Lund University
Department of Political Science

STVM25
Tutor: Gustav Agneman

Climate Change Mitigation Policies and Personal Cost

Are young people more willing to bear the cost for a greener tomorrow?

Sofia Henriks

Abstract

Even as the public awareness and concern about climate change are increasing, and the younger generations are urging for political action, support for more costly and ambitious mitigation policies is not given. The low-cost hypothesis theory provides an explanation for why our concern about climate change fails to translate into supporting policies when the personal cost is high. However, research addressing if younger people are less cost sensitive is missing in the literature. In this thesis, I conduct an online experimental vignette survey to capture the effect between cost and support, together with a potential interaction of age. The research relies on data gathered from 165 participants living in Malmö and nearby areas and was analyzed using simple linear regression- and interaction models. My results indicate that higher cost has an effect on support. I also find mixed evidence of personal costs and habits as moderating the relationship, and concern as mediating. However, support was not moderated by age. The findings contribute to the understanding of voter support for climate change mitigation policies and provide both an empirical, theoretical and methodological contribution.

Key words: Climate change mitigation policies, Low-cost hypothesis theory, Experimental vignette survey, Climate generation gap, Cost-sensitivity
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1 Introduction

In the latest Eurobarometer (2021), EU citizens reported that climate change is the single most important issue, and 75 percent of the EU citizens believed that their government is not doing enough to tackle climate change (European Union 2021). However, multiple studies show that politicians often fear introducing stricter climate change mitigation policies (Huber, Wicki & Bernauer 2019:1; Carter 2018; Farjam, Nikolaychuk, & Bravo 2019; Wynes & Nicholas 2017), due to the risk of not being re-elected when implementing policies with long-term effects that are difficult for voters to interpret (List & Strum 2006:1249). But given that climate change has become a salient political issue, is it true that more costly and ambitious mitigation policies still receive lower support than cheaper, less effective, policies?

When a country reaches a certain level of security and well-being it enables a shift in salient political issues, such as an increased concern of environmental sustainability (Malu & Power 2016). In the shift, values move from materialistic to post materialistic. Sweden stands out with one of the highest scores of postmaterialism (World value survey 2020), and the younger generation has organized protests urging politicians to take action (Haynes 2019). As the younger generations are the ones who disproportionately bear the burden caused by climate change, there is a belief that they are poised to act and protect the environment (Timm 2014). But are we right to believe that the younger generation is different from the older, and that they are less sensitive to personal costs associated with climate change mitigation policies?

In the following thesis, I study the willingness to support high-cost climate change mitigation policies by using an experimental vignette design. This enables me to evaluate the causal impact of cost on support. The data was collected through an online survey, distributed in the city of Malmö and nearby areas in November 2021. There is accumulating evidence in the literature indicating that there is an existing climate change generation gap, where the younger generations are more concerned than the older (Milfont et al. 2021:1). Furthermore, research argues that changes in adolescents' attitudes are important for understanding long-term social change (Yamane & Kaneko 2021; Wray-Lake, Flanagan & Osgood 2010:62f). My design allows me to shed light on a potential shift in support for climate mitigation policies, as I explore the interaction if age is moderating the support.

1.1 Purpose and research question

The main purpose of this thesis is two-folded: (i) to statistically test if age serves as an interaction variable between support for climate change mitigation policy and cost, in order to understand if younger people are less sensitive to a cost increase. This idea is an extension of the so-called low-cost hypothesis, where policies with low personal cost are believed to receive higher support than policies with high personal cost (Diekmann & Preisendörfer 2003). The theory offers an explanation of the behavior-action gap that occurs when a pro-environmental behavior does not correspond with the actions. (ii) I also aim to test the theory of the low-cost hypothesis under different conditions than earlier testing, which mainly has been conducted based on survey results, rather than experimental. Therefore, the first research question aims to evaluate the causal relationship between cost and support:

> *RQ_1: Does an increase in cost affect the willingness to support climate change mitigation policies?*

Given that climate change has become a salient political issue, the second research question aims to answer the above mentioned puzzle, if younger people are less sensitive to the personal cost associated with climate change mitigation policies. Thus, the second research question that will be answered is:

> *RQ_2: Does the willingness of support towards high-cost climate change mitigation policies vary between ages?*

1.2 Disposition

The remainder of this thesis is organized as follows: In chapter 2, I provide an overview of the literature on what promotes pro-environmental behavior and the generational gap of environmental concern. Followed by chapter 3, where I present the theory of the low-cost hypothesis and the assumptions that perceive the thesis. Thereafter, I present the methodological decisions in chapter 4. Starting with the experimental design, data sampling, and how the data was analyzed. The results are presented in chapter 5, by computing multiple regression models. The relationship between cost and support for climate change mitigation policies and if age moderates the support will be explored. In addition, I will test personal cost as a moderating variable and concern as a mediating variable to further evaluate the relationship between cost and support. In chapter 6, I discuss the result together with the previous research and the theoretical framework. The thesis ends with a conclusion and suggestions for further research in chapter 7.

2 Literature review

The literature review will start by addressing studies of environmental concern as one of the driving factors when supporting climate change mitigation policies. Furthermore, the discrepancy between pro-environmental attitudes and actual actions will be highlighted. Subsequently, in the second subsection, the potential environmental generation gap will be addressed. In this chapter I show the literature gap, together with motivating the chosen variables that will be measured in my experiment.

2.1 Determinants of pro-environmental policy support

Studies in political science and economics have found support that it is easier for politicians to introduce and implement policies with a clear outcome. Environmental policies that entail high costs with diffuse benefits are thereby difficult to justify, and the introduction of stricter environmental policies has been seen as politically vulnerable (Harrison, 2012: 384). Harrison describes that there can be greater resistance if the voters are motivated by self-interest and the policy entails a visible and immediate cost (Harrison 2010:512).

Driving factors to determine voter support is explained by the value-belief-norm theory, developed by Stern et al. (1999). The theory combines personal values, environmental beliefs, and norms to explain pro-environmental behavior, such as supporting climate change mitigation policies. Studies using the model have managed to predict public acceptability for policy support (Drews & Bergh 2016:857). Additionally, Rhodes, Axsen, and Jaccard (2017) proposed that concern about climate change is one of the underlying factors in voters' support (Rhodes et al. 2017:65). The same was found in a Swedish study underpinning the importance of environmental concern when predicting support for environmental policies (Drews & Bergh 2016:859). Furthermore, Tjernström & Tietenberg (2008) found that concern was associated with lower GHG emissions in a country, and suggested that public attitudes translate into policy action (Tjenström & Tietenberg 2008:322). Another strong determinant for supporting mitigation policies is political affiliation. A study conducted by Tobler, Visschers, and Siegrist (2012) indicated that participants on the right-wing were less willing to show support for mitigation policy measures. This is also supported by Dunlap and McCright (2008), Hornsey et al. (2018) and Farjam, Nikolaychuk, and Bravo (2019).

However, enacting pro-environmental behavior is not a guarantee for supporting climate change mitigation policies, because there is no absolute correspondence between attitudes and behavior. Previous studies have suggested various possible explanations for the discrepancy (Blake 1999:264; Whitmarsh, Seyfang & O'Neill 2011), e.g. the value-action gap theory. The theory raises questions about when attitudes work as a lever to promote environmental objectives (Farjam et al. 2019:1). Farjam et al. (2019) conducted a game-theory experiment, testing the effect of environmental attitudes on behavior. Their results showed that environmental attitudes affected behavior only in low-cost situations. The study followed previous literature, implying that concerned individuals will undertake low-cost actions to reduce cognitive dissonance but avoid high-cost actions, even when knowing that those actions will result in greater potential of environmental protection (Farjam et al. 2019:2). Likewise, Tobler et al. (2012) could not see a correlation between political affiliation and environmental behavior in low-cost situations, but only in high-cost situations (Tobler et al. 2012:197).

Groot and Schuitema (2012) examined how policy characteristics and social norms influenced the acceptability of environmental policies. They used earlier studies to define high- and low-cost actions, similarly to a study of Diekmann and Preisendörf (2003). However, Groot and Schuitema (2012) stated that they could not fully exclude the possibility that their chosen situations of high- and low-cost themself contributed to the result. Hence, the authors recommended future research to more strictly distinguish between high- and low-cost situations (Groot & Schuitema 2012:105).

When predicting pro-environmental behavior, studies often determine the willingness to support or adopt a behavior by looking at energy-saving, transportation, or recycling (e.g. Bord, O'Connor, & Fisher 2000; Kyselá, Ščasný & Zvěřinová 2019). Many of which often include normative work. Thus, Farjam et al. (2019) recommends empirical driven work, allowing to carefully evaluate the interplay of psychological and economical factors motivating the decision making (Farjam et al. 2019:2).

2.2 The potential climate generation gap

As described in the previous subsection, there can be an individual conflict of acting according to one's values when personal cost increases (Blake 1999; Farjam et al. 2019; Whitmarsh, Seyfang & O'Neill 2011). However, these studies do not address a generational difference, despite a potential shift in values between generations (Waynes & Nicholas 2017; Hawcroft and Milfont 2010). Older research found that support for environmental policies is strongest in wealthy countries with high levels of postmaterialist values, e.g. the Nordic countries (Boström et al. 2011:211; Ingelhart 1995). It is believed that these postmaterialist values proceed if there is no interference of national security. Hence, implying that generations within a country that has moved from materialism to postmaterialism possess different values and behavior between the

younger adults and elders (Boström et al. 2011:212). Wynes and Nicholas (2017) states that younger generations are more likely to express a willingness to depart from current lifestyles in an environmentally relevant way (Waynes & Nicholas 2017:5). Similarly, Clayton and Karazsia (2020), and Hawcroft and Milfont (2010) found support that younger generations express a higher concern for climate change that originates from the feeling of it as more pressing, potentially as younger generations will experience the societal consequences (Milfont, Zubielevitch, Milojev & Sibley 2021).

Data gathered in 2017 from Eurobarometer showed that younger people, aged 15-24, were more likely to be concerned about climate change than people over age 55 (Eurobarometer 2017). Furthermore, the WWF climate barometer, conducted in Sweden, showed that the group of young adults (ages 18-29) were willing to change their transportation and eating habits to a greater extent compared to other age groups (The World Wide Fund for Nature 2021). Likewise, Gray et al (2019) highlighted that media reporting suggests that the heightened level of concern among younger people, will generate higher levels of support for policies mitigating the losses related to climate change (Gray 2019:399). However, earlier studies also show mixed results of the generational differences, and the observation of age as a predictor is not observed consistently in the literature e.g. seen in Otto and Kaiser (2014) and Wiernik, Ones, and Dilchert (2012).

Gray et al. (2019) argue that political affiliation and pro-environmental behavior are better predictors for environmental concerns than age and generation (Gray et al. 2019). The mixed results may indicate that age as a predictor of acting more pro-environmental is dependent on particular environmental questions or being context bounded (Milfont et al. 2021).

Age and the low-cost hypotheses theory have not, to the best of my knowledge, been combined in previous research. Furthermore, many of the studies that have applied the low-cost hypothesis have done so with survey data, or with questionnaires conducted by an interviewer, leaving room for potential social desirability in the answers. Drews and Bergh (2016) completed a cross-disciplinary overview of research explaining voter support for climate change mitigation policies. They found that studies investigating public opinion on climate policies, that did not explicitly state the personal costs of a policy, may have resulted in a bias towards overly favorable responses (Drews & Bergh 2016:861). Similarly to Farjam et al. (2019) and Groot and Schuitema (2012), they recommend using an experimental design to better identify the causal relationship between factors and policy support (Drews & Bergh 2016:869). Furthermore, these studies did not take a potential generation gap into account, and did not explore the potential of a shift in the political landscape, as the younger generation may perceive other political issues as increasingly important.

3 Theory

The following chapter will lay out the theoretical assumptions of the thesis, which is the basis for my hypothesis tests. I will start by presenting the origins of the theory, followed by the technical assumptions. Subsection 3.2 presents the hypotheses that will guide the study, followed by the auxiliary hypotheses.

3.1 Low-cost hypothesis theory

The low-cost hypothesis theory aims to explain the relationship between attitudes and actions. The founders of the theory believe that cost of a behavior, in a broad sense, is a key variable explaining the correlation between the two. Attitude-behavior research has shown varying strength of correlation between environmental attitudes and behavior (Diekmann & Preisendörfer 2003:442-443). Andreas Diekmann and Peter Preisendörfer, the founders of the low-cost hypothesis theory, argue that attitude research fails to predict pro-environmental behavior in so-called high-cost situations. Instead, they reason that the rational choice theory, with a cost indicator as a cornerstone, is better suited. At the same time, the rational choice theory is not sufficient for predicting pro-environmental behavior in low-cost situations. To fill this gap and deepen our understanding of pro-environmental behavior, such as supporting climate mitigation policies, they developed the low-cost hypothesis theory (Diekmann & Preisendörfer 2003:446-448). Thus, pro-environmental attitudes appear to have a higher effect on easy-to-perform and inexpensive actions, such as recycling (Waynes & Nicholas 2017) and switching off lights (Diekmann & Preisendörfer 2003:444) than actions involving high personal cost.

The choice of only adapting a pro-environmental behavior in low-cost situations can be explained by the psychological phenomena of cognitive dissonance. Farjam et al. (2019) explains that concerned individuals are undertaking low-cost actions "to reduce the cognitive dissonance between their attitudes and rational realization of the environmental impact of their behavior" (Farjam et al. 2019:2) but avoiding higher-cost actions, even when knowing that these high-cost actions have greater environmental protection (Farjam et al. 2019:2). Consequently, to maintain positive self-esteem individuals downgrade (or eliminate) their environmental impact in high-cost situations (Diekmann & Preisendörfer 2003:444). Diekmann and Preisendörfer (2003) state that people express their "environmental correctness" in low-cost situations, such as recycling, but do not engage or support policies, such as changing travel habits, that are more costly or inconvenient for oneself (Tobler et al. 2012:198; Diekmann & Preisendörfer 2003:444; Kollmuss & Agyeman 2002). Moreover,

supporting low-cost actions tends to set aside more effective actions as people may become satisfied with their low-cost mode of conduct (Farjam et al. 2019:2). Diekmann and Preisendörfer (2003) argue that environmental concern contains a strong normative component. Where the norm prescribes that one should care about climate change and the environment in daily activities. However, such a norm conflicts with the preferred action. When doing so, there is a trade-off between the costs of norm violation and the gain from preferred (high-cost) behavior. This decision-making process can be understood as a strained-choice model, where "actors maximize utility under the constraint of an internalized social norm" (Diekmann & Preisendörfer 2003:451). In other terms, the theory implies that we can expect higher correlations between concern for climate change and pro-environmental behavior, like supporting climate mitigation policies, under circumstances when the individual cost is low (Diekmann & Preisendörfer 2003:443).

Figure 3.1 models the idea of the low-cost hypothesis theory. The x-axis represents the cost of an environmental action, and the y-axis represents the strength of the effect of environmental concern doing the activity. Cost is not merely defined in economic terms but includes other factors that might require additional time, effort, or discomfort (Tobler et al. 2012:198). The theory expects that the concern effect decreases with an increasing cost for the individual. The idea can be described as if a person is faced with a (binary) decision X, with alternatives x_1 (not environmental) and x_2 (pro-environmental). Subjective costs of each alternative (cost index including inconvenience, time, and economic cost) are $c(x_1)$ and $c(x_2)$ respectively. It is assumed that for most actors, a pro-environmental activity is costly, $c(x_2) > c(x_1)$ or d (effect) = $c(x_2) - c(x_1) > 0$ (Diekmann & Preisendörfer 2003:450). Hence, the higher cost, the smaller proportion of individuals with attitudes strong enough to compensate for the cost difference. If the increasing cost leads to the proportion of individuals approaching zero, the effect of the attitude on the act decreases too (Ibid 2003: 451).

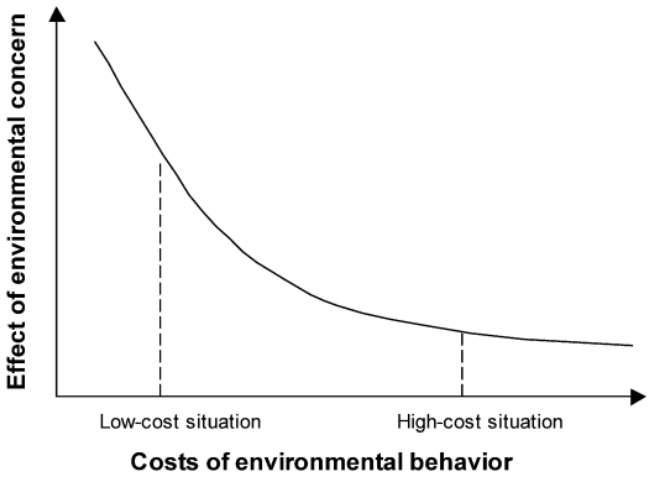

Figure 3.1. The low-cost hypothesis, from Diekmann and Preisendörfer (2003:449).

Dikemann and Preisendörfer (2003) built their theory based on survey data. Hence, they did not explicitly ask respondents if the action involved high- or low-cost. Instead they build the theory assuming that when few people carried out an action, it was considered costly. In the following thesis, the theory will be used with an experimental design, enabling me to analyze the cost assumption from an actual increase in cost and not merely an assumption of a high- or low-cost situation. Earlier attempts of testing the low-cost hypothesis theory have implied some contradictory findings. Farjam et al. (2019), mentions that survey-based studies have found a relationship between environmental attitudes and pro-environmental behavior only when cost has been intermediate. Almost all respondents undertook low-cost pro-environmental activities, but they found no effect on high-cost activities, in-line with the low-cost hypothesis theory. The results can be compared with Kriwy and Meckning (2011) who found no interaction between attitudes and behavioral cost (Farjam et al, 2019:4). Furthermore, looking at how age might influence the support and concern has not, of my knowledge, been done in previous studies using the theory. As the political landscape is changing when new generations are entering the electorate, it would deepen the understanding of factors that influence pro-environmental behavior.

3.2 Hypotheses

I start the following subsection with providing the two main hypotheses, which will guide the thesis. I close this chapter by presenting two auxiliary hypotheses, which are related to hypothesis one, and aims to create a better understanding of the potential relationship between cost and support.

The first hypothesis aims to test the core of the low-cost hypothesis theory, namely the impact of perceived policy costs. However, compared to Diekmann & Preisendörfer, I will test the actual cost effect and not merely the assumption of a low-cost versus high-cost effect. Diekmann and Preisendörfer (2003) writes that supporting climate mitigation policy is categorized as a pro-environmental behavior. Hence, the first step is testing the relationship between cost and support for climate mitigation policies and thereby answering the research question “Does a cost increase affect the willingness to support climate mitigation policies?”. Following the theory, we can expect that high-cost policies will receive lower support, thus, the first hypothesis for the thesis is:

> *H_1: High-cost climate change mitigation policies receive lower support than low-cost policies*

As previously mentioned, a common postulation is that younger people are more concerned about climate change (Timm 2014; Undp 2021; Newall & Jackson 2018), this goes along with studies showing that the younger groups are prepared to sacrifice more to counter climate change (Milfont, Zubielevitch, Milojev & Sibley 2021; Waynes & Nicholas 2017:5). Bringing in the idea of postmaterialist values, assuming that as the Swedish electorate reinforces values of individualism and protection of the environment, we can expect that the variation on *d* (effect) is

different if age moderates the support. Adding age as an interaction term implies that the relationship between cost and support is expected to be different depending on age. Age as an interaction term is visualized in figure 3.2.

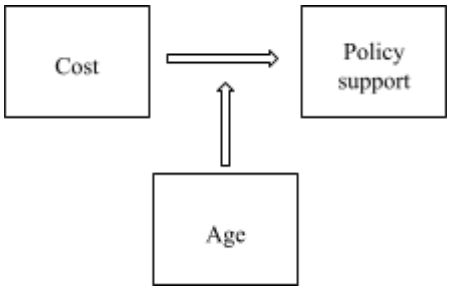

Figure 3.2. Demonstrating a moderating variable, here as age

Hence, the second hypothesis enables answering the second research question "Does the willingness of support towards high-cost climate change mitigation policies vary between ages?". Assuming that younger people are more concerned, and more willing to counteract climate change to a greater extent than older generations, the second hypothesis is:

> *H_2: There is an interaction between age and willingness to support high-cost climate change policies*

The reasoning of the second hypothesis is presented in Figure 3.3, the younger population (dotted line) has a lower decline in environmental concern, compared to the older (filled line), when cost is present. Here it is assumed that the concern follows support according to Diekmann and Preisendörfer (2003). Thereby, if a policy is not supported it assumes that the concern is low in order to rationalize this standpoint.

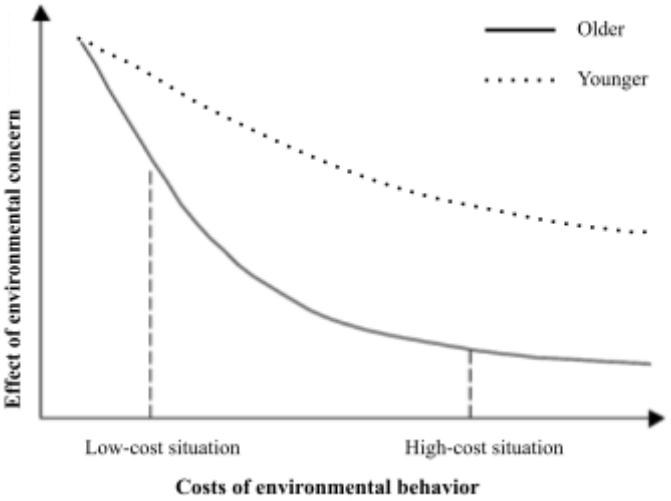

Figure 3.3. Age as an interaction variable, modeled in the dotted line. Visualizing the idea behind the second hypothesis. The figure is re-shaped from Diekmann and Preisendörfer (2003:449)

3.2.1 Auxiliary hypotheses

The auxiliary hypotheses relate back to the first hypothesis, and broadens the scope, without bypassing the main hypotheses guiding the thesis.

The theory tells us that people care about the costs, exploring this in an experimental setting enables an objective cost. However, how much a subject cares about the potential increase is subjective. Thus, the exposure of high-cost treatment may determine the willingness to support climate mitigation policies. Exploring this possibility would enable us to understand more about who the subjects are that high-cost treatment has an effect on. Hence, the first auxiliary hypothesis is:

> *AH_1: Higher personal cost moderates the willingness to support high-cost climate change mitigation policies*

As described in the theory section, the low-cost hypothesis theory assumes that concern and support are intertwined. Thus, when cost affects support, concern decreases. The cost is perceived to affect both support and concern, however, exploring this further might widen the perception of the theory. The second auxiliary hypothesis explores how the subjects motivate a decrease in support for climate change when exposed to an increase in cost. When cognitive dissonance is present, we can assume that there is a negotiation with oneself, with or without one's knowledge, and that there is a post-rationalization of a decision. Hence, the second auxiliary hypothesis is:

> *AH_2: Concern mediates the relationship between high-cost and support for climate change mitigation policies.*

All hypotheses involve assumptions inline with rational choice theory. Assuming that individuals to some extent are rational in their decision making process. However, these assumptions also allow deviation in the standpoint of rational choice, and provide a nuanced interpretation of rational decision making.

4 Method

In the following chapter, I will explain methodological decisions. Firstly, I will discuss the research design and present the experimental vignette survey. This setting was used to test my hypotheses. Secondly, I will discuss the variables of interest and operationalizations, followed by the target population and how I reached the subjects. Lastly, I will present how the data was analyzed.

4.1 Identification strategy

To study the causal inference of perceived cost on support, I needed to make perceived policy cost an exogenous variable. To this end, I embedded a vignette experiment in a survey to answer my research questions and test the hypotheses. The vignette experiment was used to present a hypothetical situation, involving a systematically varied description of my cost variable, to elicit subjects' attitudes and intended behaviors (Steiner et al. 2016:52; Lowndes, Marsh & Stoker 2018:231). Thereby, the experimental design enabled me to detect the relationship between cost and support for high-cost mitigation policies.

The choice of using an experimental vignette survey manifested the opportunity of combining vignettes with a traditional survey methodology, to counterbalance each approach's weaknesses. Traditional surveys often attain a higher external validity, in terms of representativeness and multivariate measures, yet often involve lower internal validity, caused by the passive way of measuring. On the contrary, classical experimental designs achieve a higher internal validity as the active mode of measurement enables controlled intervention, but suffer a drawback of lower external validity when using non-representative samples. Therefore, an experimental vignette study tries to overcome these hindrances by reconciling the vignettes with a traditional survey (Atzmüller & Steiner 2010:128). Using an experimental vignette design in the following thesis strengthens the internal validity of exploring the causal relationship between perceived cost and support for climate mitigation policy.

A crucial part for obtaining valid causal inferences, was enabling randomly assigning subjects into two different treatment groups. The assignment of units to each group had to be done randomly so that every unit had exactly the same chance of ending up in any of the groups. The randomization process helped to rule out all alternative explanations of any difference between the groups that might be observed after applying the experimental manipulation (Lowndes, Marsh & Stoker 2018:231; Esaiasson et al. 2017:338). Each participant was randomly assigned to two different groups in the beginning of the survey. An additional

strength of using an experimental vignette method was the possibility of textualizing, meaning that each respondent based their assessment of an identical situation. As each respondent received the same scenario, answers could be seen as more reliable than other methods asking about attitudes (Kullberg & Brunnberg 2007:117).

The vignette survey consisted of two components (i) the vignette experiment as the core and (ii) a traditional survey for the supplementary measurements, used as moderating variables in the data analysis. In the beginning of the survey, each subject had to accept a consent form, informing that participation was anonymous, voluntary, and that they could terminate the survey at any time.

4.1.1 Vignette design

The experimental vignette design was a mix of between- and within-subject design. A purely between-subject design tends to have lower statistical power and requires a larger sample size compared to a within-subject design. Whilst, an within-subject risks having an order effect that may limit the interpretation of the results. Hence, all participants received a set of four vignettes (within-subject design), but all variation occurred between the vignettes, with no statistical comparison between them (between-subject design). This combination gave me a better statistical power than if each vignette was to be exposed to independent subjects.

Each subject was presented with four vignettes targeting different policy areas that systematically varied on the factor cost. In each policy area, the subjects received information about the yearly amount of carbon dioxide equivalent allied with the policy topics. The four policy areas were (i) the textile industry, addressing the absence of environmental cost in the prices of the textiles we buy. (ii) Air travel, addressing the amount of subsidies for airlines and air travel. (iii) Transportation, addressing short distance driving. (iv) Energy sector, addressed by regulating the permissible indoor heating temperature. The full composition of the vignettes are presented in Appendix, Table A.1.

The design of the vignettes and the chosen policy areas were inspired from research conducted by Bord, O'Connor, and Fisher (2000) and Kyselá, Ščasný and Zvěřinová (2019), I also followed previous research recommendations of specifying a clear cost of the fictional policy implementation (Bord, O'Connor, Fisher 2000). Before each vignette, the subjects answered a question of their own cost associated with the policy area. For instance, before reading the vignette about the textile industry, respondents were asked to estimate their yearly spending on new clothes and shoes. The answer sent them to a vignette based on their own spendings, which aimed to position the policy in a more real-life setting. This also allowed manipulating how subjectively costly the policy was, as cost is a subjective perception.

After reading a vignette, subjects were asked to answer the question "How likely are you to support the policy proposal?" followed by a question about their concern of the specific environmental problem. Both questions enabled answers on a 5-point Likert scale. The former reached from "Not likely" to "Very likely" and the latter reached from "Not at all worried" to "Very worried". Hence, both

variables were structured as ordinal variables. But using a Likert scale containing at least five answer options, allows interpreting it as a continuous variable. Therefore, the answer alternatives between the endpoints were not categorized and marked with numbers instead.

Morton and Williams (2012) expressed that in an ideal situation, subjects are unaware of the varying variables and that others receive different questions and different question orders in the experiment. Therefore, a question was asked if the subjects understood the purpose of the survey. The answers were manually controlled when processing the data.

To reduce the order effect, the order of the vignettes was presented differently in the two groups and thereby reducing the risk that the answers in vignette four were affected by the answers in previous vignettes.

4.1.2 Survey design

Survey questions for the supplementary measurements were presented after the vignette experiment. Starting with nine statements addressing concern about climate change, replicated from Diekmann and Preisendörfer (2003). Diekmann and Preisendörfer (2003) created an index for measuring concern, by capturing affective and cognitive aspects of ecological awareness (see Appendix Table A.2 for all questions). The index has been used in several studies conducting the theory, such as Best and Kepis (2011) and Keuschnigg and Kratz (2018). The same was done in my study with statements enabling answers on a 5-point Likert scale ranging from "Disagreeing" to “Agree”. The index reliability was tested with Cronbach’s alpha. Cronbach’s alpha ranges between 0 and 1, where higher values indicate that the questions are compatible and reliable.

The survey ended with demographic questions. Similar to Steiner et al. (2016), the collection of sociodemographic questions was important for the analysis, as it helped control for heterogeneous response behaviors, reduce error variance at the respondent level (Steiner et al. 2016:64), and computing a balance check table (described in detail in subsection 4.4.1). A total of five demographic questions were requested to be answered. The question of income contained the possibility of not leaving an answer, as it can be perceived as sensitive. In addition to these, the subjects were asked about political position. The question of political position was not possible to skip, which may have resulted in an unknown number of dropouts, as it also can be perceived as sensitive information.

When conducting a survey it is advisable to capture actual actions, and not just attitudes (Esaiasson et al. 2017:342; Hughes 1998:382). The survey included a question controlling the difference of self-reported and actual behavior by enabling subjects to sign a petition demanding action in the climate crisis. If finding a positive association with support, it could give credibility to the measure of policy support, as well as serving as an alternative outcome.

Lastly, because the survey did not mention the angle of climate change before people started the experiment, I entered the option for people to share their thoughts before sending in the survey, as it addressed a complex issue.

4.1.3 Pilot study and power calculation

Esaiasson et al. (2017) recommends carrying through a pilot study before handing out the final large-scale survey. The purpose is to test the experiment on a smaller group of subjects to detect how they respond to the manipulation, that the survey is running smoothly and avoiding ambiguities for the subjects (Esaiasson et al. 2017:342). The pilot study was distributed to 14 people. They were randomly assigned into two separate groups to test whether the randomization process was working. Each subject took the time of their participation and sent back feedback of how to improve the vignettes and the survey questions. The results were used to calculate the expected sample size needed to receive strong enough power in the large-scale survey. Power refers to the probability of getting a significant result given an existing effect (that there is systematic difference between treatment groups). Recruiting a high number of participants allows making interpretations of a possible null result. If the experiment would receive low power it is impossible to determine whether the null result depends on the manipulated variables not having a meaningful effect or because there were too few subjects participating (Esaiasson et al. 2017:347). Therefore, underpowered studies can produce biased and misleading inferences (Lowdens & Marsh 2018:231).

To obtain a perception of how large a sample was needed, I used an online Power Calculation tool (stat.ubc). Based on the pilot study, the effect size (difference in means between the two cost conditions, regardless of policy) was estimated to be 0.689, and with a standard deviation of 1.334. Given this estimated effect size, the sample size of 118 was needed to achieve a power of 0.8.

4.2 Operationalization

The variables of main interest were the high-, and low-cost treatment, as the independent variable, policy support as the dependent variable, and age treated as a moderating variable.

The operationalization of cost was based on Diekmann and Preisendörfer (2003). Diekmann and Preisendörfer explains that the cost is not solely an economical factor when interfering with environmental behavior, it is also cost as convenience and time. Therefore, cost was operationalized as economical in two vignettes, and as inconvenience in comfort and time in two. I varied the cost associated with the textile industry with a 10/40 percent increase. The cost for air travel varied with a 20/70 percent increase. The vignette regarding indoor heating, capturing, inconvenience in comfort had a variation of temperature in public buildings as 17/21 degrees celsius. The vignette associated with short distance driving captured inconvenience in time by addressing the accessibility of parking spaces at commercial areas, varying as limited/removed.

Environmental concern was operationalized, as described above, both through statements replicated from Diekmann and Preisendörfer (2003) (subsection 4.1.2) and through concern linked to the specific vignette (described in subsection 4.1.1). The personal cost was associated with the four vignettes, acting as moderating variables in the data analysis. Personal cost was operationalized by the questions seen in Table 4.1

Table 4.1. Operationalization of personal cost associated with the vignettes

Vignette policy	Question	Thresholds	
		Lower personal cost	Higher personal cost
Textile industry	How much money do you spend yearly on new clothes and shoes?	"≤ 5.000"	"5.001-15.000", ">15.000"
Airline industry	What kind of air travel did you do during 2019? Counting both private and work associated	"None", "One way ticket"	"Minimum one short, and one long", "Minimum one short distance", "Minimum one long distance"
Heating in public buildings	What is your preference for inside temperature during the winter?	≤ 20	≥ 21
Short distance driving	How often do you travel by car to nearby commercial areas?	"More rarely", "Not using a car"	"3-7/week", "1-2/week", "1-3/month", "1-4/half year"

Political affiliation was measured from left to right on a Likert scale 1-5 and measuring actual pro-environmental behavior was done with the option to sign a petition for uring actions of hindering climate change.

4.3 Target population and data collection

To get as many participating subjects as possible, I used a multiple-sampling strategy. As a first step, I turned to Facebook groups to effectively reach out to various people quickly. The common denominator for the groups was the city of Malmö (see Appendix Table B.1 for specification of the groups). The response rate from Facebook groups was low, after multiple publications. Therefore, I combined it with Facebook advertising. The target group was Malmö +40 km (lowest range possible), distributed to ages 18-65+ (see Appendix Table B.2 for ad statistics). To reduce the risk of skewed sampling, no subpopulations with specific personal interests were targeted. Although, sampling through Facebook groups and with Facebook advertising is encumbered with the risk of selection bias, such as only reaching out to people who spend time on social media, and

self-selection bias. Further, it is not a strictly randomized sample, as the process would be in an ideal world. However, as the study uses an experimental design, the importance of the sample collection has traditionally been argued to be lower compared to studies conducting a traditional survey. Thus, the sample collection's main importance was the internal validity rather than the external validity (Esaiasson et al. 2017:346). However, external validity should not be neglected and enables a greater interpretation of the result. Esaiasson et al. (2017) recommend inviting randomized samples from the population. Therefore, as a second step, the sampling through Facebook was combined with distributed invitations of participation, handed out by postmail. This was carried out by identifying the different residential areas within the municipality of Malmö (263). After organizing the areas in alphabetical order and giving them an id-number, ten areas were randomly selected for distribution. The geographical areas were subdivided with a polygon provided by the website booli.com[1]. To ensure a random distribution, the house in the upper left corner of each polygon was the starting point, followed by handing out invitations to every other household. However, the city center consisted of apartment buildings, where most postboxes were behind locked doors. Consequently, the distribution within these areas was based on the accessibility to the postboxes (see Appendix Table B.3 for extended area information).

The invitations included a QR-code together with an url-link, which required some pre-knowledge of using and owning a smartphone or computer. In total, 400 invitations were evenly distributed in the residential areas.

To reduce the risk of previously mentioned, self-selection bias, none of the sampling tactics disclosed that the survey referred to climate change mitigation policies. However, all had a headline of the possibility of winning movie tickets. The survey ended with a second survey link, with the possibility to participate in the raffle of these tickets. Using a second link was a means of ensuring anonymity. The statistics of the different distribution channels are reported in Table 4.2,

Table 4.2. Statistics of distribution channel

Type	Distributed	Frequency in final sample	Percent in final sample
Facebook ad	4893	140	83.33 %
Facebook groups	4 groups	6	3.57 %
Postmail	400	22	13.09 %
Total		168	100 %

The data collection resulted in a sample size of 168 subjects. When processing the data, there was a loss of three subjects (1.8 %), one was excluded for living outside the population area and two because of frivolous answers. In the frivolous answers the two subjects had answered “3” in all questions and had stated fictional cities. The analyzed sample ended with a size of 165 subjects.

[1] https://www.booli.se/malmo/78

4.4 Data analysis strategies

I have divided the following subsection into three different parts. The first presents the ground assumption that needs to be fulfilled when an experimental design has been used, namely balance between the groups. The second part includes analysis strategies, in terms of linear regression models that were used to test the hypotheses. The third part presents the estimation strategies for the two auxiliary hypotheses.

4.4.1 Balance table

Before analyzing the data, the internal validity relies on the successfulness of the randomization process. To control for the randomization process, a balance table was created, visualized in Table 4.3. The table statistically compares differences in characteristics between the two groups. It is commonly used in experimental research to ensure that there are no significant differences between the divided treatment groups. The right column in the table displays two different tests, depending on how the variables were measured. For the numeric variables with a mean difference, a *F-test* was used and a *Chi-square* test for variables measured at an ordinal and nominal scale. The table shows that the groups did not possess any significant demographic differences, suggesting a successful randomization.

Table 4.3. Balance table of the socio-demographic questions

Policy group		**Group 1**			**Group 2**		
Variable	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**Test**
Age	80	39.9	15.782	85	35.706	15.22	F=2.086
Gender	80			85			X^2=1.289
….Woman	52	65%		50	58.8%		
…. Man	26	32.5%		34	40%		
… Other	2	2.5%		1	1.2%		
Education	80			85			X^2=4.566
… Not completed upper secondary	4	5%		0	0%		
… Upper secondary	12	15%		14	16.5%		
… Post secondary 2-3 years	15	18.8%		19	22.4%		
…. Post secondary >3 years	49	61.3%		52	61.2%		
Income	80			85			X^2 = 5.343
…. < 15.000 sek	24	30%		23	27.1%		
… 15.000-30.000 sek	21	26.2%		17	20%		
30.001-45.000 sek	27	33.8%		27	31.8%		
45.001-55.000 sek	4	5%		8	9.4%		
> 55.0000 sek	1	1.2%		6	7.1%		
Rather not say	3	3.8%		4	4.7%		
Political position	80	2.688	1.65	85	2.541	1484	F = 0.359

Signif. codes: p<0.1‘*’, p<0.05 ‘**’; p<0.01 ‘***’

4.4.2 Estimation strategy

The data analysis was constructed in the statistical software environment R. The acceptable significance level for the statistical tests were set at 0.05. I analyzed the data using simple regression models and interaction regression models. In total, 5 regressions models were computed for each vignette policy.

The simple linear regression models were used to explore the relationship between the variable cost, and support for the different policies. Cost was set as a predictor and support as the criterion variable. The following equation describe this model:

$$Support_i = \alpha_0 + \beta_1 Treatment_i + \epsilon_i$$

Treatment regards to when the cost was high. In line with the theory, I expected the relationship between cost and support to be negative with a negative β -coefficient. In other words, when the participants were exposed to the high-cost treatment the predicted value of Support was predicted to drop with a value of β from the mean, with some error margin.

The second hypothesis, aimed to investigate age as an interaction variable. It was expected that age would affect the high-cost treatment effect on support. Thus, to test the second hypothesis, exploring if an interaction effect existed, the second regression model was calculated as follows:

$$Support_i = \alpha_0 + \beta_1 Treatment_i + \beta_2 Age_i + \beta_3 Treatment{:}\, Age_i + \epsilon_i$$

In line with the assumptions of the low-cost hypothesis theory, I expected there to be a decrease in support when exposed for the high-cost treatment. Given that younger people would be less affected of a high-cost treatment, the β_1 is expected to be closer to 0 in the second equation than in the first. In this equation two more coefficients are included. β_3 represented the interaction term and β_2 is the effect of increased age. Both of these were expected to be negative if younger people were to be less affected by the high-cost treatment.

4.4.3 Estimating the auxiliary hypotheses

The first auxiliary hypothesis considered how cost affects support when the personal cost was taken into account. To capture the effect, I subsetted the dataset into two different subgroups for each policy and computed simple linear regression models. The two subgroups for each policy were divided according to the self-reported personal cost, one with lower and one with higher. The thresholds for each group are reported in Table 4.1 For this hypothesis, the model was calculated as follows:

$Support_i = \alpha_0 + \beta 1 Treatment_i + \epsilon_i$, *for each subgroup in C = low / high*

As in previous models, I expected β_1 to be negative, implying that the high-cost treatment decreased the predicted support. Furthermore, *C* refers to personal cost and when *C* was high, the β_1 term was expected to be higher than the β_1 for when *C* was low.

For a second auxiliary hypothesis testing, if personal cost mediates the relationship between high-cost and support, I expected concern to act as a mediating variable. A mediating variable is present when a third variable influences the relationship between the predicting variable cost, and the criterion variable support. Testing this hypothesis was based on the criteria from the first equation, namly to find a statistically significant relationship between cost and support. If concern was mediating the relationship between cost and support, β_1 was expected to be nonsignificant when including reported concern in the model. The hypothesis followed the following equation:

$$Support_i = \alpha_0 + \beta 1 Treatment_i + \beta_2 Concern_i + \epsilon_i$$

For all four equations, α_0 = the intercept, represented the mean of $Support_i$ when $\beta_1 Treatment = 0$. The error term (ϵ_i) represents the mismatch between predicted and actual outcome.

5 Results

In this chapter, I present the results in light of the hypotheses. I begin by presenting descriptive statistics and visualizing the differences in support and concern between treatments in boxplots. Subsequently, the results of the main hypothesis tests, using simple linear regression and interaction regression models, followed by testing the two auxiliary hypotheses. The implications of the results will be discussed in the next chapter, discussion.

5.1 Descriptive statistics

The analyzed sample consisted of 165 subjects, of which 61.8 % were women, and 36.4 % men, 1.8 % did not specify their gender. The subjects aged varied between 18-78, M = 37.25, sd =14.24. Seventy subjects were aged 30 years or younger (42.4 %), and 95 subjects were 31 or older (57.6%). The reported mean in the computed concern index was estimated to be 3.84 per question on a 5-point Likert scale. The reliability of the index was high, Cronbach's $\alpha = 0.862$. For the full presentation of demographic variables between the two groups, see Table 4.3.

To overview the data and observe potential outliers, I plotted boxplots for each policy. Boxplots help getting an indication of a potential observed difference regarding support depending on cost. Figure 5.1 displays each policy. The x-axis represents low- and high-cost and the y-axis represents support. The bar is the estimated median value of support of each group.

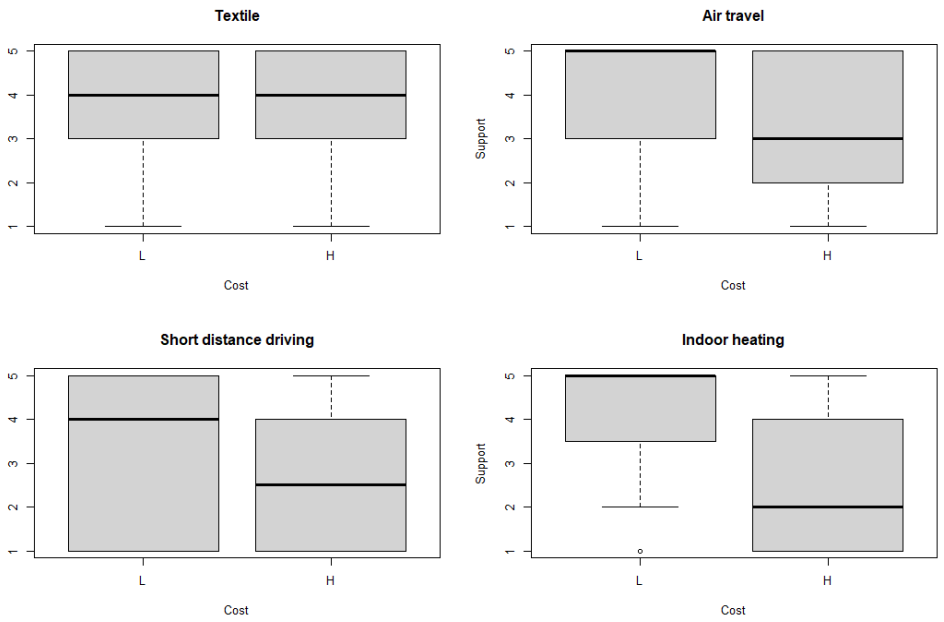

Figure 5.1. Boxplot: cost and support. All four policies are represented. The X-axis represents low- or high-cost. The Y-axis represents the support 1-5. Starting in the upper left corner: Textile, Air travel, Short distance driving, Indoor heating

Looking at the boxplots, 3 out of the 4 policies indicate that the treatment (cost) has an effect on the support. Only visualization by boxplots does not imply a significant difference, but it does give an indication of the potential relationship. The support for policies addressing air travel, short distance driving, and indoor heating in public buildings seems to be higher for subjects exposed to the low cost condition. The policy addressing the textile industry cost does not seem to have an impact on the rated support.

Figure 5.2 displays the estimated concern in the two treatment groups high- and low-cost, represented by the x-axis. The y-axis represents concern for each policy. Compared with the estimated support, in Figure 5.1, the treatment seems to have a lower impact on subjects' concern regarding the addressed topic. Although, exposure for the high-cost condition corresponded with lower concern rating in boxplot 3, short distance driving and boxplot 4, indoor heating. Further analyses of mediating effects were conducted and will be presented in subsection 5.2.3.

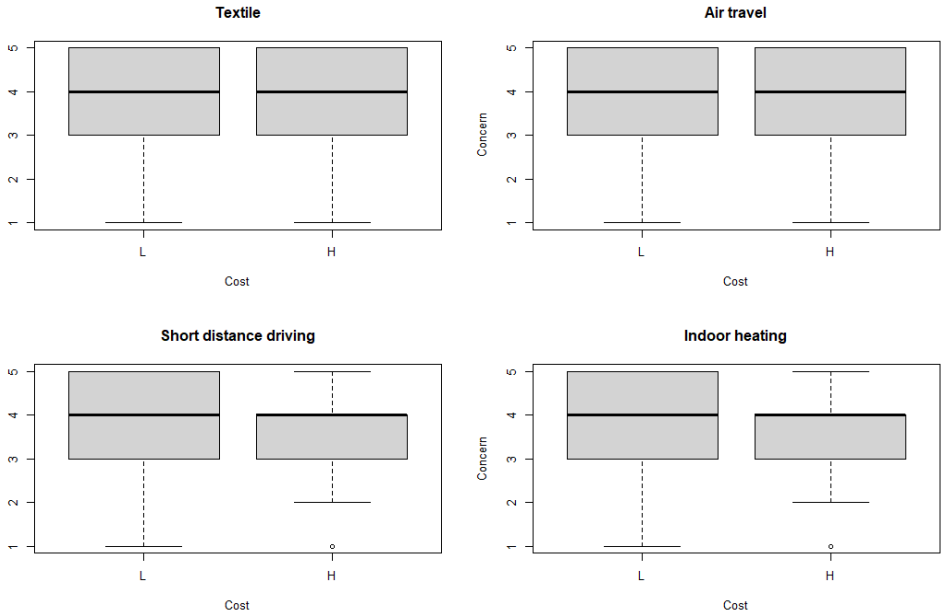

Figure 5.2. Boxplot: cost and concern. All four policies are represented. X-axis represents low- or high-cost. Y-axis represents the concern 1-5. Staring in the upper left corner: Textile, Air travel, Short distance driving, Indoor heating

Lastly, Figure 5.3 shows boxplots of support divided by the personal costs and habits. The y-axis in all four box plots represent support. The x-axis represents the personal spending or habits related to each policy area. The first boxplot in the upper left corner, shows yearly spending of new clothes and shoes. The second, in the upper right corner visualizes the amount of time driving the car to a nearby shopping area. The third represents preferred indoor heating and the fourth, personal air travels. The boxplots do seem to indicate some difference between the groups, although the amount of subjects vary between the groups, which may influence the difference and the possibilities of comparing the groups.

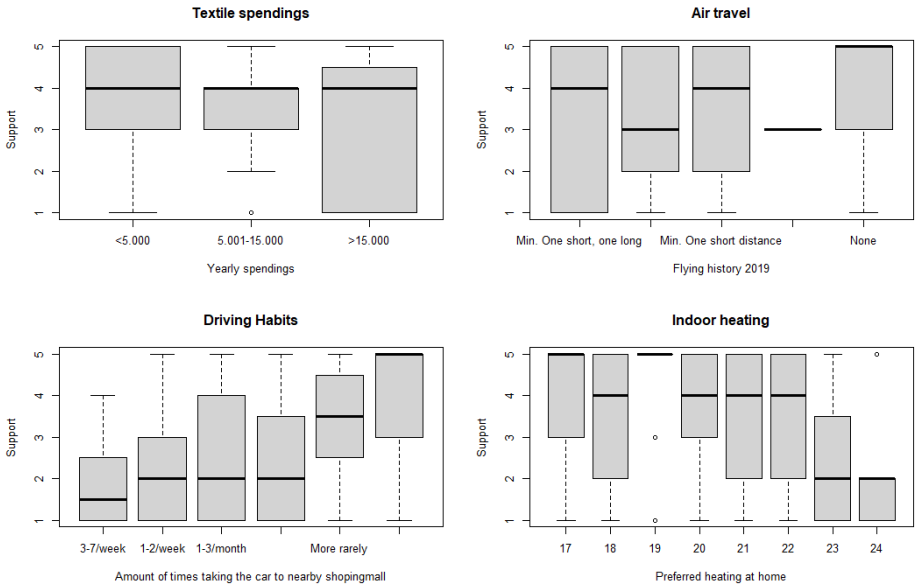

Figure 5.3. Boxplot: estimated support, divided in personal costs and habits. All four policies are represented. The X-axis represents the personal cost and habits. The Y-axis represents the support 1-5. Starting in the upper left right corner: Textile spendings, Air travel, Short distance driving, Indoor heating

5.2 Hypothesis testing

As mentioned, the low-cost-hypothesis theory suggests that level of cost and support should be negatively correlated. I will begin by testing the hypothesis if high-cost policies receive lower support than low-cost policies, by conducting several bivariate regression models.

The estimated support was selected as the criterion variable with cost as a single predictor. The test statistics from all the regression models are presented in Table 5.1. The intercept in each column represents the mean in support when high-cost treatment is absent. Indoor heating, represented in column 4, received the highest support, while short distance driving, represented in column 3, received the lowest. The variable "Treatment high-cost" indicates the change in the mean of support when subjects are exposed for the high-cost treatment. All four policies show a negative correlation, this suggests that when the high-cost condition is present, support for the policy decreases.

Of the four models, three achieved the acceptable significance level (borderline significant result in short distance driving). Cost had a significant prediction value on support when the policy regarded air travel, with a decrease in support by β = -0.686, p = -0.004, short distance driving, with a decrease in support by β = -0.462, p = 0.062, and in indoor heating, where support decreased the most when exposed for high-cost treatment, β = -1.263, p <0.0001.

The R^2 statistics shows the proportion of variance in support rating that could be explained by the model. Because these are bivariate models, with cost as the

only predictor, all the predictive information comes from the cost variable. In air travel and short distance driving, the cost variable attributes approximately 5% and 2 % of support ratings, respectively. The cost variable explains the variance in support by approximately 18 % in the policy regarding indoor heating.

Table 5.1 Simple linear regressions of all four policies

	Textile consumption	**Air travel**	**Short distance driving**	**Indoor heating**
Intercept	3.647 *** (0.159)	3.863 *** (0.163)	3.212 *** (0.185)	4.075 *** (0.134)
Treatment high cost	-0.097 (0.213)	-0.686 ** (0.237)	-0.462 . (0.247)	-1.263 *** (0.213)
R^2	0.001	0.048	0.021	0.179
N	165	165	165	165
***p*-value**	0.649	0.004 **	0.062 .	<0.0001 ***
Randomization inference *p*-value	0.693	0.006 **	0.0618 .	0 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Robust standard errors reported in parentheses. Low-cost is set as the reference group.

I validated the (baseline) findings presented in Table 5.1 in two different ways. The data was tested for heteroscedasticity with a Q-Q-plot, seen in Figure C.1, the data indicated a skewed distribution. As a consequence of this skewness, I used the methodological approach of randomization inference test, to validate the data. The approach has been growing in the literature of social science, and is able to corroborate that the data carry unbiased estimates (e.g. seen in Hess 2017; Agneman 2021; Cantoni et al. 2019). By randomly assigning a subset of the subjects to a fictional treatment, and estimate the treatment-β effects of this fictional process, randomization inference evaluates what would have happened under all possible random conditions, and not just the ones that occurred in my randomization process.

I repeated the simulation procedure 10 000 times, and a normal distribution of possible β-coefficients could be derived. The hypothetical distribution is based on a non-effect and is therefore centered around 0. By comparing this distribution, information of how many times the observed fictional value was more extreme than my observed value in the actual β-coefficient can be obtained. The β-values will center around 0, and by chance sometimes obtain positive or negative values of the treatment cost. By repeating this measure multiple times, I obtain an absolute value.

Inserting the estimated fictional p-value in the following equation provides information about how many times the fictional treatment-β is an absolute value of my observed treatment coefficient.

$$p.value\ RI\ = \frac{times\ fictional\ treatment\ is\ absolute\ value\ of\ actual\ treatment}{number\ of\ simulations}$$

The *p*-values reported in Table 5.1 shows that there is less than a 0.05 percent risk that the observed result, in my data, happened by chance (in column 2, and 4). Similarly to Cantoni et al. (2019), I compare the *p*-value from the fictional randomization inference tests to the corresponding *p*-value from the actual treatment assignment. The two sets of *p*-values do not diverge much from each other and it is therefore unlikely that the observed values happened by chance, despite the skewed distribution.

In sum, the randomization inference test is a good complement when the residuals are not normally distributed. The results from the randomization inference test presented in Table 5.1 imply that the non-normal distribution is of less worry for the interpretation of the results. The distribution of the randomization inference test is visualized in Figure C.2-5, in the Appendix.

All tables that will be presented henceforth in the chapter are based on the assumptions in the first simple linear regression models. Hence, the next five tables are presented as subsections.

5.2.1 Age as interaction variable

Four interaction regression models were conducted to test the second hypothesis, if age serves as an interaction variable. As research reports higher climate change concern in the younger population, an interaction model is expected to show a difference in the treatment variables' effect on support. Following the theory, the relationship is still expected to be negatively correlated, however, with an effect difference. Similarly to before, support was selected as the criterion variable. The results are presented in Table 5.2.

Three out of four regression models show a tendency that when subjects are exposed to the high-cost treatment, there is lower willingness to support the policy. The age variable reports a value that is almost as close to 0 as possible, and in different directions for different policies.

The variable "Treatment:Age" presents age's interaction effect with the treatment. In the policies regarding air travel, short distance driving and indoor heating, the results suggest that the difference in the effect on support by cost, based on the value in age, is negatively correlated. As age increases, and subjects are exposed to the high-cost treatment, the effect is negatively correlated. Suggesting that support decreases with β = -0.011, p = 0.527, β = -0.013 p = 0.984 and β = -0.014, p = 0.373 respectively for the three policies. However, this difference in effect size is low in all four policies and is not statistically significant. Therefore, I cannot determine whether the results occurred by chance.

Table 5.2. Age as interaction variable

	Textile consumption	Air travel	Short distance driving	Indoor heating
Intercept	3.728 ***	3.926 ***	3.013 ***	3.649 ***
	(0.484)	(0.435)	(0.549)	(0.385)
Treatment, High cost	-0.106	-0.293	0.014	-0.735
	(0.615)	(0.681)	(0.688)	(0.604)
Age	-0.002	-0.002	0.006	0.011
	(0.013)	(0.011)	(0.014)	(0.01)
Treatment:Age	0.0004	-0.011	-0.013	-0.014
	(0.016)	(0.018)	(0.018)	(0.016)
Adjusted R^2	0.002	0.054	0.024	0.18
N	165	165	165	165

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Robust standard errors reported in parentheses. Low-cost is set as the reference group.

In the following two subsections, I will test the auxiliary hypotheses, exploring the relationship seen in Table 5.1 with high-cost treatments effect on support for climate mitigation policies.

5.2.2 Conditional models

The low-cost hypothesis theory suggests that cost is subjective, this is controlled simply by the design of my experiment. However, using the reported individual cost and habits as a moderating variable in the analysis could deepen our understanding of the cost indication in our behavior. For example, if someone often uses their car when driving to a nearby shopping mall, it can be assumed that they will react to the treatment accordingly. Likewise, if someone likes to keep their indoor temperature high, the effect of the treatment is assumed to differ from the group who prefer lower indoor heating. Hence, Table 5.3 presents the result of the first auxiliary hypothesis test, that higher personal cost moderates the willingness to support high-cost policies.

Similarly to the first hypothesis, I conducted several simple linear regressions. Although, this time divided into subgroups depending on the reported self use and personal cost. Two regressions were computed for each policy. Cost had a significant prediction value on five out of eight occasions. The table shows that the subgroup who reported less flying decreased their support when exposed to the high-cost treatment, β = -0.88, and p = 0.029. Whereas, the group reporting more frequent air travel history decreased the support when the condition of high-cost treatment was met with, β = -0.542, p = 0.079. Suggesting that when exposed to the high-cost treatment, the group reporting less flying had a steeper slope in the support. The p-value of the high-frequent flying group was borderline significant, and should be interpreted with care, and merely suggest a trend.

Looking at the two subgroups in the policy regarding short distance driving, the table show that the subgroup reporting less car usage decrease their support with β = -0.68 compared to more frequently use of the car, β = -0.541. Both these results are only borderline significant and should be interpreted with caution.

In the policy of indoor heating, the subgroup who reported lower preferred indoor heating the support decreased by β = -1.14, $p < 0.001$, R^2 = 0.16. when exposed to the high-cost treatment. The group preferring higher indoor temperature, the support decreased with β = -1.35, $p < 0.001$, R^2 = 0.193. The two models in column 4, explain the variance with 16 % and 19 % respectively. This suggests that subjects reporting higher personal-cost, their own cost serves as a moderating factor on support. However, the results in the different groups are close to each other on the confidence interval, with fluctuating values in all subgroups, implying that the results should be interpreted with caution.

Table 5.3. Support subsetted to personal cost and habits

	Textile consumption		**Air travel history**		**Short distance driving**		**Indoor heating**	
	Less	More	Less	More	Rarely	Frequently	Lower	Higher
Intercept	3.905 ***	3.5 ***	4.059 ***	3.717 ***	4.069 ***	2.768 ***	4.324 ***	3.861 ***
	(0.202)	(0.238)	(0.235)	(0.221)	(0.244)	(0.23)	(0.193)	(0.175)
Treatment High-cost	-0.16	-0.19	-0.88 *	-0.542 .	-0.68 .	-0.541 .	-1.14***	-1.35 ***
	(0.27)	(0.326)	(0.394)	(0.301)	(0.293)	(0.346)	(0.3)	(0.289)
R^2	0.004	0.005	0.077	0.03	0.055	0.03	0.16	0.193
N	89	76	62	103	65	100	75	90

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Robust standard errors reported in parentheses. Low-cost is set as the reference group.

In Table 5.1 the data showed that being exposed to a high-cost treatment, indicated lower support for climate mitigation policies in three out of four policy vignettes (including the borderline result of short distance driving). Hence, the last section in the result chapter will explore if concern is mediating between cost and support.

5.2.3 Concern as mediating variable

There is a three step procedure when determining a mediating effect, where the criteria in each step needs to be fulfilled to find the effect. This generates three regression models for each policy. The first step and assumption that needs to be fulfilled is to show that cost is a significant predictor of support. This regression is displayed in the first column. The second step is regressing the variable concern, on the independent variable cost, to confirm that cost is a significant predictor of

the mediator concern, presented in the second column (concern as the outcome variable). If there is no significant relationship between the two, the variable concern can simply not serve as a mediator. The last step to demonstrate mediation is regressing the effect of cost on support, with concern as a control variable. In the third regression, the significant relationship should be absent between the independent variable cost and the outcome variable, support. The third regression is presented in the third column.

My data did not show a significant relationship between cost and support regarding the textile policy, and does therefore not meet the first step for exploring a potential mediating relationship. The test statistics from the three regressions of each policy are displayed in the succeeding Tables 5.4, 5.5 and 5.6. The first column represents the relationship between cost and support, which is significant in all three remaining policies. As a next step, I explore the possibility of concern as a mediating variable regarding the policy of air travel, presented in Table 5.4. The second regression (second column), does not show a significant relationship between cost and concern. Hence, given my data, concern is not mediating the relationship between cost and support concerning the policy of air travel. That the control variable concern shows a high statistical significance in the third column is expected, as it indicates that people who are worried about climate change, have a high explanatory power of the variation in support.

Table 5.4. Concern as mediating variable: Air travel history

	Support	**Concern**	**Support + control**
Intercept	3.863 ***	3.888 ***	0.798 **
	(0.163)	(0.14)	(0.259)
Treatment, High-cost	-0.686 **	-0.123	-0.589 **
	(0.237)	(0.199)	(0.179)
Concern	-	-	0.788 ***
			(0.061)
R^2	0.042	0.002	0.457
N	165	165	165

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Robust standard errors reported in parentheses. Low-cost is set as the reference group. Adjusted R^2 is reported in the third column.

Table 5.5 presents the regressions of the policy regarding short distance driving. Similarly to the previous displayed table, the relationship of concern and cost has to be significantly correlated. This is shown in the second column, with a negative relationship, suggesting that concern decreases when exposed to the high-cost treatment, β = -0.382, p = 0.035. Lastly, determining if concern is mediating the relationship is done in the third column, where the relationship should be insignificant when concern serves as a control variable. The model explains 29 %

of the variance in support, R^2 = 0.289 and suggests that concern is mediating the relationship.

Table 5.5. Concern as mediating variable: Short distance driving

	Support	Concern	Support + control
Intercept	3.212 *** (0.185)	3.894 *** (0.126)	0.433 (0.339)
Treatment, High-cost	-0.462 . (0.247)	-0.382 * (0.178)	-0.19 (0.216)
Concern	-	-	0.712 *** (0.082)
R^2	0.021	0.027	0.27
N	165	165	165

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Robust standard errors reported in parentheses. Low-cost is set as the reference group.
Adjusted R^2 is reported in the third column.

The last policy presented in Table 5.6 regards concern as a mediating variable when looking at the policy of indoor heating. Likewise Table 5.4, the second step is not fulfilled. Therefore, concern does not serve as a mediating variable in the relationship between estimated support for the mitigation policy and cost.

Table 5.6. Concern as mediating variable: Indoor heating

	Support	Concern	Support + control
Intercept	4.075 *** (0.134)	3.675 (0.125)	1.701 *** (0.323)
Treatment, High-cost	-1.263 *** (0.213)	-0.169 (0.178)	-1.154 *** (0.184)
Concern	-	-	0.646 *** (0.076)
R^2	0.174	0.005	0.406
N	165	165	165

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Robust standard errors reported in parentheses. Low-cost is set as the reference group.
Adjusted R^2 is reported in the third column.

As a final paragraph in this chapter, I want to address additional results that were found in the data. As previous research indicates that political affiliation is a better predictor of support than age I wanted to draw up on those findings. Therefore, I added self-reported political affiliation as a control variable. I also looked for the

potential explanation of support for the policies with an actual behavior in signing environmental petitions. Political affiliation predicted the variance in support on a statistical significance level at two of the policy areas, textile as β = -0.123, and short distance driving with β = -0.216. Both decreased in support with an increase in the variable of political affiliation. Signing the petition for demanding action against climate change showed statistically significant results in all four policy areas. Implying that support increased when signing the petition. For the full table of the additional results, see Table D.1 in Appendix.

6 Discussion

In the following chapter, I address the implications of my findings and discuss the conducted hypothesis tests. I aim to deepen the understanding of a potential shift in the political landscape as new generations enter the electorate. My purpose has been two-folded. Firstly, to explore a potential interaction of age between cost and support. Secondly, to test the theory of the low-cost hypothesis in an experimental vignette setting, enabling to treat cost as an exogenous variable.

The chapter follows the same outline presented in the result chapter. I will discuss the first research question, if a cost increase affects support for climate mitigation policies. Subsequently, I discuss the research question if willingness to support high-cost climate change mitigation policies vary between ages. Thereafter, I will return to the first question but with regards to the two auxiliary hypotheses, if personal cost is a moderating variable and if concern is a mediating variable in the relationship between cost and support. I will end with a brief discussion of the chosen method.

6.1 The relationship between cost and support

Given that climate change has become a salient political issue, the first hypothesis aimed to test if more costly climate change mitigation policies receive lower support than (personally) cheaper, but less effective policies. My first hypothesis test follows the previous literature, implying that concerned individuals will undertake low-cost actions but avoid high-cost actions (Farjam et al. 2019:2). The replicated concern index served as a baseline for the subjects participating in the sampling, where my results showed an average sample mean of 3.84 on a 5-point Likert scale. Compared with Diekmann and Preisendörfer (2003) reporting a sample mean of 3.28 and Keuschnigg and Kratz (2018:1070) reporting a sample mean of 3.78. Hence, the reports of subjective concern in my sample were comparable to earlier studies.

In my data, the reported support for climate mitigation policies decreased when a cost increase occurred. The interaction between cost and support showed a trend in the behavior as all four policies were negatively correlated. Two of them, air travel and indoor heating, achieved high statistical significance, with a relatively large movement in support. This decrease in support goes in line with previous research conducted by Tobler et al. (2012:204) who found that high-cost situations affected climate-friendly behaviors in a negatively correlated way, likewise was found by Groot and Schuitema (2012).

The theory of Diekmann and Preisendörfer (2003) aims to understand what happens when the cost is high. My results contribute to their explanation as my

method enabled minimizing the risk of counterfactuals, targeting an isolated effect that had a direct influence on support. The first hypothesis testing implies that the null hypothesis can be rejected and that there is a negative relationship between cost and support. However, the result should only be generalized with caution, as they mainly hold for the policies tested in the thesis. Nevertheless, these policies were created based on previous research, enabling comparison.

As the previous research mostly focused on support for policies related to energy savings, transportation, or recycling (Bord, O'Connor & Fisher 2000; Kyselá, Ščasný & Zvěřinová 2019), it is interesting that the policy regarding the textile industry deviates from the otherwise observed trend. This implies that there might be different perceptions of when a cost increase matters and when it does not. Potentially, the results were deviating because of the methodological decisions, e.g. the cost variation varying between the policies. However, my study did not aim to compare between the policies, but instead within the same policy's different cost manipulations.

Using the low-cost hypothesis may come around as a simple theorization, nevertheless, it widens the analysis of complex behavior, as it contributes to an understanding of why unsustainable behaviors are maintained in the face of increasing evidence of the need for change.

6.2 The cost sensitivity of younger

Analyzing if age served as an interaction variable enhanced the understanding of a potential shift in the political landscape and if the younger generation is less sensitive to high-cost policies. The theory of the low-cost hypothesis establishes that cognitive dissonance occurs when we fail to act according to our environmental values and beliefs in high-cost situations. However, the studies adapting the theory have not approached it through the lens of age differences. Wynes and Nicholas (2017), Clayton and Karazsia (2020), and Hawcroft and Milfont (2010), found support that young adults express higher concern for climate change and that they are, to a higher extent than older, prepared to change their living conditions. Hence, intervening these findings with the theory contributes to a theoretical contribution, with findings answering the question of how the effect in support changes when age is moderating the relationship between cost and support.

The conducted data could not find that age interacted with cost and support. This result may indicate that younger people are following the actions of previous generations. Despite previous findings of younger people expressing higher levels of concern for climate change (Waynes & Nicholas 2017). However, these findings may be caused by the method, and that the data collection consisted of too few observations in the different ages. Therefore, the results of an indication should be interpreted with care. Consequently, given my data, we can not reject the null hypothesis.

Other potential explanations for why the result did not end up as expected. Gray et al. (2019) expressed that political affiliation and measurements of pro-environmental behavior are better predictors for environmental concern than

age. However, the aim was not to explore age prediction value, but rather how age affected support. The explained variance in support was low in 3 of the models, 2 %, 5.4 % 2.4 % respectively in textile, air travel, and short distance driving. This suggests that the variables were not sufficiently explaining the measured variance in support. Thus, in Table 5.2 the models showed that neither high-cost treatment nor age moderated the support.

The fact that R^2 is low in the interaction regression models, supports that the result can be interpreted as a null result. Thereby my findings indicate other results compared with the previous research implying that younger people are more likely to change their living conditions to hinder climate change (Hawcroft & Milfont 2010). Moreover, these findings substantiate the theory of the low-cost hypothesis as the effect of a high-cost situation occurred across all age bands. As the theory of the low-cost hypothesis implies that our behaviors and actions compete in high-cost situations, my findings suggest that even though there is an increased concern about climate change, we may not assume that this concern will translate into action. However, further conclusions need further research.

6.3 Perceived cost and concern

Gaining information about how the subjects are affected by a high-cost treatment, would increase our understanding of the decision making process. In the first auxiliary hypothesis, I assumed that higher personal costs would decrease the willingness to support the climate change mitigation policy. However, the conditional models (presented in Table 5.3) showed a trend that subjects with lower personal costs supported the policies to a lower extent than subjects in the group with higher personal costs. The treatment had a significant prediction value on five out of eight subgroups. A possible reflection is that the individuals with a higher personal cost, e.g. reporting higher spending on textile, and more frequent air travel, support higher costs to legitimize the same consumption and use. This would follow the reasoning of the value-action gap, and the low-cost hypothesis theory, using cognitive dissonance as an explanation factor (Farjam et al. 2019). However, the differences between the subgroups were small, and based on my findings it is difficult to determine whether personal cost affected how the treatment of high-cost was perceived. As the values in all subgroups were close to each other, with the true value fluctuating, the findings showed mixed results. Therefore, the found effects can not reject the null hypothesis.

The tables exploring the potential mediating effect of concern showed that concern mediated in one of the policies, short distance driving. Similar to the conditional models, the results were insufficient to support the hypothesis of concern as meditating. I cannot demonstrate explicitly that concern decreases as cost increases, however, it is suggested by the theory of the low-cost hypothesis that when cost affects our behavior, the environmental concern is considered to decrease. My findings, interpreted with caution, contribute to a discussion about the low-cost hypothesis theory. As the theory equalizes the effect of support and concern based on the ideas of cognitive dissonance, my findings nuance this.

Nevertheless, the null hypothesis of concern as a mediating variable cannot be rejected.

Before I reflect upon the methodological implications, I want to turn to the ending paragraph in the results section as these findings might provide nuance to some of the findings by Tobler et al. (2012). Tobler et al. (2012) could not see a correlation between political affiliation in high-cost situations, only in low-cost situations. My findings implied that political affiliation was a predictor of variance in support in high-cost situations in two of the policies. However, as this goes beyond the scope of my research, I instead invite further research to test different background variables affecting support in a controlled environment. Moreover, the data showed high statistical significance with the variable of signing the environmental petition as a predictor of the variance in support. Further research could draw upon this, to explore if this differs between age groups.

6.4 Discussion of the methodology

Farjam et al. (2019) recommended research to be empirically driven, to carefully evaluate the interplay of psychological and economical factors motivating the decision making (Farjam et al. 2019:2), which the use of an experimental vignette survey allowed me to do. Thus, the identification strategy in my thesis provides a methodological contribution by identifying an objective cost increase and not an assumed or subjective one. Nonetheless, next, I will briefly discuss the methodological implications for the results.

The experimental design allowed me to focus on the internal validity, however, some of the results did not follow my predictions. One potential factor is that my sample size was too small. I tried to overcome this risk by combining the vignette experiment with a between and within-subject design, together with computing a power calculation. However, the estimated effect size in the power calculation was based on the total difference between the cost conditions. This might have been a misleading calculation of the needed sample size. Instead, by looking at different age groups, the estimated effect size might have been more accurate and the required sample size would probably have been different. Furthermore, the sample of the pilot study would probably need to be larger in such a case. Hence, an increased sample size would have been beneficial for the interaction models, where the groups in the data are divided even further. More extensive resources of time and money could thereby result in more robust findings. Although my findings of effect in age moderating support were close to zero, given these results, future research would need a significantly larger sample to find an interaction effect. Collecting a bigger sample size, with more subjects in each age group would also have enabled a better comparison between age groups, and not only with age as a continuous variable.

Another methodological decision that might have implications on the results was the choice of only adding two levels of cost, as the survey software did not allow for much design variation. More levels in the cost variable would nuance the results in my findings.

7 Conclusion

The purpose of this thesis has been two folded. The aim was to test if younger people were less sensitive to personal costs associated with climate change mitigation policies. Additionally, the aim was to explore the effect between cost and support, and deepening the understanding of how our decision making is affected when there is a higher personal cost present. The idea originated from Diekmann and Presiendörfer, who argue that attitude research fails to predict the effects of pro-environmental actions when the personal cost is high. To test the cost sensitivity and if it varies between ages, I created an online experimental vignette survey targeting people living in Malmö and nearby areas in November 2021. The survey was distributed online and by post mail, ending with 168 subjects participating. Two main hypotheses guided the thesis, and two auxiliary hypotheses were conducted to further explore the expected outcome in the cost effect in support. The results indicated that we can reject the first null hypothesis, as the reported support for climate change mitigation policies decreased when the high-cost treatment was present. These results were statistically significant in three out of four policies. The results in the remaining three hypotheses did not, however, provide a result sufficient enough to reject the null hypothesis.

Nevertheless, the contribution of my work can be highlighted in the methodological robustness of internal validity by the successful randomization process. Positioning the theory in a new context of a potential age difference also has a theoretical contribution. Enabling to differentiate the understanding of its implications and if we should expect a moving political landscape as new voters are entering the electorate. Lastly, creating an experimental design and collecting new raw data, with rich observations, provides an empirical contribution.

The findings of concern as a potential mediating variable were mixed. Hence, further research could explore this relationship, both to provide nuance to the theory, together with the idea of cost effecting concern, effecting, support are compelling. As the willingness to support effective, potentially more costly, climate change mitigation policies will continue to be an important subject of analysis, as the need for change increases.

This study indicated that even though the consequences of climate change will be more severe in the future, we can not assume that the increased concern will translate into actions. Hence, the belief that younger people are poised to act to protect the environment, should not be taken for granted.

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Appendix A. Experimental vignette survey

Table A.1. Experimental vignette questions

Policy område	Bakgrundsinformation	Vinjett med manipulerad kostnad
Klädkon-sumtion	Utsläppen från svenskarnas klädinköp uppgick 2017 till 4,2 miljoner ton koldioxidekvivalenter. Det är lika mycket utsläpp som att köra 850 000 varv runt jorden med bil. Idag är inte miljökostnaderna inkluderade i priserna på de textilier vi köper (exempelvis kläder och skor).	En dag läser du om ett lagförslag som vill minska textilkonsumtionen genom att klädföretag behöver betala för sina utsläppskostnader. Förslaget skulle innebära en höjning på *10/40* procent på de nya kläder och skor du köper. Det skulle öka din angivna kläd- och skokonsumtion upptill *500 kr* per år.
Flygindu strin	Utsläppen från svenskarnas flygresor uppgick 2019 till 10 miljoner ton koldioxidekvivalenter (inklusive höghöjdseffekten). Det är lika mycket utsläpp som att producera 38 miljoner kilo nötkött. Idag är flygbranschen kraftigt subventionerad och betalar inga bränsle-, energi-, eller koldioxidskatter, har undantag från moms och flyger ofta från offentligt subventionerade flygplatser.	En dag läser du om ett lagförslag som vill minska flygets klimatpåverkan genom att ta bort subventioneringar för flygbolagen och flygresor. Förslaget skulle innebära en höjning med 30/70 procent på flygbiljetterna. Din angivna flyghistorik skulle i snitt öka med *1.060kr* på kortdistans och *4.433* kr på långdistansflygningar
Biltrafik	Utsläppen från svenskarnas resor med personbilar uppgick 2019 till 10,1 miljoner ton koldioxidekvivalenter. Det är lika mycket utsläpp som att åka 25 miljoner varav runt jorden med ett SJ-tåg. Enligt Trafikverket är hälften av alla bilresor i tätorter kortare än 5 kilometer och på dessa sträckor finns ofta andra alternativ tillgängliga.	En dag läser du om ett lagförslag som vill minska tätorters biltrafik genom att reglera parkeringsplatser. Förslaget innebär att parkeringsplatser på Sveriges köpcentrum och handelsområden *begränsas/tas bort*, för att uppmana till kollektivtrafik och möjliggöra för fler gång- och cykelbanor.
Uppvär mning	Utsläppen från Sveriges offentliga bostadsuppvärmning uppgick 2018 till 880.000 ton koldioxidekvivalenter (CO2-eq). Det är lika mycket utsläpp som att 1.000 människor dammsuger utan avbrott i 300 år	En dag läser du om ett lagförslag som vill minska offentliga byggnaders (butiker, bibliotek, kontor) klimatpåverkan genom att reglera byggnadernas uppvärmning till max *17/21* grader på vintern.

Followed by two questions about their support for the potential policy and about their concern of the area. The manipulation of cost is specified by the dash and italic in the third column. The specific cost, written in Italic depended on answers seen in Table 4.1

Table A.2. Questions about subjects concern about climate change

Frågor om klimatoro	Mean	SD
Jag är rädd när jag tänker på klimatförhållandena för framtida generationer	4.018	1.161
Ifall vi fortsätter med vårt nuvarande sätt att leva är vi påväg mot en klimatkatastrof	4.321	1.006
När jag ser på TV eller läser tidningen om klimatförändringarna upplever jag ilska	3.345	1.286
Den stora majoriteten av svenska befolkningen agerar klimatmedvetet och ansvarsfullt	3.57	1.007
Jag tycker ekonomisk tillväxt är bra även om det påverkar klimatet negativt*	3.733	1.127
Enligt min åsikt är klimatproblemen överdrivna av förespråkare för klimatrörelsen*	4.242	1.22
Politiker gör tillräckligt för att förhindra och motverka klimatförändringarna*	4.273	0.996
För att skydda klimatet måste vi alla vara villiga att minska vår nuvarande levnadsstandard	3.812	1.314
Miljö- och klimatregleringar bör genomföras även om det innebär en minskning av arbetstillfällen i ekonomin	3.267	1.389

The response options varied from "I do not agree at all" = 1, "I totally agree" = 5.
*Reversed numbers to be computed in the index ("I do not agree at all" = 5, "I totally agree" = 1).

Table A.3. Demographic questions

Frågor	Svarsalternativ
Hur gammal är du?	17-99+
Vilket kön tillhör du?	Man, Kvinna, Annat
Vad är din hittills högt uppnådda utbildningsnivå?	Grundskola (ej färdigställd gymnasial utbildning), Gymnasial utbildning (2-3 år), Eftergymnasial utbildning (2-3 år), Eftergymnasial utbildning (mer än 3 år)
Vilken är din genomsnittliga månadsinkomst? Räkna med inkomst från lön och studiebidrag innan skatt	< 15.000 kronor (mindre än), 15.001 - 30.000 kronor, 30.001 - 45.000 kronor, 45.001 - 55.000 kronor, > 55.000 kronor (mer än), Vill inte uppge
Om du tänker på den traditionella politiska höger-vänsterskalan, vart skulle du positionera dina egna politiska åsikter?	1 (vänster) - 5 (höger)

Vilken stad/ort bor du i?	Fri text

Appendix B. Data sampling

Table B.1. Sampling in Facebook groups

Social media			
Facebook groups	**Posted**	**Denied**	**Link**
"Du vet att du är från Malmö när…"	X		https://www.facebook.com/groups/143292919138257
"Det är i Skåne det händer"	X		https://www.facebook.com/groups/skaneplus
"Gratis Saker i Malmö/Skåne"	X		https://www.facebook.com/groups/861345910610874
"Free Your Stuff Malmö"	X		https://www.facebook.com/groups/1263593203673405
"Du vet att du är från Malmö om…"		X	https://www.facebook.com/groups/429475317095887

Table B.2. Facebook advertising statistics

Facebook advertising	
Target group	
Age	18-65+
Living area	Malmö + 40 km
Interests	Not specified
Statistics	
Reached	4893
Web pages visits	263
Days public	8

Table B.3. Sampling, randomly distributed areas in Malmö

Random areas	Accessed based distribution	N distributed
Ellstorp	X	40
Folkets park	X	40
Gamla Limhamn		40
Husie		40
Kronborg	X	40
Käglinge		40
Möllan	X	40
Sibbarp		40
Slottsstaden	X	40
Västra kattarp		40
Total		400
Answers		22

Appendix C. Robustness check

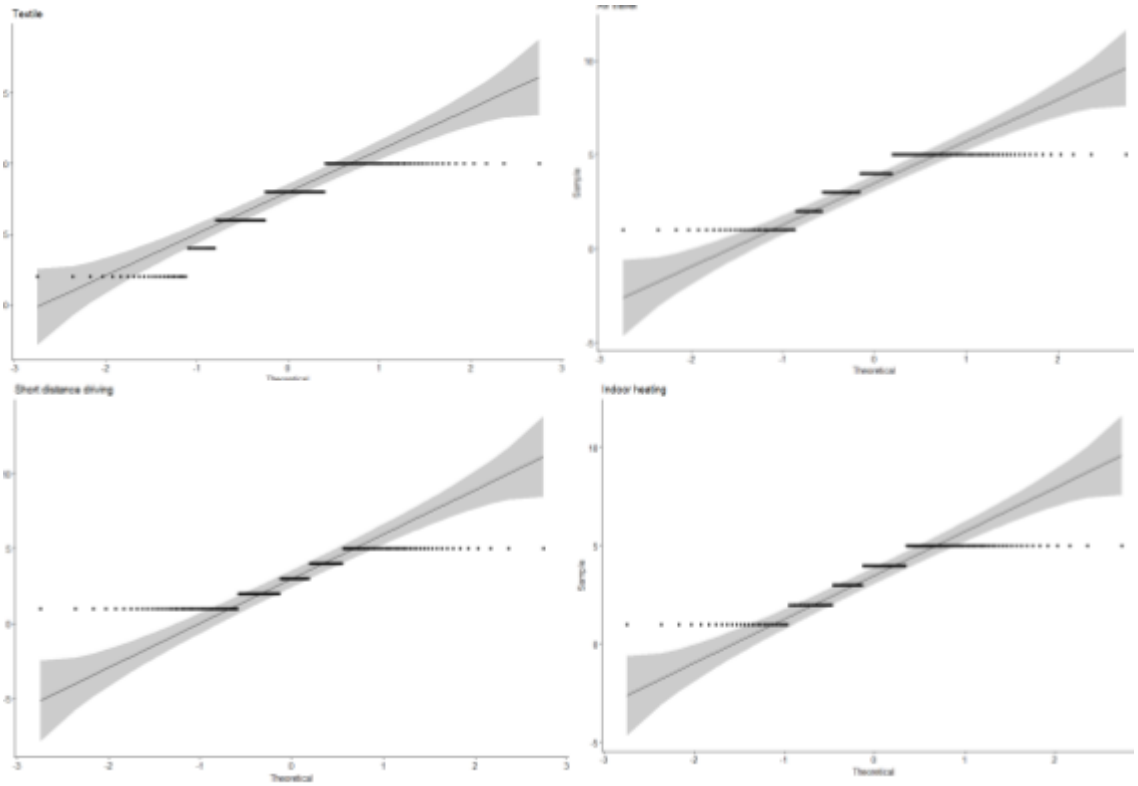

Figure C.1. QQplots for all four policies. Displayed from upper right corner: Textile, Air travel, Short distance driving, Indoor heating

Note: When the data is normally distributed, all observations should lie on a straight line. In non-normal distribution, the points deviate markedly from a straight line, as seen in the figure above.

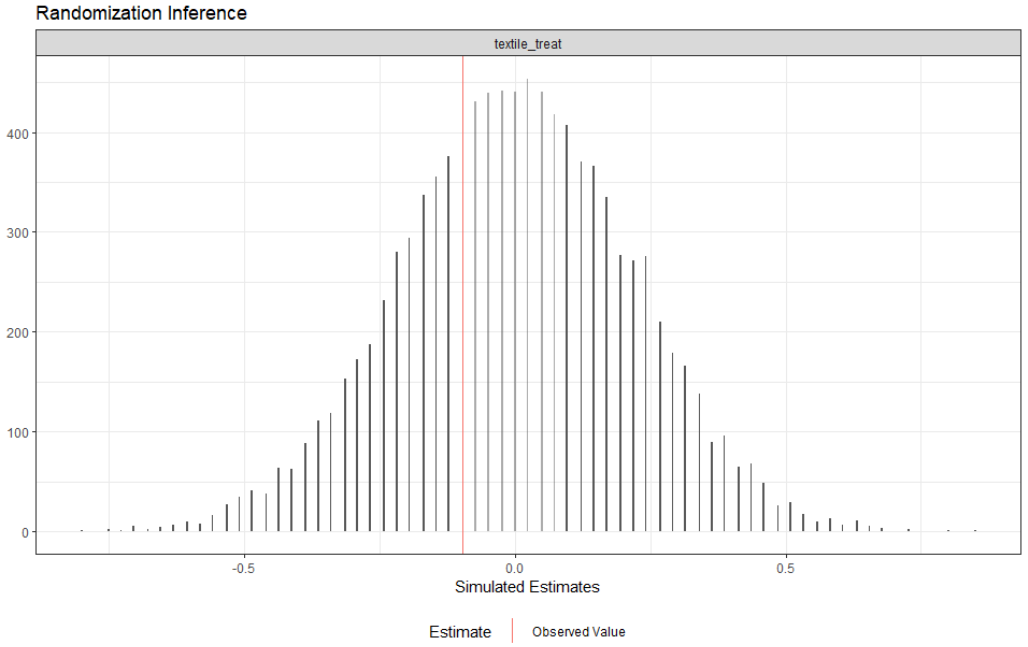

Figure C.2. Randomization inference: textile. The y-axis represents the frequency of the fictional Beta. The x-axis represents the simulated Beta-values centered around 0. The vertical line shows the estimated effect of the Beta in the actual observed treatments, the further away from 0, the better. The reference group is the low-cost group.

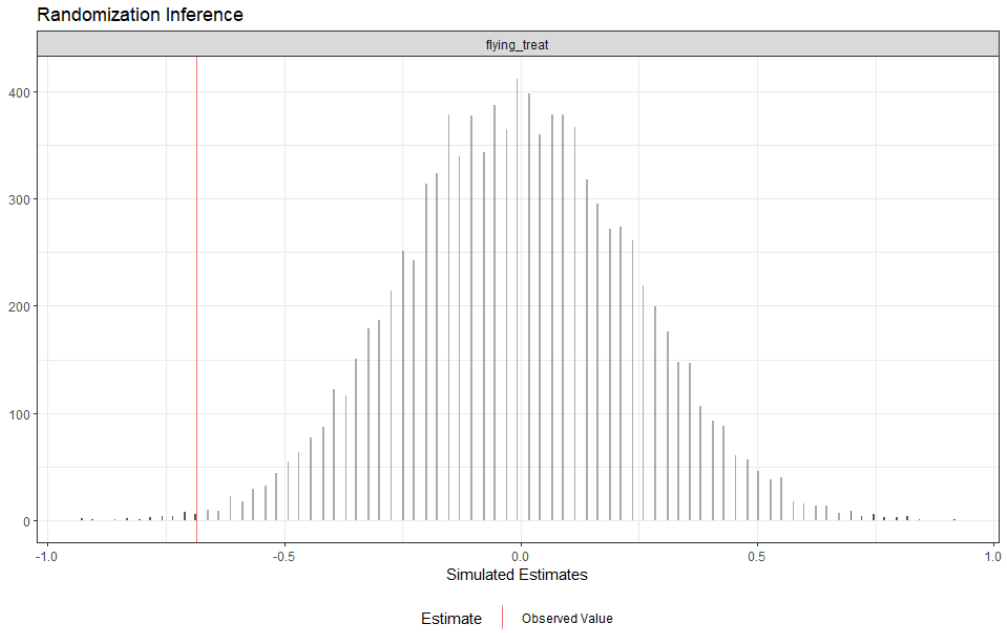

Figure C.3. Randomization inference: air travel. The y-axis represents the frequency of the fictional Beta. The x-axis represents the simulated Beta-values centered around 0. The vertical line showing the estimated effect of the Beta in the actual observed treatments, the further away from 0, the better. The reference group is the low-cost group.

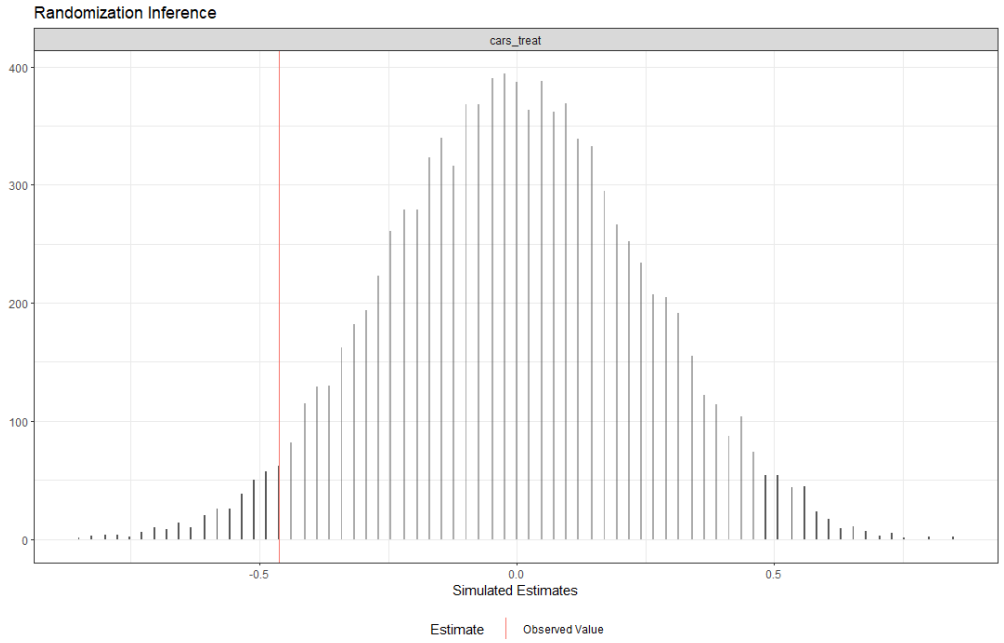

Figure C.4 Randomization inference: short distance driving. The y-axis represents the frequency of the fictional Beta. The x-axis represents the simulated Beta-values centered around 0. The vertical line showing the estimated effect of the Beta in the actual observed treatments, the further away from 0, the better. The reference group is the low-cost group.

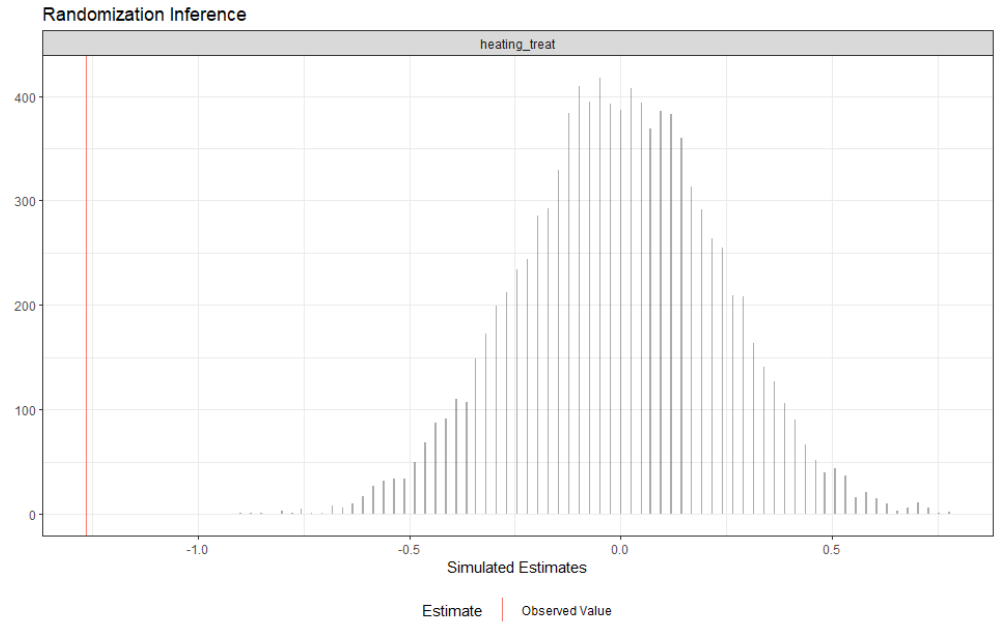

Figure C.5. Randomization inference: indoor heating. The y-axis represents the frequency of the fictional Beta. The x-axis represents the simulated Beta-values centered around 0. The vertical line showing the estimated effect of the Beta in the actual observed treatment, the further away from 0, the better. The reference group is the low-cost group.

Appendix D. Additional results

Table D.1. Additional results of regression model added with control variables

	Textile consumption	**Air travel**	**Short distance driving**	**Indoor heating**
Intercept	3.449 ***	3.34 ***	3.245 ***	3.58 ***
	(0.307)	(0.336)	(0.322)	(0.290)
Treatment, High-cost	-0.099	-0.67**	-0.451 *	-1.245 ***
	(0.195)	(0.217)	(0.226)	(0.2)
Political position	-0.123 .	-0.075	-0.216 **	-0.023
	(0.073)	(0.076)	(0.075)	(0.071)
Signing env. petition	0.921 ***	1.208 ***	0.934 ***	0.972 ***
	(0.22)	(0.231)	(0.239)	(0.211)
Adjusted R^2	0.145	0.204	0.171	0.267
N	165	165	165	165

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Robust standard errors reported in parentheses. Low-cost is set as the reference group.