which case it should not be resisted” (Heywood, 2017, p. 75). Addressing this conclusion, the nature of paternalistic conservatism is “cautious, modest and pragmatic” (Heywood, 2017, p. 76) and is reflecting a suspicion of revolutionary or reactionary principles. In this way, Ian Gilmour (1978) stresses the principle of “change in order to conserve” (Gilmour, 1978, as cited in Heywood, 2017, p. 76) which expresses that paternalistic conservative values such as tradition, order, property and the like, can only be conserved if gradual change is accepted (Muller, 2001; Heywood, 2017). Further, one of the central values of paternalistic conservatism was the regulation of the economy by the state, which got expressed through propagating Keynesianism during its heights the 1950s and 1960s (Heywood, 2017).

The paternalistic principle of state before economics got challenged by the maxim of the tradition of *liberal conservatism*, which developed in the late 20th and early 21st century. In reverse to paternalistic values, liberal conservatism is accepting classic liberal ideas such as “emphasis on individualism, negative liberty, personal rights and a minimal rule-of-law state” (Vincent, 2009, p. 65). However, the principle of individual freedom is not extended to other areas of social life, which is shown by liberal conservatives emphasizing a strong state to ensure classical conservative claims such as law and order and the need of institutions to nurture a sense of duty to the community. Liberal conservatism as such has been carried out by a number of societies in the post-war period and had growing impact in Europe and especially America in the second half of the 20th century (Heywood, 2017; Vincent, 2009).

The last tradition of conservatism, the *New Right*, has its immediate origins in the liberal conservative tradition. As Levitas (1985) points out, the New Right is “usually seen as a

merging of “neo-liberalism and authoritarianism” (p. 2). As such, its essence is described as the merging of classical liberal economics, especially the free market ideologies of Adam Smith and traditional conservative ideas such as the defence of order, authority, and discipline (Heywood, 2017). Further, liberal conservatives appraise values such as patriotism, national culture, purity of race, national inequality, disciplined family life and Christian values as well as great reliance on market criteria. As a result, this leads to typical policy objectives such as cuts in taxation, reduction of welfare state and privatization of state monopolies. These New Right Ideas have had their greatest impact in the US and the UK, for example through the agendas of politicians like Ronald Reagan and Margret Thatcher in the 1970s and 1980s as well as most recently in the Agenda of Donald Trump (Levitas, 1985; Vincent, 2009).

2.2 Conceptualisations

As illustrated in the previous section, theorists and politicians have been using Burke’s catalogue of basic conservative ideas throughout the last three centuries in response to varying political situations. Although the introduced traditions emphasized these values differently, all of them were using classical conservative arguments based on Burke’s central conservative principles. This universal applicability of conservative ideas gave rise to the most common conceptualisation of conservatism as a *situational ideology*. In this sense Huntington (1957) defined conservatism from a political science perspective “as the ideology arising out of a distinct but recurring type of historical situation in which a fundamental challenge is directed at established institutions and in which the supporters of those institutions employ the conservative ideology in their defence” (p. 455). As such, conservatism is described as an ideology which is different from other, so-called *ideational ideologies* such as Liberalism, Socialism or Communism because it does not represent any vision or substantive ideal. Instead of e.g. making statements about its preferred system of government, conservatism reflects the self-conscious defence of any institutionalized political system. In other words, it values the existing political order in form of institutions, independent of its ideological background, and tries to defeat it on basis of its own, repeatedly articulated basic principles (Huntington, 1957; Vincent, 2009). In this way Mannheim (1953) states, that conservatism “first becomes conscious and reflective when other ways of life and thought appear on the scene, against which it is compelled to take up arms in the ideological struggle” (Mannheim, 1953, as cited in Vincent 2009, p. 56). Huntington (1957) is taking this conception a step further by defining conservatism as a *positional ideology* which does not reflect the interests of a particular group or class. Being articulated in response to a specific social situation, conservatism depends more

on the relationship between groups then on the groups themselves. Therefore conservatism “lasts only so long as the relations lasts, not so long as the groups last” (Huntington, 1957, p. 468). This assumption implies that conservatism is not developed and transmitted from one generation to another and that it does not have basic writings. Summarized, the manifestations of conservatism in this way can be simply referred to as “parallel ideological reactions to similar social situations” (Huntington, 1957, p. 469) which are characterized through their nature of challenging existing institutions. Conservatives in this situational reading “stand for the existing order, whatever its political complexion, against the chaos of change and reform.” (Vincent, 2009, p. 57).

This perspective of understanding conservatism as situational, positional, and reactive raises the question of what factors influence the adoption of conservative ideas. The approach of understanding conservatism as *dispositional* seeks to answer this question through shifting the perspective from the overall political ideology and its central principles to focussing on the individual and its beliefs enhancing the adoption of these principles (Rothmund & Arzheimer, 2015). In this sense conservatism was understood less as an ideology but more as a tendency of individuals preferring tried habits to the new and unfamiliar (Cecil, 1900; Vincent, 2009).

More contemporary conceptualisations of *dispositional conservatism* decompose the conservative ideas into two core aspects. The first one being resistance to change. Rossiter (1968) defines conservatism in this sense as “an attitude of opposition to disruptive change in the social, economic, legal, religious, political or cultural order” and identifies fear of change as its “distinguishing mark” (Rossiter, 1968, p. 291). This assumption got confirmed by the works of Huntington (1957) as well as Conover and Feldman (1981). Both authors are identifying the acceptance versus the resistance to change as the main influences for self-definitions of liberals and conservatives. As Jost et al. (2003) states, this dimension of conservatism is best captured by Wilson and Patterson’s (1968) C-Scale as well as by Altemeyer’s (1996, 1998) RWA Scale (Jost et al. 2003).

The second core issue is the one of preference for inequality. In relation to this, Giddens (2013) pointed out that attitudes toward equality are one of the major criteria for distinguishing conservatives and liberals, whereas conservatives seems to have greater acceptance for inequality seeing the society as “inevitably hierarchical” (Giddens, 2013, p. 40). Being consistent with much of the literatures political definitions of conservatism (Muller, 2001), Jost et al. (2003) sees this dimension best captured in measures of political-economic conservatism

(Sidanius & Ekehammar, 1979), SDO (Pratto et al., 1994) and economic system justification (Jost & Thompson, 2000) which all focus on attitudes toward equality.

Besides these two mostly psychologically related core aspects (Muller, 2001), Jost et al. (2003) identified some further peripheral aspects of dispositional conservatism as “the desire for order and stability, preference for gradual rather than revolutionary change (if any), adherence to pre-existing social norms, idealization of authority figures, punishment of deviants, and endorsement of social and economic inequality” (p. 343) which are highly equivalent to the conservative principles of Burke set out in the previous section.

However, after analysing the literature taking the dispositional perspective of focussing on individual differences, Jost et al. (2003) are taking this conception a step further by claiming that “approaching political conservatism exclusively from the standpoint of personality theory is a mistake” (p. 339). To address this issue, alongside personality and individual differences, their *motivated-social-cognition* approach included situational variables and took epistemic, existential, and ideologically defensive motivations into account. Thereby defining conservatism as “an ideological belief system that is significantly (but not completely) related to motivational concerns having to do with the psychological management of uncertainty and fear” (p. 369).

Applying this perspective, Jost et. al. (2003) stimulated a considerable body of research examining the relationship between personality and political orientation on a broader basis of personality measurements in the first decade of the 21st century. Through widening the understanding of conservatism in this way, the authors were aligning it with contemporary social-psychologic understandings of conservative ideology. Conservatism, in this way, is understood as an ideology which is connected to basic personality traits, is shaped by genetic and neurological structures and can be understood as an expression of psychological needs (Rothmund & Arzheimer, 2015).

Since the focus of this thesis is on the question which frames are examined when trying to change behaviour in relation to psychological dispositions, the conceptualisation of Jost et al. (2003) is fertile for our approach. To enable a better understanding of the psychological dispositions employed in framing as a useful way of communicating pro-environmental behaviour among conservatives, selected findings on the underlying components will now be presented in more detail.

2.2.1 Conservatism and basic personality traits

As outlined in the previous section, scholars applying the social-psychological perspective are not focussing on central conservative principles but investigating the underlying factors inducing the adaption of these principles. As Sibley et al. (2012) puts it, “research on the Big-Five provides an important starting point for addressing this question” (Sibley et al., 2012, p. 665).

The Big-Five model of personality traits argues, that traits are organized in five core dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to new Experience. Thereby the model has been consistently supported through decades of research proving it is solid and relatively universal (McCrae et al., 2000; McCrae & Costa Jr, 1997). Big-Five personality traits are characterized through being remarkably stable within individuals as well as being partly heritable (Rothmund & Arzheimer, 2015; Sibley et al., 2012). Thereby Jost et al. (2003) repeatedly linked two of the Big-Five factors with values associated with political attitudes. Openness to Experience is shown to relate to support for cultural diversity, and Conscientiousness to influence people’s attitudes towards change (Sibley et al., 2012). This connection has been proven by Sibley et al. (2012). Analysing 73 studies, the authors found correlations between liberal and conservative self-placement and Openness to new experience ($r = -.18, p < .01$) and Conscientiousness ($r = .10, p < .01$). For the remaining three traits, no correlations were to be found. Thereby the relationship between conservatism and Openness and Conscientiousness seems to be highly stable over time. This was shown by studies such as the one of Block and Block (2006), which was able to show that teachers’ character description of young kids served as a statistically solid predictor of self-reported political attitudes 20 years later. However, in combination with the notably small average effect sizes reported above, the findings of Block and Block (2006) are raising questions on genetic and neurological factors influencing political ideology (Rothmund & Arzheimer, 2015).

2.2.2 Conservatism, genetics, and neurological correlates

For a long time social sciences ignored the possibility that social variables might be influenced by biological variables (Hatemi & McDermott, 2012). However, recent research like the one of Alford et al. (2005) established a link between political ideology and genetic influences. The resulting research tradition at the interface of political science, psychology, genetics, and neuroscience has ever since been delivering promising findings explaining large portions of the

individual expression of political ideologies. Some central findings will be presented in the following whereby the focus lays on the two central domains genetics and neuroscience.

Particularly promising with respect to conservatism are findings that relate the activity of different brain areas to political judgments and actions. Thereby, most of the findings implicate that conservatives are less able to adapt to new situations than liberals. This was proven by Amodio et al. (2007) conducting a Go/No Go experiment. As expected, liberals were more flexible in their reaction than conservatives. This was confirmed by the neuroscientific method of EEG which showed lower brain activity in the Anterior Cingulate Cortex (ACC) for conservatives. Since one function of the ACC is to deal with uncertainty and conflict, these findings were interpreted in the way that conservatism is associated with neurologically determined persistence of accustomed behaviour. Findings of this type have been successfully replicated in subsequent studies (e.g., Weissflog et al., 2010).

Kanai et al. (2011) provided another finding linking neurological structures to the expression of conservative attitudes. The authors were able to demonstrate that a large amygdala, is positively correlated with conservatism. Since the amygdala is responsible for experiencing fear, this finding is consistent with Jost et al.'s (2003) understanding of conservatism. Taken together, these findings form an insight into the link between neurological structures and conservative attitudes (Riemann & Kandler, 2015).

The focus of behavioural genetic studies is to examine the extent to which genetic differences between individuals influence their political attitudes and can therefore be seen as heritable. Thereby this field of study generates findings showing that as much as 65% of the variance of political attitudes can be explained by genetic influences (Kandler et al., 2012). With specific reference to conservatism studies reveal heritability estimates ranging from 40% to 60% (Riemann & Kandler, 2015). Further, Hatemi et al. (2009) provided data on the influence of genetics on political attitudes over an individual's life span. The authors concluded that the influence of genetic factors on political attitudes varied considerably, showing that its effect was only observed from the age of 21. Under this age, differences resulted from environmental influences and parental socialisation (see also, Hufer et al., 2020). These results indicate that the genetic influence on political attitudes is significantly increasing in early adulthood, which can be explained through the fact that young adults often leave their parents' home and influence, allowing their own individual dispositions to unfold more strongly (Wajzer & Dragan, 2021). The findings of behavioural genetic studies are thereby confirmed by molecular genetic

studies which found significant relationships between specific genes and conservatism (Hatemi et al., 2010).

Summarized, these neuroscientific, behavioural, and molecular genetic findings induced a paradigmatic shift on the relationship between personality traits and political attitudes, calling into question the usual assumption, that personality traits are “the causal factors for the development of attitudes” (Wajzer & Dragan, 2021, p. 8) and suggesting that the observed correlation between personality and political attitudes results from underlying genetic factors (e.g., Hatemi & Verhulst, 2015). Regarding the research question, from a neurological perspective, this seems to be the case for conservatism's positive correlation with resistance to change and the experience of fear. As will become clear in the further course of this work, these are both characteristics that do not have a positive effect on the practice of environmentally friendly behaviour.

2.2.3 Conservatism and psychological motives

As was made clear in the last paragraph, much of the variance in conservative attitudes can be explained by heritability. Jost et al. (2003) answered the subsequently raising question, which set of “basic cognitive, motivational, and personality orientations could account for the heritability of political attitudes”? (p. 318). Applying their understanding of conservatism as motivated social cognition, the authors clarified their idea of an elective affinity between conservatism and epistemic, existential, and relational motives.

The first category, epistemic motives, are characterized through a drive to reduce uncertainty, complexity, or ambiguity and often get operationalised as the Need for Cognitive Closure (Kruglanski & Webster, 1996). In his highly recognized meta-analysis, Jost et al. (2003) identified a number of epistemic motives whose manifestations have a significant influence on conservative attitudes. The authors identified significant correlations between conservatism and personal needs for order, structure, and closure ($r = .26, p < .0001$) as well as a relatively strong connection with dogmatism and intolerance of ambiguity ($r = .34, p < .0001$), integrative (cognitive) complexity ($r = -.20, p < .0001$), openness to new experience ($r = -.31, p < .0001$) and uncertainty avoidance ($r = -.27, p < .0001$). Taking the two core characteristics of conservatism, resistance to change and acceptance of inequality into account, the findings of Jost et al. (2003) are not surprising. That is because the listed epistemic motives all refer to them in a logical way (Rothmund & Arzheimer, 2015).

The second category, existential motives, can be described as a personal drive to manage threatening circumstances by searching for security, self-esteem and meaning in life (Jost et al., 2009). According to *Terror Management Theory* (TMT), which is often referred to in this context, existential motives result from existential threats such as death or loss of belongings. Subsequently, the need to avoid the associated feelings like fear and uncertainty is served by the function of political ideologies to transfer the perceived threat to the group connected by that ideology (Greenberg et al., 1997). As Jost et al. (2009) puts it, “political and other belief systems are seen as assisting people in the motivated belief that they are persons of value in a meaningful universe that transcends the finite self, thereby providing a sense of existential security” (Jost et al., 2009, p. 320). These assumptions are in line with Jost et al. (2003) showing that fear and threat ($r = .18, p < .0001$), mortality salience ($r = .50, p < .0001$) and threat to the stability of the social system ($r = .47, p < .0001$) were all positively correlated with measures of political conservatism. In sum, it can be stated that conservatism through its function of defending the status quo and thereby reducing insecurity and fear, has a special appeal for existential motives (Rothmund & Arzheimer, 2015).

The third category, relational motives are understood as a desire to affiliate and establish personal relationships expressed through a need for social identification, solidarity, and shared reality. They are assumed to be met by political ideologies through their bonding character (Jost et al., 2009). Subsequently studies show that social identification processes can influence political identifications in both liberal and conservative directions (e.g., Cohen, 2003). Subsequently, relational motives such as a general tendency to values such as tradition, social order, and consensual adherence to rules and norms, could favour conservative outcomes. Furthermore Jost et al. (2009) assume an *elective affinity* between relational motives and conservative attitudes by arguing that it is easier to establish common ground by defending the status quo, as well as communicating effectively in terms of simple and unambiguous messages. As has already been emphasized, both qualities match the components of conservative ideologies (Jost et al., 2009).

This chapter has clarified the core values of conservatism as a political ideology. In addition, we have looked at the factors determining the adoption of these values. Based on this theoretical foundation, in the following chapter we will try to explain why conservative ideology hinders environmentally friendly behaviour. We will thereby focus on motivational processes.

3 Conservatism and environmentally friendly behaviour

3.1 Environmentally friendly behaviour

Before we shed light on the negative relationship between environmentally friendly behaviour and conservatism, we want to briefly explain what we mean by environmentally friendly behaviour. In this thesis environmentally friendly behaviour means concrete action, behavioural intentions, as well as attitudes which are meant to support the protection of the natural environment and subsequently the climate. With protection we mean the attempt to mitigate human caused devastation and the resulting change of the climate as well as the loss of biodiversity. Due to the ongoing climate crisis, climate change plays a special role in this process. Nevertheless, by environmentally friendly behaviour we mean not only attitudes or behaviours related to climate change or measures to mitigate it, but also towards environmental protection measures that are not directly associated with the climate crisis.

3.2 Conservatism and environmentally friendly behaviour – it's difficult

There is a long-held consensus in the scientific community, that climate change is one of the most pressing concerns of our time and that carbon emissions generated by humans are causing it. Further it is clear that this rise will continue to have devastating consequences for planet earth. To mitigate these consequences, emissions must be drastically reduced (Cook et al., 2016). Despite this consensus within the scientific community, studies consistently indicate that attitudes toward climate change within society reveal a completely different picture, showing that people continue to deny the severity of the problem as well as resist efforts to address it. Irrespective of the “time-sensitivity associated with climate change and despite the fact that the predicted effects of climate change are arriving in dramatic and tangible way – efforts at mitigation have not been widespread enough to have significant impact” (Hornsey & Fielding 2020, p. 4).

On an individual level, this circumstance can be explained by taking into account the influence of socio-demographics and political ideology (Liu et al., 2014). Thereby, with reference to the overall objective of this thesis, conservatives are known to be significantly less willing to acknowledge human caused climate change, as well as less willing to agree to or implement actions to mitigate it (Feygina et al., 2010; Hornsey & Fielding, 2020; McCright et al., 2016; Poortinga et al., 2019). Exemplary of the negative relationship between conservatism and attitudes toward climate change may be a Gallup poll conducted in 2018, revealing that 65% of self-identified conservatives in the USA did not agree that global warming is caused by humans.

This particularly strong positive relationship between conservatism and scepticism towards climate change such as the negative relationship concerning measures to mitigate it has long been proven in countries where the issue of climate change has become increasingly politicized such as the United States, Canada, Australia and the UK (McCright & Dunlap, 2011; Gifford, 2011; Liu et al. 2014; McCright et al. 2016b; Hornsey & Fielding 2020). However, findings from Western Europe are consistent with those reported. Based on data from 2008, McCright et al. (2016b) found that there is a modestly sized, but significant left-right divide in climate change views, which is manifested through conservatives being less likely to believe in climate change, perceive it as a serious problem and express willingness to support policies to reduce greenhouse gas emissions. Anyway, it must be stated, that the effect was considerably weaker than in the United States. Nevertheless, the reported results were recently confirmed by Poortinga et al. (2019) based on European Social Survey Data from 2016, which added a remarkable cross national stability over 23 countries to the association.

3.3 But why?

As argued the previous paragraph, the negative correlation between conservatism and environmentally friendly behaviour has been found frequently and cross-culturally. Consistent with Jost et al.'s (2003) conceptualization of conservatism as *motivated social cognition*, scholars in the field have increasingly emphasized the role of "motivated reasoning" to explain this circumstance (Jacquet et al., 2014). The main idea of this approach is that political ideologies can influence the processing of information and alter behaviour (e.g., Taber & Lodge, 2006). According to this understanding, people process information primarily when it corresponds to their prior beliefs which are influenced by ideologies (Kunda, 1990). Scholars following this approach often distinguish between three motives that can shape the processing of information and thereby influence behaviour, namely ego (self) justification, group justification and system justification. In order to understand the negative relationship between conservatism and pro-environmental behaviour, these motivational processes will be explained below.

3.3.1 Ego (self) justification

Scientists recognized early that individuals tend to accept new information especially if it corresponds to their already existing beliefs (Jost et al., 2013). With regard to controversial political issues such as climate change, Taber and Lodge (2006) found that individuals often display so-called "motivated scepticism" and favour arguments corresponding to their

ideological positions. This mechanism, which is explained by *Cognitive Dissonance Theory* (Festinger, 1962), is serving the psychological motive of preserving self-esteem by upholding one's pre-existing beliefs. Since lower self-esteem was consistently linked to conservatism, people holding conservative attitudes are known to more strongly process information in a motivated way (Jost et al., 2003; Jost et al., 2013). The interplay of conservative attitudes and information on climate change can be illustrated by a finding of Guber (2013). The author used data of different Gallup polls to show that people who said they understood climate change, were more polarized about environmental concerns than people who said they did not. Since environmental concerns fundamentally challenge the existing beliefs of conservatives, the findings show that the process of motivated scepticism results in a rejection of related information. Conversely, this results in a lower assimilation to this information (Jacquet et al., 2014).

3.3.2 Group justification

As Jacquet et al. (2014) points out “[in] many cases, it may be difficult to disentangle ego and group justification motives ... because many cherished beliefs are linked to membership in a social group” (Jacquet et al., 2014, p. 3). In line with this assumption is the *Social Identity Theory* (Tajfel et al., 1979), which is often referred to in this context. According to this theory “individuals derive a substantial portion of their self-concept (and self-esteem) through associations with social groups” (Jost et al., 2013, p. 13). The main idea is, that to achieve self-esteem, individuals want to positively distinct their “ingroups” from other “outgroups”. As Jost et al. (2013) points out, circumstances of political competition and accompanying policy debates such as the one about climate change, reinforce this process leading individuals to take on partisan identities and “approach politics from an ““us” versus “them” perspective” (Jost et al., 2013, p. 3). With reference to climate change attitudes, Hart and Nisbet (2012) and Unsworth and Fielding (2014) both found that exposure to scientific information about climate change decreased support for mitigation policies among conservatives, while the exact same information increased support under liberals. Campbell und Kay (2014) implemented these findings into their “solution aversion approach”, showing that increased scepticism towards environmental sciences hold by conservatives is not due to an aversion against the problem itself but rather an aversion between core ideological values, such as the belief in free market ideology, and the most popular discussed environmental solutions (Campbell & Kay, 2014).

The presented findings shed light on the underlying psychological processes accounting for denial of climate change and reduced willingness to tackle it among conservatives. That is

because information about climate change challenges conservative beliefs in many ways (e.g., the necessity of upholding the status quo as one of conservatism's core concepts) and are therefore processed worse. This process seems to be reinforced by findings showing that motivated reasoning is particularly strong among conservatives (Jost et al., 2013). Conservatives, in this way, are found to tend more strongly to selective exposure (e.g., Iyengar et al., 2008) or engage in conversations reinforcing their prior beliefs (Mutz, 2006). However, a recently conducted meta-analysis from Ditto et al. (2019) contradicts these findings by showing that liberals and conservatives in the USA had no difference in biased acquisition and processing of information (Ditto et al., 2019). Nevertheless, the natural contradiction between conservative attitudes and information concerning climate change remains, enhancing processes of self- and group justification which hinder climate friendly behaviour.

3.3.3 System justification

The third psychological process contributing to the negative correlation is the one that appears most frequently in this context: system justification. Following *System Justification Theory*, “people are not only motivated to defend and bolster interest and esteem of their personal self-concept and social groups, they are also motivated to defend and bolster aspects of the social, economic and political systems on which they depend” (Jacquet et al., 2014). The theory's basic assumption is that especially in situations where these systems are threatened, individuals tend to legitimize and maintain them (Jost et al., 2004). Since this motivation explicitly favours the status quo, it favours conservative thinking in general (Jacquet et al., 2014). More specifically, since system justification is thus primarily a psychological process for dealing with uncertainty and fear, it can be assumed that people with conservative attitudes are more prone to it (Feygina et al., 2010). Looking at the findings on neurological and psychological causes of conservatism presented in Chapter 2.2.2 and Chapter 2.2.3, this assumption is supported.

Consistent with these theoretical assumptions, Feygina et al. (2010) were able to prove that “holding a more conservative political orientation was associated with greater system justification, both in general ($b = 0.27$, $SE = .03$, $\beta = .44$, $p < .05$) and with respect to economic matters in particular ($b = .17$, $SE = .02$, $\beta = .38$, $p < .05$)” (p. 331). Subsequent work confirmed these findings and especially strengthened the thought that ideological differences in economic system justification help to explain why conservatives are more sceptical about climate change (Wong-Parodi & Feygina, 2020). That is, because belief in free market ideology being at the heart of conservative ideology, especially in the United States (e.g., Campbell & Kay, 2014). Generally, these findings have led to identify system justification as a powerful driver of climate

change denial and inaction against it among conservatives. That is, because it satisfies needs for safety, security, and stability which are evoked through the threats and uncertainties accompanying climate change and are especially high in people holding conservative attitudes (Jacquet et al., 2014; Wong-Parodi & Feygina, 2020; Jost et al., 2004). At this point, however, it should be pointed out that the findings presented are mainly from the US (Hornsey & Fielding, 2020).

The theoretical considerations and findings presented, allow the assumption of something like a natural aversion between conservatism and attitudes towards climate change, such as measures to mitigate it. First, that is because climate change requires drastic changes in the way we live, which contradicts core aspects of conservative ideology. Second, this aversion is intensified by psychological processes of motivated processing of information. Taken together, in view of the ever more urgent problem of climate change and the need of increasing efforts to mitigate it, these findings do not seem very promising.

However, in recent years, scholars have increasingly argued that the differences between liberals and conservatives concerning pro-environmental intentions and behaviour stem, at least in part, from the way in which the topic is communicated to the public, thereby arguing that the discourse of environmentalism per se, such as more specific issues like climate change, are mainly communicated in ways that appeal to liberals rather than conservatives (Hart & Nisbet, 2012). A considerable body of framing research integrates such findings into work which explores whether the divides between conservatives and liberals can be bridged by framing environmental communication in conformity with the conservative values and attitudes which have been presented in this section. In the following section the framing approach will therefore be introduced before we go on to systematically review research exploring which frames are examined in the literature when trying to convince conservatives of environmentally friendly behaviour. Thereby the focus will be on investigating if the theoretical considerations presented are met by the frames employed. This means whether an attempt is made to overcome the motivational resistance described above, by specifically addressing central conservative values.

4 Framing

Framing theory emerged at the interface between research in sociology, psychology, and communication science. Subsequently, framing is closely related to psychological attitudinal theories as well as to theories originating from communication science, such as agenda setting and priming (Matthes, 2014). The basic assumption of framing theory is “that an issue can be viewed from a variety of perspectives and can be construed as having implications for multiple values or considerations” (Chong & Druckmann 2007b, p.104). Framing in this sense “refers to the process by which people develop a particular conceptualization of an issue or reorient their thinking about an issue.” (Chong & Druckman 2007b, p. 104). In the following, an attempt will be made to describe the central terms of the framing approach and thereby explain the process of framing itself.

4.1 Frames

Frames are typically understood as schemes both for presenting and comprehending information, which is why most scholars distinguish between individual and media frames, while decomposing the process of framing into both types and their interaction. In this sense, Friedland and Zhong (1996) stated, that frames serve as “the bridge between ... larger social and cultural realms and everyday understanding of social interaction” (p.13), which is why Scheufele (1999) argues, that a “concept explication of framing must take into account both types of frames” (p. 106). However, at this point it must be emphasized that there is no consistent use of terms in framing research which has long been criticized (Entman, 1993). Therefore, media frames are often also referred to as communication frames and individual frames as frames in thought. To avoid confusion in this paper, the terms media and individual frames will be used consistently in the following.

Individual Frames: Early definitions of individual frames define them as “mentally stored clusters of ideas that guide individuals in processing information” (Entman, 1993, p. 53). Scholars again distinguish between two types of individual frames which are assumed to affect the processing and interpretation of political information differently. Thereby the first type, described by Scheufele (1999) as “global political views”, is seen as a result of certain personal characteristics of individuals and is expected to have limited influence on the evaluation of political information. Unlike this first type, the second type, „short-term, issue related frames of reference” is assumed to have a “significant impact on perceiving, organizing, and interpreting incoming information” (Pan & Kosicki, 1993, p. 56). Following this attempt,

McLeod (1987) described how audiences classify political news by defining individual frames as “cognitive devices that operate as non-hierarchical categories that serve as forms of major heading into which future news content can be filed” (McLeod, 1987, p. 10). In a more contemporary conceptualisation, Chong and Druckman (2007b) illustrate their definition along a conventional expectancy model of individual attitudes (Azjen, 1980). According to this model, the attitude of a person towards an object, results from the interaction of different evaluative beliefs about that object. Thereby the relative salience weight given to the beliefs determines the outcome of the respective evaluation (Chong & Druckman, 2007b). To give an example concerned to the overall topic of this thesis, this interplay can be illustrated as following. One’s overall attitude toward climate change mitigation policies might consist of a combination of negative and positive evaluations on different dimensions connected to the topic. For example, it would be possible for an individual to believe that action to mitigate climate change is harmful to the economy but good for the environment. If the individual assigns value to both attributes, in this case the valuations of the two attributes contradict each other. Thus, the evaluation depends on which attribute is more important to the individual, the economy, or the climate. Following this understanding, individual frames are defined as “the set of dimensions that affect an individual’s evaluation” (Chong & Druckman, 2007b, p. 105), whereby in this definition “dimension” could be replaced by a consideration, a value, or a belief (Chong & Druckman, 2007a).

Media Frames: As mentioned above, frames are not just represented in people’s minds, but also in political discourse. In this sense Entman (1991) defines media frames as “attributes of the news itself” (Entman, 1991, p. 7). In scholarly analysis, media frames are conceptually defined as “central organizing idea[s] or story line[s] that provide meaning to an unfolding strip of events” (Gamson & Mogdiliansi, 1987, as cited in, Chong & Druckman, 2007a, p. 106). Accordingly, Tuchman (1978) states that a media frame “organizes everyday reality” (p. 193) while promoting “particular definitions and interpretations of political issues” (Shah et al., 2002, p. 343). In line with these definitions, Entman (1993) referred to media frames by emphasizing that, “to frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation” (p. 53). Subsequently, media frames are perceived to consist out of these four elements which are further defined as follows. The problem definition clarifies where the topic is located, and which information is relevant. The causal interpretation serves to attribute personal or situational

responsibility for the topic discussed, whereby the moral evaluation is an either evaluative or moral classification of the problem. The last element, the treatment recommendation, includes measures to solve an emphasized problem or more generally includes recommendations on how to deal with the framed topic while holding allocations of responsibilities. However, since in most cases not all four frame elements are used in media frames, it should be emphasized at this point that in research discourse it is disputed which and how many of the elements must be contained within a media frame in order to be able to speak of it (Matthes, 2014; Entman, 1993).

4.2 Framing effects

As mentioned earlier, the study of framing requires consideration of both types of frames as well as their interaction. Accordingly, the overarching finding of studies focussing on individual frames as dependent and media frames as independent variables is that media frames influence individual's frames and their attitudes, which is "typically called a framing effect" (Chong & Druckman, 2007a, p. 109). Thereby, studies differ in rather focussing on how media frames "bias the weight individuals give to various considerations" and on how media frames "alter overall opinions without tracing changes in underlying considerations" (Chong & Druckman, 2007a, p. 109). The general assumption thereby is, that framing is altering the underlying considerations used in peoples evaluation of certain issues (Chong & Druckman, 2007b). At the core of explanations trying to explain these effects is the assumption that a frame must meet three requirements to be effective: availability, accessibility, and applicability.

First, to be considered for evaluating a certain issue, a consideration must be cognitively available, which means that it must be stored in the memory of an individual. Second, the consideration also must be accessible. That means that its activation potential must exceed a certain threshold, enabling a person to retrieve it from long term memory. As Chong und Druckman (2007a) state, "Individuals sometimes base their opinions on available and accessible considerations without deliberation" (p. 110), which means that in some cases for a media frame to be effective it is enough if these two requirements are met. However, sometimes these two requirements are not sufficient, and people further evaluate if a consideration is applicable to the topic under evaluation. In this sense, Eagly & Chaiken (1993) stated that the "perceived applicability of a given communication frame, and thus the likelihood it will affect an individual's opinion, increases with perceptions of its strength or relevance" (p. 330) and depends on two conditions. One of them is personal motivation, or more precisely if someone is sufficiently motivated to weigh competing considerations stored in their mind or suggested by different frames. The other one is a competitive context in which individuals are being

exposed to opposing frames. Further, when it comes to situations of competition, the decision which frame is especially applicable depends on how “strong” (Chong & Druckman, 2007a, p. 111) a frame is, whereby strong frames are often characterized through links to partisanship and ideology (Stapel et al., 1998). Accordingly, Sniderman and Theriault (2004) found that individuals tend to be more influenced by frames that are consistent with their values or principles. Other factors influencing the strength of a frame are its repetition, individual motivation e.g. for deliberation, as well as moderators such as predispositions, knowledge and the source (Chong & Druckman, 2007b). Thereby, predispositions are found to be the strongest moderator since they influence how the frame is seen as conforming or disconfirming with prior knowledge and is processed accordingly (e.g., Barker, 2005). Nevertheless, framing can also affect people holding strong prior values and opinions, especially on new issues but also on topics that have already been established. This applies particularly when an individual’s predispositions are framed to be associated with an issue which is usually framed in terms of opposing values or opinions. Knowledge as another moderator is found to enhance framing effects, since it is assumed to increase the availability and comprehensibility of the framed information (Druckman & Nelson, 2003). Additionally to the moderators of predisposition and knowledge, frames are particularly strong when they are communicated through credible sources (Druckman, 2001) and when longstanding cultural values are invoked by them (Gamson & Modigliani, 1994).

In sum, framing can be described as the conscious or unconscious influence of media frames on individual frames. In doing so, media frames are making individual frames available, accessible, and applicable, whereby changing their relative weights in the evaluation process. In this way, framing shapes opinions, values, attitudes, and behaviour. This process is influenced by moderating variables such as the availability of competing frames, a person's predispositions such as ideology or party affiliation, and the source of the frame.

5 Framing for Future – a systematic review on how to encourage environmentally friendly behaviour among conservatives

The previous sections showed that there is a negative correlation between conservatism and pro-environmental attitudes and behaviour (Feygina et al., 2010; Hornsey & Fielding, 2020). In opposition to interpreting this as a "natural aversion", authors like Feinberg and Willer (2013) or Wolsko et al. (2016) argue, that the negative relationship stems, at least in part, from the fact that environmental issues "are typically framed in ideological and moral terms that hold greater appeal for liberals" (Wolsko et al., 2016, p. 7). Subsequently, it is argued that the differences in environmental attitudes between liberals and conservatives could be equalized through a more balanced framing, which presents environmental issues in a more conservative fashion (e.g., Hornsey & Fielding, 2020).

These assumptions are supported by recent studies. For example Sapiains et al. (2016) found, that a conservative identity frame was significantly stronger than a climate change frame in inducing intentions for climate friendly behaviour among conservatives. Similar findings were made by Hurst and Stern (2020), who also found that messages framed along conservative moral foundations resonate stronger with conservatives. This was shown by conservative probands in the study being significantly more concerned about the use of fossil fuels, as well as holding stronger support for transitioning away from them. Wolsko et al., (2016) presented further findings of this kind. In their study the authors examined the extent to which variations in the moral framing of pro-environmental messaging affects liberal vs. conservative conservation intentions as well as attitudes towards climate change and donations to environmental organisations. Similar to the findings of Hurst and Stern (2020), their findings showed that conservatives "shifted substantially in the pro-environmental direction after exposure to a binding moral frame, in which protecting the natural environment was portrayed as a matter of obeying authority, defending the purity of nature and demonstrating one's patriotism to the United States" (Wolsko et al., 2016, p. 7).

Nevertheless, studies examining the use of frames on conservatives' attitudes toward climate change have not been widespread. However, based on the findings presented, it can be assumed that the framing approach holds great potential in this area. Therefore, building on the theoretical assumptions of the previous chapters, the following research question is investigated:

What frames are used in the literature to persuade conservatives of pro-environmental behaviour?

To answer this question, a systematic literature review was conducted following the framework provided by Vom Brocke et al. (2009) as well as Webster & Watson (2002). For this purpose, a neutral framing typology was developed through conceptualizing the literature according to the included frames (see Table 1 and 2, Appendix). Thereby it was our goal to compare the identified frames examined in the studies and identify knowledge gaps which hold potential for future research. Therefore, we chose an approach which systematically identifies and categorises the literature while reducing or at least identifying biases. Through conceptual mapping, this work does not take a meta-analytical approach but rather highlighting trends in the literature, gaps in knowledge and opportunities for future research. Thereby we hope that our work will be of use for scholars, politicians and all people who are trying to encourage more environmentally friendly behaviour in society.

5.1 Methods

5.1.1 Keyword string

As a first step a keyword string was developed. This was done through first applying the central terms of our research question to the Web of Science Core Collection and identifying some highly cited articles in this research area. These articles were then used to identify related terms which were added to the keyword string. Further we applied the framework of Kollo (2012) and developed a thesaurus to additionally add logically close related terms and thereby reduce biases in the keyword string. Finally, the developed string was the following:

```
TS = ((political ideolog* OR conservatis* OR conservativ*) AND (framing OR frame* OR reframing) AND (climate change* OR pro-environmental attitude OR environmental attitude* OR environmentalism OR environmental action OR environmental protection OR environmental conservation OR climate protection OR conservation attitudes OR nature conservation OR attitudes towards nature conservation OR environmental friendly behav* OR eco-friendly behav*))
```

The described development of the string was undertaken to yield a broad range of literature, while limiting the number of irrelevant articles to a minimum.

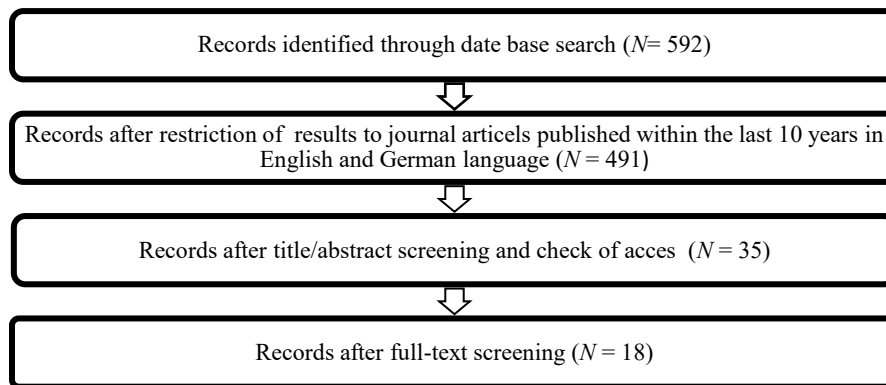
5.1.2 Database and search strategy

We then used the string for a search in *Web of Science Core Collection*. Since this database is known to have one of the best coverages of social sciences, we limited our search to this

database. Because Web of Science Core Collection does not have a thesaurus there was no need for a review of the search terms.

After applying our keyword string, our initial search identified 592 results. To identify the most recent and up to date literature as well as assuring that the studies can be understood by the author of this work, we limited the results to the last ten years (from 2012) and excluded results written in other languages than German and English. Further, to assure scientific quality we limited the results to journal articles. Taken together, these steps led us to a total number of 458 results which were included into the first phase of screening. In this first phase titles, keywords and, in inconclusive cases, abstracts were checked on the basis on the inclusion criteria which were developed using the framework of PICO/PECO, Collaboration for Environmental Evidence 2018 and are outlined in Table 3 (see Appendix). This Process led us to a total number of 35 results which went into the second phase, the full text screening. At this stage, all articles were reviewed again against the inclusion criteria leaving a total of 18 articles left for analysis. A complete list of all articles which were included into full text screening with reasons for exclusion can be found in Table 4 (see Appendix). The whole search progress is documented in Figure 1.

Figure 1 Search process



5.1.3 Procedure for analysis

At first basic bibliographic data were collected for analysis. This included the publishing journal, the year of publication, the country in which the study was conducted, the number of subjects, and the representativeness of the sample. Furthermore, to identify broad trends in methodology, the way in which the frames were communicated, and the applied measurements for framing effects were evaluated. Finally, with specific reference to the research question, the frames used in the studies were analysed and conceptualized in the manner already described above.

6 Results

6.1 Journals and research area

Since the research question is interdisciplinary and attempts to communicate nature-scientific contents with the help of the social-psychological framing model, the range of journals in which the articles were published is correspondingly large. Taken together, the articles included were published in twelve different journals, from which the most related to the field of psychology. This includes journals such as *Psychological Science* ($n = 1, 6\%$), *Journal of Experimental Psychology* ($n = 1, 6\%$), *Topics in Cognitive Science* ($n = 2, 11\%$), *Journal of Environmental Psychology* ($n = 2, 11\%$), *Environment and Behaviour* ($n = 1, 6\%$) and *Journal of Risk Research* ($n = 1, 6\%$) which made up together around 46% of the publications. The second largest share was accounted for by publications in the field of environmental studies with the two journals *Global Environmental Change* ($n = 4, 22\%$) and *Energy Research & Social Sciences* ($n = 1, 6\%$) making up 28%. The third largest category is referred to as multidisciplinary. This category consists of three Publications ($n = 3$) in *PLOS ONE* making up 17% of the publications. Surprisingly, journals with explicit reference to communication were only represented by one publication ($n = 1$) in the *Journal Environmental Communication* making up 6%. Further the category of politics was represented by the *Social Science Quarterly* with one publication ($n = 1$) making up also 6%, as well as economics by *Ecological Economics* also contributing one publication ($n = 1, 6\%$).

6.2 Dates

Although we included publications since 2012, no study was published in that year, as well as in the year of 2014. When looking at the publication years in Figure 2 (see Appendix) we can see one publication each in 2013 ($n = 1, 6\%$) and 2015 ($n = 1, 6\%$) before publications increased in 2016 ($n = 3, 16\%$) to reach a peak in 2017 ($n = 5, 19\%$). After that they level off again through 2018 ($n = 2, 11\%$) and 2019 ($n = 1, 6\%$), and ultimately rise again in 2020 ($n = 3, 11\%$) and 2021 ($n = 3, 16\%$). There was also no publication in 2022, however this was most likely since the research was conducted very early in year, taking place on the 15th of January.

6.3 Study location and samples

As in other reviews in the framing literature (e.g., Badullovich et al., 2020) the vast majority of the studies analysed ($n = 26, 96\%$) were conducted in the United States. Only one study was from Switzerland ($n = 1, 4\%$). At this point it must be stated that the number of analysed studies

exceeds the number of analysed publications because in some publications more than one study was described. In these cases, however, only studies that met the criteria were included.

Regarding sample size, a large proportion of the studies used samples between 150-500 people ($n = 12$, 46%), with the next most common being 500-1000 ($n = 7$, 27%) and 1000-1500 ($n = 4$, 15%). The rest of the studies ($n = 3$, 12%) was above that with numbers of 1591, 1702 and 2088. Thereby most of the samples were non-nationally representative adults ($n = 23$, 88%) and only one study used university students ($n = 1$, 4%). Representative samples were used only in only two studies ($n = 2$, 8%).

6.4 Measures for framing effects

The studies analysed all employed response (dependent) variables measuring the framing effectiveness. These variables were grouped to be able to observe broad trends (see Table 5, Appendix). The most frequently used variable was that of policy support for measures to mitigate climate change or protect the environment such as policies which were designed to transition away from fossil fuels or prescribing energy saving measures. Variables of these kind were used by 56% of the included studies ($n = 10$). The second most frequently used were variables which measured the belief in (anthropogenic) climate change ($n = 8$, 45%), followed by variables measuring behavioural intentions ($n = 7$, 39%), for example the willingness to act in environmentally friendly ways by engaging in recycling or changing one's own lifestyle in a sustainable way. Also frequently used were variables which measured the concern with which people look at climate change and its consequences, i.e. their risk perception related to the topic. Variables of this kind were applied in 33% ($n = 6$) of the studies. Less frequently used were variables that measured environmental attitudes with items like "we should change how we interact with the environment" ($n = 3$, 17%) and variables that asked for approval of already implemented government actions ($n = 3$, 17%), such as variables which appeared so rarely that they were grouped the "others" category ($n = 4$, 22%).

Regarding the number of response variables used, the picture is divided. One half of the studies ($n = 9$, 50%) used either three ($n = 7$, 39%) or four ($n = 2$, 11%) measurement variables, while the other half used one ($n = 7$, 39%) or two ($n = 2$, 11%).

6.5 Ways in which frames were communicated

In addition to the parameters already presented, the way in which the respective frame was communicated within the studies was also analysed (see Table 6, Appendix). Thereby, a large proportion of the studies used the format of newspaper articles or short text segments ($n = 16$,

62%). By a wide margin, the form of communicating the respective frames through survey questions, was the second most common form ($n = 4$, 15%). Further, three studies used images or videos as frames ($n = 3$, 12%) and only two studies used combinations of text and videos or pictures ($n = 2$, 8%). Finally Baldwin und Lammers (2016) communicated their past and future focussed frames through exposing their subjects to websites of aid organizations which had been identified as either past or future focussed in a previous study ($n = 3$, 12%).

6.6 Frames

To answer the research question, particular attention was paid to the analysis of the actual frames. For this purpose, the studies were grouped on basis of their examined frames. This was done through creating a concept matrix (see Table 2, Appendix) which was later used to deductively create a framing typology (see Table 1, Appendix). The analysis undertaken was concerned with the simple questions of what kinds of frames are examined in the literature and further, which of the components of conservatism (as presented in Chapter 1) were addressed by the frames to induce pro-environmental behaviour among conservatives.

During the analysis, it was noticed that the types of applied frames differed from each other. While a large part of the frames mostly emphasized different topics in connection with climate change or measures to mitigate it (emphasis frames), other frames simply used different terms to refer to the same phenomenon while thereby trying to bypass ideological resistance connected to the terms (label frames). Yet others used both at the same time.

The results of the analysis are presented below. However, it must be emphasized here that among the studies were those that explicitly examined the effect of specific frames on conservatives and those that reported on conservatism only as a moderator variable. Therefore, only frames for which explicit effects on conservatives were reported, are presented in the following.

6.6.1 Moral frames

Four of the studies examined the impact of moral frames (Feinberg & Willer, 2013; Wolsko et al., 2016; Severson & Coleman, 2015; Hurst & Stern, 2020). These studies developed their frames on the basis of *Moral Foundations Theory* (MFT). The MFT posits that the polarization of attitudes, like the one concerning environmental behaviour and climate change, is associated with different underlying moral divisions used by conservatives and liberals. In this sense, MFT describes five moral foundations which underlie moral attitudes and judgements. These are summarised by Feinberg and Willer (2019) as “*care*—relating to the prevention and mitigation

of suffering; *fairness*—relating to equality and discrimination concerns; *loyalty*—relating to the prioritization of one's group and its needs; *authority*—relating to showing respect for traditions and high-ranking others, and *sanctity*—relating to the protection of purity and sacredness” (p. 2). Further, the MFT assumes that liberals more strongly endorse the care and fairness foundations and are subsequently grounding many of their political positions on “notions of compassion, nurturance, and social justice” (Feinberg & Willer, 2019, p. 3). Regarding the moral foundations used by conservatives, there is disagreement in the literature. Some authors assume that conservatives ground their political opinions on the remaining three foundations of loyalty, authority, and sanctity (Feinberg & Willer, 2013, Wolsko et al., 2016; Severson & Coleman, 2015) while others assume that conservatives utilize all five foundations (Hurst & Stern, 2020). Thereby the assumptions made by MFT, especially the ones assuming that conservatives are particularly prone to judgements based on values such as loyalty, authority, and sanctity, is widely consistent with the introduced components of conservative ideology in Chapter 1. This is especially true for the conservative characteristics of acceptance of inequality and adherence to pre-existing social norms.

All four studies which applied these frames have attempted to use language that matches the moral foundations of conservatives. Wolsko et al. (2016) provides a fruitful example. The authors tried to induce support for a pro-environmental agenda among conservatives through providing arguments emphasizing that such an agenda demonstrates loyalty to the ingroup, respect for authority, maintenance of purity and sanctity in human endeavours as well as patriotism to the United States. Three of the four studies analysed presented findings suggesting the effectiveness of this framing technique for conservatives (Wolsko et al., 2016; Feinberg & Willer, 2013, Hurst & Stern, 2020). However, the findings of Severson and Coleman (2015) did not allow this conclusion. In addition, the findings of Feinberg & Willer (2013) and Hurst and Stern (2020) emphasized the role of conservative message sources when trying to induce environmentally friendly behaviour. In summary, our analysis shows that papers that seek to convince conservatives of environmentally friendly behaviour often do so on the basis of MFT. Thereby they particularly try to appeal to the conservative values of loyalty, sanctity, and authority.

6.6.2 Religious frames

Religious frames, which can be thought of as a subset of moral frames, were analysed by three studies (McCright et al., 2016a; Severson und Coleman, 2015; Hazboun et al., 2019). Since these types of frames were used frequently enough, they should be briefly described separately.

In difference to moral frames, the observed religious frames only emphasized the moral foundation of purity. They did so by stressing religious obligations through emphasizing the duty of religious individuals for the stewardship over God's creation. This approach is also consistent with conservatives' stronger affiliation with religion, emphasized in Chapter 1. However, regardless of theoretical logic, none of these works were able to find especially strong framing effects of religious frames for conservative individuals.

6.6.3 Public health frames

Five of the studies analysed examined public health frames (McCright et al., 2016; Mossler et al., 2017; Schuldt et al., 2021; Feldman & Hart, 2018; Hazboun et al., 2019). Thereby these studies do not build on a specific theory, but on previous findings which found that issues of climate change such as air pollution, carbon pollution or ocean acidification carry strong negative connotations and are often perceived as major causes of public health problems. In order to induce environmentally friendly behaviour, public health frames therefore either connect these issues with climate change and/or use them as a term for the issue of climate change itself (e.g., Mossler et al., 2017). Findings in this area are consistent that regardless of political orientation, public health frames often have a significantly better performance in inducing environmentally friendly behaviour in comparison to frames that do not mention public health as an issue. However, among the studies there were no findings that this is especially true for conservatives.

6.6.4 Economic frames

Economic frames were also analysed by five studies (Severson & Coleman, 2015; McCright et al., 2016; Whitmarsh & Corner, 2017; Dharshing et al., 2017; Hazboun et al., 2019). Building mainly on the conservative principle of free market ideology, studies in this area try to influence environmentally friendly behaviour by, for example, presenting recycling or energy saving home improvements as good business cases (Whitmarsh & Corner, 2017; Hazboun et al., 2019).

Alternatively, another work in this area conducted by Dharshing et al., (2017), tried to use economic frames to either portray compensation payments as a "tax rebate" or a "subsidy". Thereby, the authors were trying to break motivational barriers of conservatives through addressing opposition to governmental interference (in form of taxes), which is why they assumed the "tax-rebate" frame to resonate more strongly with conservatives. Conformingly, the use of the "tax rebate" frame led to significantly stronger support of the payments among conservatives. This finding is consistent with others (e.g., Whitmarsh & Corner, 2017; Hazboun

et al., 2019), indicating that economic frames resonate strongly among conservative audiences. However, findings are inconsistent since some did not find these effects (McCright et al., 2016; Severson & Coleman, 2015).

6.6.5 Security frames

With a total of six, studies testing security frames were among the most common in our analysis (Feldman & Hart, 2018; Hazboun et al., 2019; McCright et al., 2016; Mossler et al., 2017; Motta et al., 2021; Whitmarsh & Corner, 2017). Theoretically, these studies build their frames on the assumption that people in general, but especially conservatives place great emphasis on security. In the studies under analysis, the most common frame in this area was the one of portraying renewable energy as a solution to gain energy security (e.g., Singh & Swanson, 2017). Thereby, frames of this kind often emphasized energy security as a national and patriotic issue since energy dependence on other countries is often seen to undermine national sovereignty (e.g., Whitmarsh & Corner 2017). All these values are consistent with conservative ideology as outlined in Chapter 1. However, studies of this kind found mixed results. The majority observed higher support for renewable energy among conservatives when compared to frames which emphasized renewable energy as a solution to global warming (Whitmarsh & Corner, 2017; Feldman & Hart, 2018; Hazboun et al., 2019), while others did not find such effects (e.g. Singh & Swanson, 2017).

Further, Motta et al., (2021) was the only study which actually framed climate change as a national security risk by emphasizing the possible consequences of climate change to US military bases around the world. Through additionally connecting the message to military members as sources, the authors found that conservatives were significantly more likely to believe in, as well as express concern about climate change when confronted with this type of frame than when confronted with messages emphasizing environmental consequences using climate scientists as sources. Together with the studies from the field of moral frames, these are further indications of the important role of the source of frames.

6.6.6 Label frames

Besides security frames, label frames were also among the most common ones (Mossler et al., 2017; Benjamin et al., 2017; Feldman & Hart, 2018; Dharshing et al., 2017; Hazboun et al., 2019, Schuldt et al., 2021). These studies examined the effects of different terms for referring to climate change or its consequences. Therefore, label frames can be understood as a different framing technique which is why they can be implemented in other frames by e.g., emphasizing

either the potentials of low carbon energy policies for the mitigation of “Climate Change” or “Global Warming”. Thereby this approach was divided into two different areas. The first one only compared the effect of using the terms “Global Warming” and “Climate Change” through interchangeably inserting them into the same frames (Benjamin et al., 2017; Mossler et al., 2017, Schuldt et al., 2021). This approach was made to bring clarity to different considerations. On the one hand, these scholars thought that “Global Warming” would strongly resonate with conservative audiences because of its more frightening character. On the other hand, they assumed also the opposite could be the case, due to the terms characteristic of being easier to invalidate because of its uni-directional connotation in comparison to “Climate Change”. However, two of the studies failed to find any effects, while Schuldt et al., (2021) found that conservatives expressed greater belief in the existence of “Climate Change” than “Global Warming”.

In addition, the second approach was using terms without reference to the climate itself (Feldman & Hart, 2018; Dharshing et al., 2017; Hazboun et al., 2019). This approach is theoretically based on the polarization regarding the topic in the USA. Due to this polarization, the scholars assumed that the mere mention of politically polarizing terms such as "climate change" activates partisan affiliations and subsequently prevents the processing of challenging information. For illustration, the findings of Feldman and Hart, (2018) can be mentioned. Through communicating a policy to reduce greenhouse gas emission either as a solution to Climate Change, Air Pollution or Energy Dependence, the authors were able to show that the support for the policy under conservatives was lowest in the climate change condition. These findings are consistent with others, implicating that to “Keep quiet on climate” (Hazboun et al., 2019, p. 1) might be a promising way to support environmentally friendly behaviour among conservatives (Dharshing et al., 2017; Mossler et al., 2017).

6.6.7 Intersecting and denial frames

As was already mentioned in the previous section, different kind of frames can appear simultaneously. In the context of our research question, two of the studies explicitly examined this form of framing (Schuldt et al., 2021; McCright et al., 2016). Based on the argument, that typical framing studies which isolate one particular frame “oversimplify “real world” communication settings in which audiences are often confronted with multiple alternative frames that compete for influence” (Schuldt et al., 2021, p. 2), these two studies test the effects of either frames that combine emphasis on? framing and label framing (Schuldt et al., 2021), or frames that appear at the same time but stand in opposition (McCright et al., 2016). Applying a

2x2 factorial design combining the label frames “Global Warming” and “Climate Change” with the emphasis frames “environmental consequences” and “public health”, Schuldt et al. (2021) found that isolated label framing effects disappeared when combined with emphasis frames. In line with this, McCright et al. (2016) found that positive framing effects of economic and security frames on conservative audiences vanished when these frames appeared in concurrence to climate change denial counter frames which more strongly resonate with conservatives prior dispositions. Anyway, it must be pointed out that the strategy applied by both authors is not the same. Schuldt et al., (2021) combined label and emphasis frames while observing their interaction. Thereby the authors introduced the concept of “Intersecting Frames“. In contrast, McCright et al., (2016) just examined the effect of two contradictory emphasis frames. Despite these differences, together these findings emphasize the importance of accounting for external validity when testing framing effects.

6.6.8 Past focus and psychological distance – dimensional frames

Among the studies analysed were also four studies examining frames that attempted to reinforce pro-environmental behaviour among conservatives by emphasizing temporal (Baldwin & Lammers, 2016; Kim et al., 2021; Stanley et al., 2021) or spatial (Chu & Yang, 2018) dimensions. As with intersecting frames, this form of framing can also be simultaneously applied to emphasis, label, and intersecting framing.

Studies applying temporal frames do so because of different theoretical considerations. Fundamental to this is that current climate change frames are often seen to adopt a future-focussed-temporal perspective, which “compares the current state of the earth against a possible future” (Baldwin & Lammers, 2016, p. 1). Conservatives, in contrast, are assumed to evaluate the present relative to the past, endorse the status quo as well as tradition and conformity which leads them to finally prefer the certainty of the present to the uncertainty of tomorrow. These theoretical assumptions expressed by Baldwin and Lammers (2016) are thereby highly equivalent to the outlined characteristics of conservatism in Chapter 1. Building on this, the studies analysed compared past focussed frames with future focussed ones. In these frames, the authors compared the present either with the past or the future. Thereby, the peculiarity was that the study of Kim et al. (2021) was a replication of the study of Baldwin and Lammers (2016). The latter found positive effects of past focussed frames on conservatives’ environmental attitudes and intentions, while the former did not. The third study, conducted by Stanley et al. (2021), only found positive effects for belief in climate change among

conservatives when confronted with a past-focussed frame, but not for policy support and environmental attitudes.

As mentioned above, the other dimension emphasized in the analysed studies was the one of spatial distance. The corresponding frames examined by Chu and Yang (2018) portrayed climate change impacts featuring either far or close spatial distance. This was theoretically based on *Construal Level Theory*, which posits that people think differently about events or objects when they are psychologically far or close from them (Trope and Liberman, 2010). Following the theory, framing climate change impacts as psychologically distant could induce environmentally friendly behaviour because people are more concerned with desirability of psychologically distant events. At the same time, the opposite could be the case, because the theory would also suggest that psychologically close events are seen to be more feasible. However, the theory does not make statements about people with conservative attitudes. Still, the authors found that the ideological polarization in people's climate change mitigation intentions decreased when they were exposed to messages featuring psychologically closer impacts on climate change. Further, distance framing rendered conservatives to be significantly less concerned about climate change and express less support for mitigation policies as well as exposure to psychologically close frames subsequently increased conservatives' policy support.

6.6.9 Environmental consequences frames

As was already mentioned in Chapter 4, the ideological polarization of attitudes towards climate change and the environment is often assumed to stem from the fact that “conventional” framing of climate change is mostly done in liberal fashion. Thereby, conventional framing mostly refers to frames that depict the environmental consequences of climate change for future life on earth. Further, this is often linked to scientific findings supporting these statements. Accordingly, in most of the studies analysed these environmental/scientific frames were examined in comparison to the frames introduced above. This was done to investigate alternative possibilities to the suspected insufficient effect of these “conventional” environmental/scientific frames on conservatives (as described in Chapter 2). However, the results did not always point in the expected direction. While the findings of some authors were in line with the assumptions and they found less strong effects of environmental frames than, for example, security or public health frames (e.g., Hazboun et al., 2019), others did not find any difference (e.g., Singh & Swanson, 2017). In some cases, environmental frames had even stronger effects on the environmental attitudes than for example moral frames (e.g., Severson & Coleman, 2015).

7 Discussion

We conducted a systematic literature review to identify and synthesize studies that examine the effect of frames on pro-environmental behaviour among people holding conservative attitudes. Through our search in Web of Science Core Collection, a total number of 18 articles were included into analysis. With reference to our research question, we identified a wide number of frames within these articles. In order to convince conservatives of environmentally friendly behaviour the most frequently examined frames were *moral frames*, *economic frames*, *(national) security frames* and *label frames*. However, *religious frames*, *temporal frames*, and *psychological distance frames* also received considerable attention. Thereby, it can be observed that many of the identified frames are in line with core conservative values. That is, they link the call for environmentally friendly behaviour with conservative beliefs (see Chapter 2) to break down motivational resistance. This was done by all the listed frames above, except for psychological distance frames. Accordingly, positive effects regarding pro-environmental behaviour among conservatives could be found for most of these frames, even though results were often mixed. However, psychological distance frames did not explicitly address conservative values and still achieved positive effects.

Furthermore, the analysis shows that although most of the conservative values presented in Chapter 2 were reflected in the frames, this was not true for all of them. The central values, resistance to change and endorsement of inequality or peripheral aspects such as preference for order and stability (Jost et al., 2003), were not explicitly examined. Little attention was also paid to framing techniques that consciously applied more than one frame at the same time. While two studies applied *intersecting frames* and *denial frames* and thereby tried to more closely approach the complexity of real-world communication, this field seems to be understudied. Together with frames that received little attention, and left out possibilities for emphasizing other conservative values, this represents a knowledge gap and corresponding opportunities for future research. Either way, also the more frequently examined frames should be examined further. That is because the literature base was generally small which indicates that the whole research field of “framing for environmentally friendly behaviour among conservatives” deserves more scholarly attention in the future. This was further highlighted by the fact that our search could not identify any existing meta-analyses on this topic, and accordingly no existing framing typologies could be used to conceptualize the frames. Our framing typology (see Table 1, Appendix) represents a first attempt to summarize the existing frames in this area and should be adapted and revised by future work.

The examination of the bibliographic data and methodology variables also reveals some trends in the literature. First, the studies' publication data show consistency with other meta-analyses in the context of framing and climate change (e.g., Badullovich et al., 2020). This finding indicates the validity of our search strategy. However, regarding the studies location data, our analysis contained a much higher proportion of studies conducted in the USA (96 %) than that of Badullovich et al. (2020), (50 %). Therefore, we must acknowledge that the insights we gained almost exclusively originate from the US. The scope of our review is accordingly limited to this specific socio-political context, in which there is high political polarisation on climate change and environmentalism. Future research would therefore benefit from conducting more studies outside the US as well as conducting more multinational comparison studies. Such studies would also profit from using larger, representative samples since the studies included in our review mostly used small samples ranging from 150 to 500. Further, only two samples were representative of the US national population.

Important findings were also gained from analysing the applied measures of frame effectiveness. Here the central finding is that two of the three most frequently applied measures were not explicitly related to behaviour. That was, *support for policies* and *belief in (anthropogenic) climate change*. Because scholars like Leviston et al. (2015) have shown that attitudes do not necessarily translate into meaningful behaviour, future studies could benefit from a stronger focus on behaviour related variables. This could be done through applying measures which account for actual behaviour and not just intentions. Although such experimental designs request considerably more effort, external validity of studies would probably be improved through applying such approaches.

The investigation of the ways used to communicate the frames also revealed interesting results. Thereby one of the most central findings is, that apart from two authors (Schuldt et al., 2021; McCright et al., 2016) which examined *intersecting* and *competing (denial) frames*, all of the studies investigated the unidimensional way of communication in which one particular frame is expected to have a particular outcome in attitude or behaviour. However, as already mentioned above this falls short of real-world communication in which competing climate change frames exist together and in contexts where there is two-way communication (Chong & Druckmann 2007a). Therefore, progress in this area could be made through addressing this research gap by conducting more studies investigating the effects of frames in a competing environment. Further, two-way communication could be accounted for by examining effects for e.g., conversations after exposure. Additionally, the studies communicated their frames

primarily using short texts or newspaper articles. Very few used images or videos and even fewer combined text and images or videos. Given the increasing consumption of media content that is primarily digital, future studies should more strongly investigate contemporary media communication methods. That is, because those forms of communication might be of importance for the strength of frames, since through their simultaneous use of text and visuals they are capable of transporting one message in different ways. Thus, they could meet the strength criterion of repetition of frames as discussed in Chapter 3.2. Besides repetition, the strength criterion of credible source also received little attention. However, studies that did examine this factor (Feinberg & Willer, 2013; Hurst & Stern, 2020; Motta et al., 2021) showed promising results in the way that communicating frames through “conservative” sources resulted in stronger framing effects. Therefore, the investigation of the factor message source also holds potential for future research.

In summary, through our systematic literature review we have been able to show that a wide number of frames are explored to persuade conservatives of pro-environmental behaviour and that this area of research is of current scholarly interest. However, some frames have received more attention and some less. Other potential frames have not been investigated at all. Furthermore, the literature analysed shows a trend towards small and non-representative samples, as well as that the studies analysed are conducted almost exclusively in the USA. Moreover, although measures applied to measure framing effects do account for behavioural intentions, there is a trend to focus more on attitudes such as policy support or belief in (anthropogenic) climate change. Another key finding is that most of the studies explore unidimensional ways of communication and thereby mostly use text messages. Subsequently this does not meet criteria of real-world communication and leaves out potential of investigating more “modern” forms of communication as well as putting more effort into examining strength criteria for frames such as competition, repetition, and message source.

Although we were able to partly answer our research question through summarizing and synthesizing the existing frames in the literature as well as highlighting trends and shortcomings, our approach contains important limitations that we will shortly touch upon in interest of full transparency. First, citations in the studies we have analysed revealed that there was relevant literature we did not include in our review. Often this was because these papers did not include variations of “framing” but rather terms such as e.g., “priming” in their titles or abstracts. Therefore, they could not be identified through our keyword string. This finding once again calls for consistent use of terms within the framing discourse. Furthermore, our findings

are limited by the restriction to experimental studies which were already published in scientific journals. As was made evident by Badullovich et al. (2020), grey literature and observational studies constitute a significant part of the framing literature in the context of climate change. Thereby, the inclusion of these studies might have changed our results significantly. That is, because the inclusion of observational studies would have offered potential for examining the effects of visual media and the investigation of effects on actual behavioural changes. Another limitation is due to limiting the language of articles to English and German. Although exclusions for this reason were little, the inclusion of these articles might reduce the problem of geographical concentration of studies. Finally, our results are characterized by the ambiguous use of the term conservative. Since most of the studies come from the US, we also included studies that examined framing effects on republicans, whereby we equated the two terms. This results in conceptual inaccuracies that should be avoided in future work.

In addition to the suggestions for future research already made above, the most important contribution of our analysis is that it can be used as a starting point in this comparably understudied field. Through presenting a summary of the existing frames, our review can serve to more easily identify the sub-types of frames examined to induce environmentally friendly behaviour among conservatives. Subsequently these could be investigated in the form of a meta-analysis. By applying such methods, it would be possible to evaluate not just the existence but the actual effects of different frames to persuade conservatives of environmentally friendly behaviour and subsequently use these findings for the benefit of climate change communication.

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Table 1 Framing typology

Table 1

Framing typology

Name of the frame	Description
Emphasis frames	
moral frames	Portrays environmentally friendly behaviour in accordance with basic moral principles of conservatively minded people in the sense of Moral Foundations Theory.
religious frames	portrays environmentally friendly behaviour as stewardship over God's creation.
public health frames	links climate change or environmental degradation to its consequences for public health and portrays environmentally friendly behaviour as measures to mitigate these consequences.
economic frames	links environmentally friendly behaviour to possible economic benefits.
(national) security frames	portrays environmentally friendly behaviour as a way of gaining national (energy) security or preventing security risks arising from climate change.
denial frames	deny the reality of climate change and its consequences while at the same time doubting the effectiveness of measures against it.
past focus frames	applies past- rather than future-focused comparisons of environmental condition.
psychological distance frames	portray climate change and especially its impacts as either spatially distant or close.
environmental consequences/scientific frames	describe the consequences of climate change or measures against it for future life on earth. Often accompanied by scientific facts.
Label frames	
label frames	use different terms to refer to the same phenomenon. In this case to describe climate change or its impacts.
Intersecting frames	
intersecting frames	combine different label and emphasis frames.

Table 2 Concept matrix

Table 2

Concept Matrix

Article	Concept Matrix										
	moral frame	Religious frames	public health frame	economic frame	temporal frame	(national) security frame	environmental consequences/scientific frame	label frame	psychological distance frame	intersecting frame	denial frame
1. Feinberg & Willer (2013)	1										
2. Wolsko et al. (2016)	1										
3. Severson & Coleman, (2015)	1	1		1							
4. McCright, et al. (2016)		1	1	1		1					1
5. Baldwin & Lammers (2016)					1						
6. Kim et al. (2021)					1						
7. Stanley et al. (2021)					1						
8. Hurst & Stern (2020)	1										
9. Whitmarsh & Corner (2017)				1		1					
10. Mossler et al., (2017)			1					1			
11. Singh & Swanson, M. (2017)						1	1				
12. Benjamin, et al. (2017)								1			
13. Dharshing , et al. (2017)				1				1			
14. Feldman & Hart (2018)			1			1		1			
15. Chu & Yang (2018)									1		
16. Hazboun et al. (2019)		1	1	1		1	1	1			
17. Motta, et al. (2021)						1					
18. Schuldt et al. (2021).			1				1			1	

Table 3 Inclusion criteria

Table 3

Inclusion criteria

Inclusion criteria

Question key - elements	Description	Inclusion criteria
Population (is the Article related to the research question?)	The body of literature investigating the effects of framing on changing conservative's attitudes toward environmentally friendly behaviour	Is it a defined piece of scholarly literature? Included are Journal articles examining framing effects on conservatives attitudes towards environmentally friendly behaviour and attitudes. This includes effects on attitudes towards climate change and the environment and/or nature, attitudes towards measures to mitigate climate change (such as e.g., renewable energy) or measures to protect the environment (such as e.g., recycling) as well as intentions to participate in such measures or act accordingly.
Intervention	The use of frames to try to change environmentally friendly behaviour or attitudes.	Does the article examine the effects of media frames (not individual frames) on intentions towards environmentally friendly behaviour (and or environmentally friendly attitudes) among conservatives? Included are articles which examine frames as the independent variable and environmentally friendly behaviour of conservatives as the dependent variable.
Comparison	Comparing framing effects on people holding conservative attitudes with framing effects on people with other political ideologies. Is there a control group?	Does the article compare the effects of framing on conservatives' intentions of environmentally friendly behaviour (and/or environmentally friendly attitudes) to framing effects on people holding other political ideologies? Included are articles that do so and test the effects on a control group.

Figure 1 Number of publications per year

Figure 1

Number of publications per year

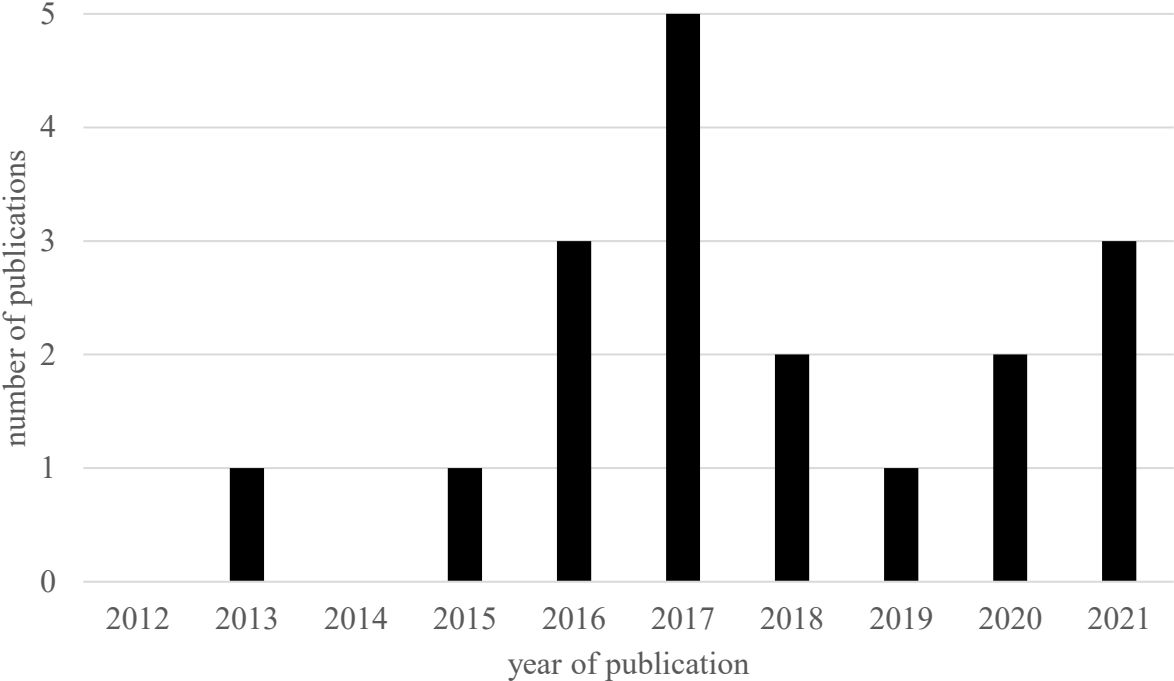


Table 4 Journal-articles included to full text review

Table 4

Journal-articles included to full text review with reasons for exclusion

Article	Exclud ed (0)/ Include d (1)	Reason
1. Feinberg, M., & Willer, R. (2013). The moral roots of environmental attitudes. <i>Psychological science</i> , 24(1), 56-62.	1	Article fulfils inclusion criteria.
2. Wolsko, C., Ariceaga, H., & Seiden, J. (2016). Red, white, and blue enough to be green: Effects of moral framing on climate change attitudes and conservation behaviors. <i>Journal of Experimental Social Psychology</i> , 65, 7-19.	1	Article fulfils inclusion criteria.
3. Lybecker, D. L., McBeth, M. K., & Kusko, E. (2013). Trash or treasure: recycling narratives and reducing political polarisation. <i>Environmental Politics</i> , 22(2), 312-332.	0	Article focusses on framing effects on “duty-based citizens”, not on conservatives. Therefore, it does not fulfil inclusion criteria.
4. Schuldt, J. P., & Roh, S. (2014). Media frames and cognitive accessibility: What do “global warming” and “climate change” evoke in partisan minds? <i>Environmental Communication</i> , 8(4), 529-548.	0	Article focusses on measuring individual frames. Therefore, it does not fulfil inclusion criteria.
5. Clarke, C. E., Hart, P. S., Schuldt, J. P., Evensen, D. T., Boudet, H. S., Jacquet, J. B., & Stedman, R. C. (2015). Public opinion on energy development: the interplay of issue framing, top-of-mind associations, and political ideology. <i>Energy Policy</i> , 81, 131-140.	0	Article focusses on framing effects on hydraulic fracturing. Therefore, it does not fulfil inclusion criteria.
6. Severson, A. W., & Coleman, E. A. (2015). Moral frames and climate change policy attitudes. <i>Social Science Quarterly</i> , 96(5), 1277-1290.	1	Article fulfils inclusion criteria.
7. McCright, A. M., Charters, M., Dentzman, K., & Dietz, T. (2016). Examining the effectiveness of climate change frames in the face of a climate change denial counter-frame. <i>Topics in cognitive science</i> , 8(1), 76-97.	1	Article fulfils inclusion criteria.
8. Baldwin, M., & Lammers, J. (2016). Past-focused environmental comparisons promote proenvironmental outcomes for conservatives. <i>Proceedings of the National Academy of Sciences</i> , 113(52), 14953-14957.	1	Article fulfils inclusion criteria.
9. Whitmarsh, L., & Corner, A. (2017). Tools for a new climate conversation: A mixed-methods study of language for public engagement across the political spectrum. <i>Global environmental change</i> , 42, 122-135.	1	Fulfils inclusion criteria because the term “narratives” can be interchangeably used to “frames” in this work.
10. Mossler, M. V., Bostrom, A., Kelly, R. P., Crosman, K. M., & Moy, P. (2017). How does framing affect policy support for emissions mitigation? Testing the effects of ocean acidification and other carbon emissions frames. <i>Global environmental change</i> , 45, 63-78.	1	Article fulfils inclusion criteria.
11. Singh, S. P., & Swanson, M. (2017). How issue frames shape beliefs about the importance of climate change policy across ideological and partisan groups. <i>PloS one</i> , 12(7), e0181401.	1	Article fulfils inclusion criteria.

12.	Benjamin, D., Por, H. H., & Budescu, D. (2017). Climate change versus global warming: who is susceptible to the framing of climate change? <i>Environment and Behavior</i> , 49(7), 745-770.	1	Article fulfils inclusion criteria
13.	Dharshing, S., Hille, S. L., & Wüstenhagen, R. (2017). The influence of political orientation on the strength and temporal persistence of policy framing effects. <i>Ecological Economics</i> , 142, 295-305.	1	Article fulfils inclusion criteria
14.	Foss, A. (2018). Divergent responses to sustainability and climate change planning: The role of politics, cultural frames and public participation. <i>Urban Studies</i> , 55(2), 332-348.	0	Does not focus on conservatism or political ideology. Therefore, it does not fulfil inclusion criteria.
15.	Hamilton, L. C., Bell, E., Hartter, J., & Salerno, J. D. (2018). A change in the wind? US public views on renewable energy and climate compared. <i>Energy, Sustainability and Society</i> , 8(1), 1-13.	0	Focusses on differences in attitudes towards anthropogenic climate change and renewable energy. Therefore, it does not fulfil inclusion criteria.
16.	Feldman, L., & Hart, P. (2018). Broadening exposure to climate change news? How framing and political orientation interact to influence selective exposure. <i>Journal of Communication</i> , 68(3), 503-524.	0	Focusses on exposure to climate change news. Therefore, it does not fulfil inclusion criteria.
17.	Feldman, L., & Hart, P. S. (2018). Climate change as a polarizing cue: Framing effects on public support for low-carbon energy policies. <i>Global Environmental Change</i> , 51, 54-66.	1	Article fulfils inclusion criteria.
18.	Chu, H., & Yang, J. Z. (2018). Taking climate change here and now—mitigating ideological polarization with psychological distance. <i>Global Environmental Change</i> , 53, 174-181.	1	Article fulfils inclusion criteria.
19.	Dean, A. J., Fielding, K. S., & Wilson, K. A. (2019). Building community support for coastal management—What types of messages are most effective? <i>Environmental Science & Policy</i> , 92, 161-169.	0	Article is to geographically focused.
20.	Nolan, J. M., & Tobia, S. E. (2019). Public support for global warming policies: solution framing matters. <i>Climatic Change</i> , 154(3), 493-509.	0	Article does not test media frames experimentally. Therefore, it does not fulfil inclusion criteria.
21.	You, M., & Ju, Y. (2019). Interaction of individual framing and political orientation in guiding climate change risk perception. <i>Journal of Risk Research</i> , 22(7), 865-877.	0	Article does not focus on media framing but on individual framing preferences of conservatives. Therefore, it does not fulfil inclusion criteria.
22.	DeGolia, A. H., Hiroyasu, E. H., & Anderson, S. E. (2019). Economic losses or environmental gains? Framing effects on public support for environmental management. <i>PloS one</i> , 14(7), e0220320.	0	Article focusses on support for management of invasive species. Since this issue is not directly related to climate change and is also not connected to climate change or environmentalism in the article, the article does not fulfil inclusion criteria.
23.	Hazboun, S. O., Briscoe, M., Givens, J., & Krannich, R. (2019). Keep quiet on climate: Assessing public response to seven renewable energy frames in the Western United States. <i>Energy Research & Social Science</i> , 57, 101243.	1	Article fulfils inclusion criteria
24.	Hurst, K., & Stern, M. J. (2020). Messaging for environmental action: The role of moral framing and message source. <i>Journal of Environmental Psychology</i> , 68, 101394.	1	Fulfils inclusion criteria
25.	Diamond, E. P. (2020). The influence of identity salience on framing effectiveness: An experiment. <i>Political Psychology</i> , 41(6), 1133-1150.	0	Focusses on priming. Therefore, it does not fulfil inclusion criteria.
26.	Motta, M., Ralston, R., & Spindel, J. (2021). A call to arms for climate change? How military service member concern about climate change Can inform effective climate	1	Article fulfils inclusion criteria

	communication. <i>Environmental Communication</i> , 15(1), 85-98.		
27.	Chu, H., & Yang, J. (2020). Their economy and our health: Communicating climate change to the divided american public. <i>International Journal of Environmental Research and Public Health</i> , 17(21), 7718.	0	Article does not focus on framing effects.
28.	Hart, P. S., & Feldman, L. (2021). The benefit of focusing on air pollution instead of climate change: how discussing power plant emissions in the context of air pollution, rather than climate change, influences perceived benefits, costs, and political action for policies to limit emissions. <i>Science Communication</i> , 43(2), 199-224.	0	Article does not focus on framing effects on conservatives or political ideologies in general. Therefore, it does not fulfil inclusion criteria.
29.	Kim, I., Hammond, M. D., & Milfont, T. L. (2021). Do past-focused environmental messages promote pro-environmentalism to conservatives? A pre-registered replication. <i>Journal of Environmental Psychology</i> , 73, 101547.	1	Article fulfils inclusion criteria.
30.	Stanley, S. K., Klas, A., Clarke, E. J., & Walker, I. (2021). The effects of a temporal framing manipulation on environmentalism: A replication and extension. <i>PloS one</i> , 16(2), e0246058.	1	Article fulfils inclusion criteria.
31.	Schuldt, J. P., McComas, K. A., & Burge, C. A. (2021). Intersecting frames in communicating environmental risk and uncertainty. <i>Journal of Risk Research</i> , 24(5), 562-573.	1	Article fulfils inclusion criteria.
32.	DiRusso, C., & Myrick, J. G. (2021). Sustainability in CSR Messages on Social Media: How Emotional Framing and Efficacy Affect Emotional Response, Memory and Persuasion. <i>Environmental Communication</i> , 15(8), 1045-1060.	0	Article does not explicitly focus on environmentally friendly behaviour. Therefore, it does not fulfil inclusion criteria.
33.	Holmes, D., Garas, B., & Richardson, L. M. (2021). Australian Newspaper Framing of Renewables: The Case of Snowy Hydro 2.0. <i>Environmental Communication</i> , 1-20.	0	Article does not focus on framing effects on conservatives or political ideology in general. Therefore, it does not fulfil inclusion criteria.
34.	Feldman, L., & Hart, P. (2021). Upping the ante? The effects of “emergency” and “crisis” framing in climate change news. <i>Climatic Change</i> , 169(1), 1-20.	0	Article focusses on media frames. Therefore, it does not fulfil inclusion criteria.
35.	Sapiains, R., Beeton, R. J., & Walker, I. A. (2016). Individual responses to climate change: Framing effects on pro-environmental behaviours. <i>Journal of Applied Social Psychology</i> , 46(8), 483-493.	0	Article does not focus on conservatism but rather on climate change denialism. Therefore, it does not fulfil inclusion criteria.

Table 5 Employed measurements of framing effects

Table 5

Employed measurements of framing effects

Article	Policy support	CC Concern	Risk Perception	Believe in (anthropogenic) CC, Believe in Climate Science	Environmental attitudes (e.g., “we should change how we interact with the environment”)	Willingness to act (e.g., donations, lifestyle change), behavioural intention (signing a petition, recycling etc.)	Agreement with (governmental) action to reduce CC	Agreement with frames employed	Affective Response to CC	Attitudes towards pro-environmental legislation	Measures of Interest in learning about environmental bad behaviour.	Number of measurements employed in one study
1. Feinberg & Willer (2013)			1	1						1		3
2. Wolsko, et al. (2016)		1	1			1						3
3. Severson, & Coleman (2015)												1
4. McCright et al., (2016)		1	1				1					3
5. Baldwin & Lammers (2016)				1	1							2
6. Kim et al. (2021)				1								1
7. Stanley et al., (2021)			1			1						3
8. Hurst & Stern (2020)						1	1				1	3
9. Whitmarsh & Corner (2017)		1	1			1						4
10. Mossler et al., (2017)												1
11. Singh & Swanson (2017)												1
12. Benjamin & Budescu (2017)		1	1			1						3
13. Dharshing et al. (2017)							1					1
14. Feldman & Hart (2018)												1
15. Chu & Yang (2018)		1				1			1			4
16. Hazboun et al., (2019)								1				1
17. Motta et al. (2021)		1	1									3
18. Schuldt et al. (2021)			1									2
Number of Studies employing one measurement		6	8	3	7	3	1	1	1	1	1	

Table 6 Ways of communicating the frames

Table 6

Ways of communicating the frames

Article	Way of communicating the frame				
	Newspaper article, Text	Picture or videos	Combination of text and pictures or videos	Questions as frames	Exposure to past/future focussed website
1. Feinberg & Willer (2013)	1				
2. Wolsko, et al. (2016)			1 (text + pictures)		
3. Severson, & Coleman (2015)	1				
4. McCright et al., (2016)	1				
5. Baldwin & Lammers (2016) Study 1	1				
6. Baldwin & Lammers (2016) Study 2	1				
7. Baldwin & Lammers (2016) Study 3		1			
8. Baldwin & Lammers (2016) Study 4b					1
9. Baldwin & Lammers (2016) Study 5					1
10. Baldwin & Lammers (2016) Study 6					1
11. Kim et al. (2021) Study 1	1				
12. Kim et al. (2021) Study 2	1				
13. Stanley et al., (2021) Study 1		1			
14. Stanley et al., (2021) Study 2		1			
15. Hurst & Stern (2020) study 1	1				
16. Hurst & Stern (2020) study 2	1				
17. Whitmarsh & Corner (2017) Study 2	1				
18. Mossler et al. (2017) Study 1				1	
19. Singh et al. (2017) Study 1	1				
20. Benjamin & Budescu (2017) Study 1	1			1	
21. Dharshing et al. (2017) Study 1	1				
22. Feldman & Hart (2018) Study 1	1			1	
23. Chu & Yang (2018) Study 1			1 (animated videos)		
24. Hazboun et al., (2019)				1	
25. Motta et al. (2021)	1				
26. Schuldt et al. (2021)	1				
Total number of studies using this way of communicating the frame.	16	3	2	4	3

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10 Deutsche Zusammenfassung

Der Klimawandel ist zweifellos die größte Krise unserer Zeit. Doch trotz großen wissenschaftlichen Konsenses über seine Ursachen und die zu erwartenden Folgen, finden Maßnahmen zu seiner Eindämmung in westlichen Demokratien noch immer nicht genügend Zustimmung. Einer der Gründe dafür ist die Ablehnung umweltfreundlichen Verhaltens durch Menschen mit konservativen Einstellungen. Im Vergleich zu Liberalen neigen Konservative weniger stark zu umweltfreundlichen Verhalten, zeigen weniger Unterstützung für Gesetze zum Schutz des Klimas und machen sich weniger Gedanken über Umweltprobleme (Wolsko et al., 2016). Nach der Theorie der motivierten Informationsverarbeitung (Jacquet et al. 2014) ist diese negative Korrelation hauptsächlich darauf zurückzuführen, dass der öffentliche Diskurs zum Klimawandel in überwiegend liberaler Weise geframed wird (Hart & Nisbet, 2012). Vor diesem Hintergrund argumentieren Wissenschaftler:innen, dass ein stärker konservatives Framing von Forderungen nach umweltfreundlichem Verhalten dazu beitragen könnte, motivationale Widerstände von Konservativen zu überwinden (Feinberg & Willer, 2013). Dieser Beitrag gibt anhand einer systematischen Literaturübersicht einen Überblick über Studien, die genau diese Hypothese untersuchen. Dabei haben wir uns auf die Identifizierung und Beschreibung der in den Studien untersuchten Frames konzentriert. Die Ergebnisse zeigen, dass die am häufigsten verwendeten Frames *Moralische-*, *(nationale) Sicherheits-*, *Wirtschafts-* und *Label-Frames* waren. Weniger häufig wurden *Religiöse-*, *Zeitliche- (temporal)-* und *Psychologische Distanz- (psychological distance) Frames* untersucht. Mit Blick auf die bibliographischen Daten zeigt sich zudem, dass das Thema von aktuellem wissenschaftlichem Interesse ist, wobei der überwiegende Teil der Studien in den USA durchgeführt wird. Die methodische Analyse zeigte außerdem, dass zur Messung von Framingeffekten häufig einstellungs- und nicht handlungsfokussierte Variablen verwendet werden. Häufig ist die externe Validität der Befunde zudem dadurch eingeschränkt, dass selten die parallele Wirkung mehrerer Frames gleichzeitig untersucht wird. Darüber hinaus wird der Bedeutung von Quellen sowie der Frame-Wiederholungen und der Verwendung moderner Kommunikationswege in der Forschung zu wenig Aufmerksamkeit geschenkt. Zukünftige Forschungsarbeiten sollten versuchen diese Lücken zu schließen und auf der Grundlage der von uns entwickelten Framing-Typologie die tatsächliche Wirkung der identifizierten Frames meta-analytisch zu untersuchen.

11 Declaration of originality

I confirm that this assignment is my own work and that I have not sought or used inadmissible help of third parties to produce this work and that I have clearly referenced all sources used in the work. I have fully referenced and used inverted commas for all text directly or indirectly quoted from a source. This work has not yet been submitted to another examination institution – neither in Germany nor outside Germany – neither in the same nor in a similar way and has not yet been published.

I do not have any objections for this bachelor thesis being accessible for public use

Jena den 07.05.2022

Jelle Stollwerk

Eigenständigkeitserklärung

Ich erkläre, dass ich die vorliegende Arbeit selbstständig und nur unter Verwendung der angegebenen Hilfsmittel und Quellen angefertigt habe. Die eingereichte Arbeit ist nicht anderweitig als Prüfungsleistung verwendet worden oder in deutscher oder einer anderen Sprache als Veröffentlichung erschienen.

Seitens des Verfassers bestehen keine Einwände, die vorliegende Bachelorarbeit für die öffentliche Benutzung zur Verfügung zu stellen.

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