Public attitudes toward climate policies: The effect of institutional contexts and political values

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Abstract
This study contributes to the literature on public responses to climate policies in two ways. We investigate the effect of institutional contexts on attitudes toward policies, and we examine the relevance of political values for these effects. Institutional theory suggests that the institutional context influences whether "individual rationality" (IR) or "social rationality" (SR) frames choices. To investigate the effects of such contexts and political values on attitudes toward policies aimed at reducing private car use, we conducted a survey experiment involving 1500 car owners in Oslo, Norway. One group of respondents received a text emphasizing the individual health gains from reducing local air pollution (IR context), a second group received a text emphasizing the social responsibility for avoiding climate change (SR context), and a control group received no such text. We found effects of the contexts on attitudes toward emission-reducing policies, and found that the effects vary across individuals with different political values. The SR context yielded higher support for an increase in petrol prices among non-individualists only. The IR context yielded higher support for a decrease in space for cars among both non-individualists and individualists. Ways forward regarding expanding this field of research are discussed.

Keywords: institutional context, climate policies, public attitudes, values

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1 Introduction

Climate change is a major public policy issue, with related effects likely to be extensive and potentially devastating (IPCC, 2013, 2014). It is widely accepted that avoiding dangerous climate change will require urgent mitigation and significant societal changes. However, lack of broad public support is a major barrier to realizing a transition to a low-carbon economy (Wiseman et al., 2013; Höppner and Whitmarsh, 2010; Pietsch and McAllister, 2010). One approach to increasing public support for emission-reducing policies is to create contexts where individual contribution to a social good is emphasized as correct. This approach uses the assumption that different rationalities may co-exist in one person. It further builds on the proposition that the institutional context influences what is considered to be the right thing to do in response to a social dilemma (March and Olsen, 1989). The context may emphasize individual rationality. It may, however, be formed to support social rationality (Vatn, 2015).

The effect of institutional contexts on environmentally relevant choices and attitudes is particularly interesting in an era of unsolved environmental problems. Despite extensive commentary on this issue in the policy and academic literatures (Devine-Wright et al., 2015; Spence and Pidgeon, 2010), relatively little field research has examined the effects of such contexts on attitudes toward policies aimed at solving social dilemmas, such as climate change. We contribute to this field by investigating the effect of different institutional contexts on car owners' attitudes toward policies to cut car emissions. Several researchers[i] identify people's degree of political value orientation – that is, position on state involvement and regulation – to be important for their attitudes toward climate policies. Therefore, we also investigate whether the effects on attitudes from institutional contexts differ in different value groups. Specifically, we ask:

1) Does institutional context affect attitudes toward policies to cut car emissions?
2) Does institutional context affect these attitudes differently among people with different political value orientations?

We employed a survey experiment to answer these questions, involving 1500 car owners in Oslo, Norway. We varied the institutional context experimentally by randomly assigning the participants

to one of three groups receiving different text treatments, and asked about their attitudes toward policies aimed at reducing emissions from private car use. One text emphasized the individual health gain from reducing local air pollution (IR context), and the other emphasized the social responsibility for avoiding climate change (SR context); the control group received no such text treatment. "Attitudes toward policies" refers to disagreement or agreement with statements about policies that involve different degrees of individual loss and social gain: 1) increasing petrol prices, 2) decreasing the space for cars to develop more bike lanes and public transport, and 3) respondents' willingness to voluntarily choose public or bike transport despite longer travel time.

In section 2 we present the theoretical perspective applied in this study. In section 3 we review previous studies of the effect of institutional context on public support for climate policies. The method is presented in section 4, and the analysis and its results in section 5. In section 6 we conclude.

2 Institutional contexts, values and attitudes toward climate policies

2.1 Concepts and theories

Institutions are here understood as conventions, norms, and legal rules of a society. They influence attitudes and action by defining what is seen as the "natural" way to act (conventions), the right way to act (norms), and/or the sanctioned form of action (the law) (Vatn, 2015). According to institutional theory, humans are regarded as multi rational (Hodgson, 2007, 1988; Sjöstrand, 1995). Moreover, the kind of rationality involved is understood to be influenced by the institutional context. Institutions create expectations and give meaning to individual action. Such expectations and meanings can vary between institutional contexts such as the market, the community, and the family (Scott, 2014).

Institutional contexts define the expected rationality or logic as specific to various arenas of human action and interaction. Institutional contexts may for instance support individual rationality (IR), what is best for the individual, or social rationality (SR), what is best for a group or for others (Vatn, 2009). An IR context emphasizes an "I" logic and a SR context emphasizes a "we" or a "they" logic. For instance, in some contexts, such as a market, choosing what is best for the individual – "maximizing individual utility" – is emphasized. In a family context, care is a dominant

norm. When being faced with a "situation," people will, consciously or unconsciously, look for information that specifies what kind of context they are confronted with and what type of action is expected. The definition of the situation informs the person about what institutions apply (Weber et al., 2004).

Assigning roles – for instance citizen or consumer, mother or teacher – is a way to define a set of conventions and norms regarding what are expected actions. As such, these roles support specific forms of rationality (e.g., Soma and Vatn, 2014, 2010; Liberman et al., 2004). Ostrom (2000), Biel and Thøgersen (2007), and Vatn (2015) offer examples from different experiments and areas of life supporting this type of relationship between rationality and institutional context.

While the institutional context may be explicitly defined by reference to, for example, norms or from being assigned a role, an institutional context may also be informationally induced. For instance, the content of information offered about an issue may activate a held norm. One may learn something new that alters beliefs and what is considered correct to do (Dietz and Stern, 2002). Learning that an issue influences mainly one's own life may evoke other norms than if one learns that one's own action influences the situation of other people. In the latter case, norms regarding social responsibility may be evoked. Information may also induce an institutional context without changing beliefs or knowledge. The information's content may emphasize a certain aspect of an issue, and cause individuals to focus on this aspect instead of on others (Nisbet, 2009).[ii] For instance, Sniderman and Theriault (2004) found that when information about government spending for the poor was characterized as enhancing poor people's opportunities, individuals tended to support increased spending. However, when such spending was characterized as resulting in higher taxes, individuals tended to oppose the increased spending.

Institutional context may thus influence attitudes toward policies. Attitudes, the dependent variable analyzed in this study, are commonly understood as psychological tendencies that are expressed by evaluating a particular entity with some degree of favor or disfavor (Eagly and Chaiken, 1998). The entity may be for instance a person, or a policy. However, a person's attitude toward policies is also dependent on individual characteristics like values, as partly formed by an individual's "institutional history" (Vatn, 2015).

Values are in social science seen as central for evaluations of individuals' actions, choices, and attitudes. They are "desirable trans-situational goals varying in importance, which serve as guiding principles in the life of a person" (Schwartz, 1994, p. 21). Rokeach (1973) argues that we can classify values in domains or spheres. Accordingly, political values can be defined as the category of values that pertain to the political sphere, and refers in this paper to peoples's positions on state involvement and regulation, following Karlsen and Aardal (2016).

Values may be important for people's interpretation of information in situations and for defining institutional contexts. Individuals will search for cues, consciously or unconsciously, to interpret the situation. The definition of the situation informs the person about what institutions apply. Individuals' idiosyncratic dispositions, such as values, may affect which situational cues they attend to, and how much weight the cues are given (Weber et al., 2004).

However, few individuals hold only one set of values entirely at the expense of other sets (Stern et al., 1993). For instance, a person who is generally against state involvement and regulation may support a specific regulation if it supports other values which that individual holds. Such support for a policy may increase without changes in value orientation as measured in surveys. Institutional context may change the relevance of a value for an attitude, which may manifest itself in changes in correlations between the value and the attitude in a statistical analysis.

2.2 Previous studies

Empirical studies on the effects from what are here defined as institutional contexts on attitudes toward climate policies are relatively rare. Recently however, a few studies have been published that one may interpret to directly or indirectly allude to effects of institutions. These studies are not typically framed within institutional theory, but range from analyses referring to so-called attribution framing and loss versus gain frames (Kahneman and Tversky's (1979) prospect theory)[iii] to theories on social norms in psychology (e.g. Cialdini et al.'s (1991) focus theory of normative conduct)[iv]. Institutional theory deviates from these theories in that it offers a stronger focus on framing as part of social dynamics.

For instance, Bolsen et al. (2014) refer to attribution framing in their study applying a survey experiment. They found that behavior intention was affected by a text treatment that both referred

to a norm – that all individuals have a responsibility for making environmentally friendly choices – and described environmental benefits for society. Respondents who received this text treatment showed higher willingness to invest in energy conservation and to pay more for insulating homes than did respondents who received no such text treatment. Both the reference to a norm and/or the information about the environmental effect might have affected respondents' willingness. The information about the consequences of the environmental effect on other people may have influenced respondents to think that making an effort is correct.

Spence and Pidgeon (2010) asked one group of respondents to evaluate mitigation from a personal perspective only and asked another group to evaluate mitigation from a social perspective, that is, as a member of society. Here, the answers given depended on the perspective emphasized. Those asked to evaluate policies from a social perspective were more positive toward mitigation policies than were those asked to evaluate policies from a personal perspective. The authors suggest that this result may be because distant effects are perceived to be more severe than local and personal effects. The result may also have come about because a logic of supporting a common good may have been established in the social perspective treatment. Employing framing theory, Gifford and Comeau (2011) similarly investigated the effects of two text treatments in a survey experiment where one treatment emphasized social motivation and social benefits from mitigating climate change, and the other emphasized the individual sacrifice necessary to mitigate climate change. The first treatment consisted furthermore of statements referring to a relational "we," whereas the latter treatment consisted of a formulation with the word "I." Hence, they applied the distinction between an IR and a SR context as defined above. The experiment resulted in higher scores on climate change engagement (agreement with statements that individuals have a responsibility to mitigate climate change) among respondents receiving the SR treatment than among respondents receiving the IR treatment and a control group.

Providing information about other people's behavior is also a way to vary the institutional context. For instance, Hurlstone et al. (2014) conducted an experiment where a group of respondents was exposed to information about a group of peers (perceived as an in-group, with similar social characteristics to those of the respondents) who had high acceptance of climate policies that entailed individual loss. Researchers found that informing respondents about what their peers considered to be correct caused respondents' attitudes to be closer to the attitudes of their peers

than the attitudes of a control group were, and refer to theory on social norms in social psychology (Cialdini et al., 1991).

There are few studies of the importance of values for the effect of institutional contexts on attitudes toward climate policies. One exception is Petrovic et al. (2014), who provide two examples of how different institutional contexts affected attitudes toward mitigation policies differently in groups with different political value orientations. They refer to framing theory (Kahneman and Tversky, 1979) and social identity theory (Cohen, 2003) when explaining the results from their survey experiment involving about 800 US residents. The authors investigated how attitudes toward policies to reduce emissions were affected by emphasizing local individual health effects from emissions compared with emphasizing environmental consequences from climate change. They found that political value orientation determined how the two versions affected attitudes. The health frame elicited stronger support for policies among conservatives and the climate frame elicited stronger support among liberals. Another exception is the study of Wiest et al. (2015), who also explain their findings using framing theory and identity theory. They found that presenting different descriptions of climate change to groups having different political value orientations caused varying effects on behavior intention. For instance, presenting local effects (affecting the respondents) from climate change yielded higher scores on behavioral intention among Republican and Independent respondents than did presenting global effects from climate change (not affecting the respondents) to these groups. They found no effects on behavioral intentions among Democrats (who reported stronger initial intentions than the other groups did).

To identify contexts that affect attitudes toward emission-reducing policies across individual characteristics, such as political value orientations, seems crucial. Given the often-found importance of quite stable correlations between political value orientations and attitudes toward such policies (e.g., Drews and Van den Bergh, 2015), it may be easier to change institutional contexts than individuals' values. The next section describes the methods designed to explore these issues.

3 Material and methods

In September 2014 we conducted a split-sample web-based survey of car owners in Oslo. The survey included an experimental element. We chose a strategic sample of car owners, since they will experience an individual loss from the policies aimed at reducing car emissions. To be able to

create both an IR and a SR context we chose Oslo city residents. Emissions from private car transport in this city contribute substantially to individual health problems that are due to local air pollution (Norwegian Environmental Agency, 2015), and to the larger social problem of global warming (Vågane, 2013). In this way, the IR context focused on the individual gain from reducing emissions, whereas the SR context emphasized the effects from climate change on poor countries. We sent an email with a web link to the survey. The median time taken to complete the survey was 10 minutes. All respondents received an introduction to the survey, informing about the aim of the study, and that they could not go backwards in the web survey (since we wanted to avoid that questions asked later in the survey might influence answers to questions asked early in the survey). Part one of the survey introduced the treatments. In part two, we asked questions about the respondents' attitudes toward the three policies. In part three, we mapped socioeconomic variables, beliefs about emissions, and political value orientation.

3.1 The experimental part – the treatments

We randomly assigned participants to one of three groups of approximately 500 respondents each. One group received the text emphasizing the IR context, one group received the text emphasizing the SR context, and a third group (the control group) received no such texts, only the general introduction. We instructed participants who received a text treatment to read it carefully because later in the survey we would ask questions about it. The two texts were of the same length, and both concerned emissions from private car transport.[v] Both texts had three parts. Part 1 stated the institutional context explicitly, and parts 2 and 3 aimed at informationally induce institutional contexts.

1) An introduction stated the topic (emissions from private car transport). The IR treatment asked respondents to reflect on what is best for themselves, enhancing an "I" logic. The SR treatment asked respondents to reflect on what is a collective good for society, enhancing a "they" logic (SR treatment).
2) An informational part presented the issue in five bullet points. The IR treatment contained numbers and facts about the contributions of car transport to local air pollution. In being a local environmental problem, this topic concerns unavoidably other people in the local environment. However, we highlighted the individual consequences from local air pollution in the IR treatment. The emphasis in this text was that the effect from emissions

hit "you" (the reader), that local pollution reduces the length and quality of life not only for those who are considered vulnerable (such as asthmatics and persons with heart diseases). The SR treatment informed about the contributions of private car emissions to the total national climate-gas emissions. The emphasis in this text was on the respective shares of rich and poor nations in contributing to global emissions, and the differences between the abilities of such nations to deal with climate change. So, while the IR treatment emphasized the personal benefits of reducing emissions from private car use, the SR treatment emphasized the social benefits of reducing emissions from private car use.

3) The texts ended with some sentences emphasizing the importance of reducing car emissions. The IR treatment focused on the health benefit "you" (the reader) would achieve from reduced exposure to local air pollution, such as less vulnerability to heart and lung diseases, and better health from walking and biking. The SR treatment focused on the normative aspect that a "we" in the rich world have a greater responsibility to cut more of per capita emissions than the poor do, and it also emphasized the benefits from reducing car emissions for future generations and for people in countries more vulnerable to climate change.

3.2 Measures

We asked respondents that received a text treatment questions to test whether they had read the text (see Appendix B for formulations). Apart from the texts treatments and these control questions, the surveys were identical for all respondents. After the treatments and the control questions, we asked respondents to answer whether they agreed or disagreed with three statements:

1) We ought to make petrol and diesel so expensive that we choose to drive less.
2) We ought to develop bicycle lanes and public transport, even if doing so means less space for driving cars.
3) You have the opportunity to cycle/take public transport to work. It will take longer than driving by car. How strongly do you agree or disagree with this statement? "I would choose public transport or cycling rather than driving a car."

The response alternatives were "strongly agree," "partly agree," "partly disagree," "strongly disagree," and "don't know." We created dummies of the attitude variables (1 = "strongly agree" and "partly agree," 0 = "partly disagree" and "strongly disagree," and "don't know" was coded as

missing), and ran logistic regressions. For simplification, we will refer to the three dependent variables as "increase in petrol prices," "less space for cars," and "choose public transport," respectively.

We measured political value orientation[vi] – the degree of support for state involvement and regulation – using items similar to those used in previous studies of political value orientation (Aardal, 2011). Respondents indicated their positions concerning statements like "Many tasks would be handled better and less expensively if they were transferred from the public entities to private companies." We created an additive index from 0 to 24 (the higher the score, the less support for state involvement and regulation) using six items (alpha = 0.86). We asked the questions on value orientation after the attitude questions to ensure that making these values salient did not affect the dependent variables.[vii] To answer research question 2, we split the sample into two groups: one scoring above 12 on the political value orientation index, and one scoring below 12 on the same index (we coded mid score of 12 as missing). We refer to the group scoring high on this index as individualists, and to the group scoring low on this index as non-individualists.

Although we randomly assigned respondents to one of the three groups, we wanted to be able to test for variation among the groups regarding gender, age, income, and education. We thus included questions to measure these characteristics. Moreover, we included two questions concerning respondents' beliefs about the effect of car emissions on local air quality and on climate change, to reveal any effect from the treatments on these beliefs. Insights into these effects can help us interpret the results on attitudes, whether due to learning or not. All items and response categories are shown in Appendix B.

3.3 The sample

A survey company (Ipsos MMI) operated the survey. This company recruited participants from their register. Respondents in their register receive points for each survey they participate in.[viii] From a sample of car owners (using petrol as fuel), the response rate was about 40%. The number of initial respondents (1516) was reduced by 62, that is those who answered "don't know" to the two questions formulated to test whether they had read the treatments. N is also reduced because we coded "don't know" answers for the dependent variables as missing (list-wise deletion).[ix] For the analyses of the effect of treatments in the two groups of value orientation, N is reduced by an additional 105 because we coded the mid score of 12 as missing.

4 Analysis and Results

In this section we first report the analyses of the whole sample, conducted to answer research question 1 on whether institutional context affects attitudes toward policies to cut car emissions. Next we report the analyses of the effects of the treatments on the two groups of value orientations which were conducted to answer research question 2. Last, we report the effects from the treatments on beliefs about car emissions, which indicate whether there were learning effects from the treatments.

4.1 Effects from the treatments on attitudes toward policies

We tested for variation in the groups regarding gender, age, income, education, and political value orientation, and found no significant differences between the groups regarding these characteristics.

Table 1 displays the descriptive statistics of the responses to the statements about the three policies for each treatment group (the control group, the group receiving the IR treatment, and the group receiving the SR treatment).

Table 1: Agreement/disagreement with the statements per treatment group

	"Increase in petrol prices"			**"Less space for cars"**			**"Choose public transport"**		
	Control	**IR**	**SR**	**Control**	**IR**	**SR**	**Control**	**IR**	**SR**
Partly/strongly agree	28%	29%	32%	77%	83%	80%	66%	71%	70%
	(152)	(135)	(145)	(422)	(381)	(358)	(359)	(324)	(316)
Partly/strongly disagree	70%	69%	66%	22%	17%	20%	31%	24%	27%
	(385)	(315)	(295)	(121)	(75)	(89)	(171)	(112)	(122)
Don't know	2%	2%	2%	1%	0%	0%	3%	5%	3%
	(11)	(7)	(9)	(5)	(1)	(2)	(18)	(21)	(11)
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
	(548)	(457)	(449)	(548)	(457)	(449)	(548)	(457)	(449)

Note: Absolute numbers in parentheses. IR = individual rationality treatment, SR = social rationality treatment.

We see that the options "less space for cars" and "choose public transport" received quite high support in all three groups, and that the policy "increase in petrol prices" was less popular.

Table 2 summarizes the results from the logistic regressions on the attitudes toward the policies. The table displays the marginal effects of the treatments. The coefficients indicate the contribution each treatment makes to the likelihood that a subject will select "strongly agree" or "partly agree" as opposed to "partly disagree" or "strongly disagree." Standard errors are in

parentheses. The reference category for the treatment groups is indicated in parentheses ("C" denotes "control group").

Table 2: Results of logistic regressions on attitude toward policies, marginal effects

	"Increase in petrol prices"		"Less space for cars"		"Choose public transport"	
	Marginal effects	**p-values**	**Marginal effects**	**p-values**	**Marginal effects**	**p-values**
SR (C)	0.047(0.029)	0.115	0.022(0.025)	0.363	0.043(0.029)	0.136
IR (C)	0.017(0.029)	0.559	**0.059**(0.026)**	0.021	**0.066**(0.029)**	0.025
SR (IR)	0.029(0.030)	0.342	-0.037(0.027)	0.177	-0.023(0.031)	0.470
N	1427		1446		1404	

Note: The coefficients indicate the contribution each treatment makes to the likelihood that a subject will select "strongly agree" or "partly agree" as opposed to "partly disagree" or "strongly disagree" to the statements. "C" denotes control group. Estimates are marginal effects in probabilities. Standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Regarding "increase in petrol prices," the p-value for a difference in attitudes between the respondents receiving the SR treatment and the respondents in the control group is 0.115. The difference between these groups is thus slightly insignificant at a p-value level of 0.1. When compared with the control group, the group receiving the IR treatment reported about a 6 percentage-point higher likelihood ($p = 0.021$) of being positive toward "less space for cars." The group receiving the SR treatment did not deviate from the control group in its attitude toward this policy ($p = 0.363$). Regarding "choose public transport," the group receiving the IR treatment yielded a 7 percentage-point higher likelihood of being more positive than the control group did ($p = 0.025$).

4.2 Effects from the treatments in the two groups of value orientations

Table 3 below displays the descriptive statistics of responses in the two groups of value orientations, non-individualists and individualists. There were quite large differences between the groups regarding their attitudes to "increase in petrol prices" and "less space for cars"; the non-individualists were more positive than the individualists were.

Table 3: Agree/disagree to the policy statements in the two value orientation groups

	"Increase in petrol prices"		"Less space for cars"		"Choose public transport"	
	Non-individualists	**Individualists**	**Non-individualists**	**Individualists**	**Non-individualists**	**Individualists**
Partly/strongly agree	43% (313)	15% (96)	90% (649)	68% (430)	76% (551)	60% (377)
Partly/strongly disagree	54% (390)	84% (524)	10% (70)	31% (193)	20% (146)	36% (228)
Don't know	3% (19)	1% (7)	0% (3)	1% (4)	4% (25)	4% (22)
Total	100% (722)	100% (627)	100% (722)	100% (627)	100% (722)	100% (627)

Note: Absolute numbers in parentheses.

Table 4 below displays the results from the logistic regressions on the attitudes toward policies, for the non-individualists and the individualists separately. Standard errors are in parentheses. The reference category for the treatment groups is indicated in parentheses.

Table 4: Results of logistic regressions on attitudes toward policies in the two value orientation groups, marginal effects (to be cont.)

	"Increase in petrol prices"				"Less space for cars"			
	Non-individualists		**Individualists**		**Non-individualists**		**Individualists**	
	Marg. eff.	**p-values**	**Marg. eff.**	**p-values**	**Marg. eff.**	**p-values**	**Marg. eff.**	**p-values**
SR (C)	**0.081*(0.045)**	0.071	0.015(0.045)	0.404	0.008(0.026)	0.799	0.054(0.044)	0.214
IR (C)	0.015(0.045)	0.742	0.013(0.036)	0.716	**0.047*(0.028)**	**0.095**	**0.089**(0.045)**	0.049
SR (IR)	0.066(0.047)	0.158	0.016(0.036)	0.716	-0.039(0.030)	0.187	-0.034(0.048)	0.476
N	703		620		719		623	

Note: Dependent variables are agreement or disagreement with the three attitude statements. Estimates are marginal effects in probabilities. Standard errors are in parentheses. The coefficients indicate the contribution each variable makes to the likelihood that a subject will select "Strongly agree" or "Partly agree" to the statements as opposed to "Partly disagree" or "Strongly disagree." * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 4 (cont.): Results of logistic regressions on attitude toward policies in the two value orientation groups, marginal effects (cont.)

	"Choose public transport"			
	Non-individualists		Individualists	
	Marg. eff.	p-values	Marg. eff.	p-values
SR (C)	-0.037(0.037)	0.313	0.054(0.046)	0.247
IR (C)	0.049(0.037)	0.196	**0.081*(0.048)**	0.094
SR (IR)	-0.010(0.040)	0.796	-0.027(0.051)	0.592
N	703		605	

We see from the results of the regressions that the SR treatment significantly affected attitudes toward an increase in petrol prices (p = 0.071) among the non-individualists. They reported an 8 percentage-point higher likelihood of agreeing with the statement than did respondents in the control group. There was no effect from the treatments on attitudes toward "increase in petrol prices" among the individualists. Regarding "less space for cars," there was an effect of the IR treatment on the attitudes of the non-individualists. The non-individualists were about 5 percentage points more likely to agree with the statement than the control group was (p = 0.095). The individualists who received the IR treatment were also more likely to agree with "less space for cars" than the individualists in the control group were (p = 0.049). The difference between these two groups in the likelihood of agreeing with the statement about "less space for cars" was about 9 percentage points. The IR treatment also affected the non-individualists' attitudes toward the option "choose public transport." This group yielded a 9 percentage-points higher likelihood of agreeing with the statement than did the control group. The effect of the treatments on attitudes seems thus to depend on the value orientation.

4.3 Effect on beliefs from the treatments

We also tested whether the treatments affected beliefs about car emissions. The SR treatment did not affect beliefs about the effect of car emissions either on climate change, or on local air pollution. However, we found an effect from the IR treatment on beliefs about the effect of car emissions on

local air pollution (IR: M = 3.33, SE = 0.044, control: M = 3.20, SE = 0.041, N = 1443, t = 2.13, p = 0.033).

We conducted the same analyses of each group of value orientation. In contrast to what we found in the full sample, we found no effect of any of the treatments on beliefs about the effect of car emissions on local air pollution in the group of non-individualists. On the other hand, both treatments increased individualists' score on the beliefs about effects on local air pollution from car emissions (SR treatment: $M_{\text{belief air, ind}} = 3.12$, SE = 0.063, p = 0.009, IR treatment: $M_{\text{belief air, ind}} = 3.11$, SE = 0.065, p = 0.026, control: $M_{\text{belief air, ind}} = 2.90$, SE = 0.65). We found no effect on beliefs about effects of private car emissions on climate change among the individualists from any of the treatments The non-individualists generally reported a higher score on beliefs about the effects of car emissions on climate change than the individualists did ($M_{\text{belief climate, non-ind}} = 3.46$, SE = 0.034; $M_{\text{belief climate, ind}} = 2.76$, SE = 0.048). The non-individualists also reported a higher score on beliefs about effects from emissions from cars on local air pollution than the individualists did $M_{\text{belief air, non-ind}} = 3.49$, SE = 0.03; $M_{\text{belief air, ind}} = 3.05$, SE = 0.041).

5 Discussion

In this section we first discuss the substantive findings in this study before we reflect upon its contributions to the literature on public responses to climate policies.

5.1 Social rationality context

Regarding "increase in petrol price," the effect on attitudes from receiving the SR treatment was slightly insignificant when analyzing the full sample. When distinguishing between respondents holding an individualist value orientation and those who do not, there was a significant effect of the SR context on attitudes toward "increase in petrol prices" among the non-individualists. The treatment did not affect the non-individualists' belief about the effect of car emissions on climate change. The score on this belief was higher among the non-individualists than among the individualists (see section 5.3). This result indicates that they were reminded about something they did care about and know about before being exposed to the text.

The difference in the effect on attitudes in the two value orientation groups may have occurred because of the non-individualists generally being more concerned with global environmental

issues than individualists are (e.g., Dunlap et al., 2001). The individualists, on the other hand, are often found to be more skeptical about taxes (Drews and van den Bergh, 2015; Kallbekken and Aasen, 2010). The non-effect on attitudes in this group may be due to less trust in the state or in the effect of such instruments (Harring and Jagers, 2013). However, the general emphasis on social consequences in the SR treatment may also have reminded respondents about effects for a local "they" having nothing to do with the climate issue. The SR treatment may, for instance, have reminded respondents about effects from increased petrol prices on people with few alternatives to private car use. Therefore, arguments using the social rationality context may have prevented an increase in support for this policy because conflicting "they" concerns may have been involved.

The non-individualists' attitude toward "less space for cars" was influenced by the IR treatment, but not by the SR treatment. This difference means that the failure of the SR treatment to affect this attitude cannot be explained by a "ceiling effect" (Wiest et al., 2015) among the non-individualists – that is, that the potential support for "less space for cars" in this group is reached. The lack of effects from the SR treatment on attitudes toward the other two policy statements may be due to these policies being comprehended as irrelevant for mitigating climate change. To decrease car driving locally – on the city level – may have been perceived to result in too small an effect on climate-gas emissions and thus also to be an insignificant effort. Norgaard (2011, 2006) identifies in her ethnographic study in Norway that individuals' nonresponse to climate change is partially a matter of socially organized denial. The information about climate change is not necessarily rejected, but the political or moral implications of it are not followed. She indicates that collectively ignoring these implications maintains Norwegian economic interests, because Norwegian economic prosperity is tied to oil production. One example of how this denial is sustained is through the narrative that Norwegians' actions are particularly insignificant because Norway is a small country. It may be that this narrative, and several other ways in which denial is socially organized, uphold not only the norm of inaction, but also people's disbelief in effects from local climate policies.

The SR treatment affected individualists' beliefs about car emissions' effects on local air pollution. The text described an increase in private car use in Norway, which may have made respondents think of local air pollution. It may be that the information about climate change was not new to any of the respondents, and that the information about car emissions and local air pollution was

less known to the individualists. The SR treatment thus affected individualists' beliefs about emissions, but did not affect their attitudes toward policies.

The results indicate that referring to global climate change is less effective than is increasing support for local policies such as to reduce space for cars in order to build bike lanes. The results also indicate that challenging to communicate across groups of different value orientations emission-reducing policies entailing individual costs.

5.2 Individual rationality context

The results indicate moreover that a context enhancing IR increases support for a policy that includes some individual benefits in addition to the social benefits (more bike lanes and public transport). We found effects on both groups' attitudes toward "less space for cars" from this treatment. Only individualists became more positive to the statement "choose public transport." This difference may be due to a ceiling effect among the non-individualists; this group had a higher score on this item than the individualists did (see Table 4). Alternatively, the distinctive effect on the individualists may be due to the novelty of information about these subjects. The effects from the treatments on individualists' beliefs about car emissions corroborate this interpretation. The IR treatment may have encouraged individualists to think about effects from car driving that they had not previously considered, leading to a change in attitude toward "less space for cars" and toward "choose public transport."

There might also be an alternative or additional interpretation of the effects of the IR context, other than that given by institutional theory. Some researchers (Maio and Haddock, 2007; Scannell and Gifford, 2013) have found a larger effect on public climate change concern and attitudes toward climate policies from presenting local effects from climate change, when compared with presenting global effects from climate change. The researchers explain their findings by citing the fact that local consequences are close in time and place, and thus concrete to and perceivable by the respondents.

5.3 Inquiring into the dynamics between institutional factors and political values

The main contribution of our research to the wider literature is our enquiry into the dynamics between institutional factors and political values. From our analyses, it may seem like political values are more important than the institutional context. Nevertheless, we note that while

experiments offer insights into the involved dynamics, a "text treatment" is a weak way to introduce institutions. One should therefore be careful about drawing the conclusion that little can be done because "values tend to override" institutions. It seems easier for a society to change the institutional framing of the climate issue and solutions than to facilitate value transitions.

What research of this kind does is to inform the public and politicians about the dynamics between institutional and individual factors. We note that our experiment is a small step in that endeavor. We argue, however, that making systematic enquiries into the role of institutions is an important way forward. Present research on "framing effects" regarding attitudes and behavior has predominantly lacked a theoretical focus on framing as part of social dynamics. This lack has hindered systematic buildup of insights regarding these dynamics.

There are several ways forward for research of this kind. One regards testing different ways to formulate institutional contexts, like being more explicit on the formulation of involved norms. Another regards distinguishing between the effects from explicitly formulated institutional contexts and those from the informationally induced institutional contexts. This could be done by isolating the different elements in the treatments and increasing the number of treatments and groups. A third could be to include other individual factors, like environmental values. Adding a qualitative component – for example, by interviewing a sub-sample of respondents – could make it possible to enquire more deeply into the perceptions of the contexts established in experiments like this. It could help better explain how institutional aspects and values influence people's evaluations and reactions as well as the role of other factors that an experiment cannot easily incorporate.[x]

6 Conclusion

This study contributes to the literature on public responses to climate policies by investigating the effect of institutional contexts on attitudes toward such policies as well as the relevance of political values for these effects. This enquiry was done by conducting a split-sample survey involving 1500 car owners who received different text treatments. One text emphasized the individual health gain from reducing local air pollution (IR context), and the other emphasized the social responsibility for avoiding climate change (SR context); the control group received no such text treatment. We also analyzed the data in groups of respondents holding an individualist value

orientation and those who do not, measured as their position on state involvement and regulation where an individualist's value orientation implied low support for state involvement and regulation.

In general, our study demonstrates the effect of institutional contexts on attitudes toward emission-reducing policies. It also demonstrates that the effects of such contexts depend on political value orientation. It seems that presenting the issue of car emissions in an IR context – as a local air pollution problem – engages individuals across political value orientations. On the other hand, presenting emissions in a larger SR context – as a contributor to the global climate problem – engages only the non-individualists.

Our findings moreover indicate that the contexts work differently for different types of policies. That the SR context affects non-individualists' attitudes toward "increase in petrol prices," but not their attitudes toward "less space for cars" may be because they perceive local policies to be irrelevant for mitigating climate change. One way of interpreting this is that people's initial associations with the policies – for instance whether people perceive the policies to be relevant for the problems they are proposed to solve – are important for how contexts work on attitudes toward these policies. The institutional contexts provided in this study are, however, "weak" relative to all the information people receive. Therefore, the results demonstrate only some of the potential for creating institutional contexts to enhance support for policies aimed at solving social dilemmas.

More importantly, it illustrates the necessity of recognizing the complex and dynamic interaction between individual characteristics and contexts for public responses in social dilemmas. This is an under-researched field of enquiry. We believe institutional theory can form a productive basis for expanded research in this field. It offers a basis for more systematic studies of the dynamics between institutions and individual factors as well as a platform for accumulation of insights.

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Appendix A: The treatments

IR treatment:

In this survey we are interested in hearing your views on different ways of reducing emissions caused by road transport. What is best for you? Some information is provided below. Later you will be asked some questions related to this information. Read it carefully, but do not spend more than around 2 minutes.

● Emissions from road traffic in Norway increased by 30 percent between 1990 and 2013. These emissions cause harmful air pollution in towns and cities.
● Norway has set national limits for local air pollution, but these are exceeded in most towns and cities. Oslo has exceeded these limits significantly for the past 10 years. This is particularly a problem during winter time.
● Pollution from road traffic is the dominant source of local air pollution. By reducing emissions from road transport in the cities, few people will develop diseases caused by local air pollution.
● Exposure to air pollution from road traffic increases the risk of various respiratory conditions, cardiovascular diseases, and leukemia.
● Air pollution from road traffic affects not only people with lung diseases, cardiovascular diseases and asthma; healthy people may also be affected by poor air quality.

You breathe in around 10,000 liters of air every day, so the quality of that air is therefore vital to your health. People living in Oslo may derive significant health benefits from reducing emissions from road transport.
If we reduce emissions locally, the risk of health problems will decrease and you will be able to breathe in the air where you live without having to worry about whether it may be harmful. If you switch to using a bicycle, both you and your heart will be healthier. There will be fewer cars on the road, fewer traffic jams, and less noise pollution.

SR treatment:

In this survey we are interested in hearing your views about different ways of reducing emissions caused by road transport. What do you think would be best for society as a whole? Some information is provided below. Later you will be asked some questions related to this information. Read it carefully, but do not spend more than around 2 minutes.

● The level of emissions of greenhouse gases in Norway and worldwide is increasing. It will continue to rise unless new measures are implemented.
● In Norway, the level of Norwegian greenhouse gas emissions is around 53 million tons annually. Emissions from transport account for 13.8 million tons, and emissions from passenger cars is the primary source. Since 1960, the level of car use has increased more than twelve fold.
● If we reduce emissions now, we could avoid several challenges in the future. such as lower food production levels, poorer water supplies, more frequent extreme weather events, and changes in ecosystems.
● Emission levels in Norway and other developed countries are far higher per person than in poor countries. In Norway, each person accounts for 10 tons of greenhouse gas emissions. In Bangladesh, each person accounts for 0.4 tons.

● Both the World Bank and the UN stress that developing countries are more vulnerable to climate change than developed countries. These countries are located in regions that are most vulnerable to negative impacts of climate change. They also have fewer resources to deal with the impacts of climate change.

A key point made in the report prepared by the UN's Intergovernmental Panel on Climate Change is that those of us living today will determine how severe the climate changes will be for future generations and other regions of the world, and that there are close links between economic development, energy consumption, lifestyle, and greenhouse gas emissions.
We cannot expect poorer countries with lower emissions per person to reduce emissions more than we do.

Appendix B: Measures

Control for having read the text treatment

How strongly do you agree or disagree with each of these statements? [Strongly agree, partly agree, neither agree nor disagree, partly disagree, strongly disagree, do not know].

The information on the preceding page dealt with local air pollution in Oslo.

The information on the preceding page dealt with climate change.

Individual value orientation index

How strongly do you agree or disagree with each of these statements? [Strongly agree, partly agree, neither agree nor disagree, partly disagree, strongly disagree, do not know].

Many tasks would be handled better and less expensively if they were transferred from the public entities to private companies.

A high tax level is necessary for maintaining key public-sector services.

We ought to allow commercially run private schools.

If society is unable to control private business and industry, the leading banks and industrial actors will gain too much influence.

There is too much state intervention and regulation in today's society.

Full employment could be achieved more easily if the state had more influence over banks and businesses.

Beliefs emissions from cars

How strongly do you agree or disagree with each of these statements? [Strongly agree, partly agree, neither agree nor disagree, partly disagree, strongly disagree, do not know].

Car transport leads to local air pollution.

Emissions from car transport do not contribute to man-made climate changes.

Endnotes

[i] See for instance Drews and van den Bergh (2015) for a review of studies.
[ii] This effect of information is often referred to as a "framing effect" (Nisbet, 2009).
[iii] They are typically focusing at the individual and her/his capacities to act rationally. The work around 'prospect theory' and 'loss aversion' is documenting different evaluation of losses and gains.
[iv] Cialdini et al. (1991) acknowledge the importance of situational factors in determining the degree of 'salience' of particular social norms.
[v] See the text treatments in Appendix A.
[vi] Note the differences between the similar concepts "individual value orientation" versus "individual rationality context," the first referring to the view on the role of the state, the second to situations where enhancing individual benefit is perceived as the correct thing to do.
[vii] See Unsworth et al. (2014) about the effect on attitudes toward policies from making political values salient.
[viii] Respondents can accumulate points and exchange them for various items.
[ix] Don't know scores: "Increase in petrol prices" 1.9% (27), "Less space for cars" 0.6% (8), "Choose public transport" 3.4% (50).
[x] One of the reviewers commented that factors like experiencing extreme weather events/effects on local infrastructures, political debates at the time of the experiment, etc. could influence the results. We agree, and such issues could more easily be delved into through adding a qualitative component to the experiment.