Strategic information avoidance, belief manipulation and the effectiveness of green nudges.

Giovanna d'Adda[1,2,*], Yu Gao[3], Russell Golman[4], Massimo Tavoni[1,5]

Abstract

Many behavioral nudges harness social or self-image concerns to promote environmental-friendly choices. Their effectiveness may be reduced if people maintain their desired image through information avoidance and belief manipulation which justify selfish actions. To test the conditions that induce information avoidance and belief manipulation, we conducted an online experiment on air conditioning (AC) usage involving over 2,000 US households. Combining requests of effortful behavioral changes, in terms of increases in AC temperature, with greater salience of a social norm of energy conservation discourages people's acquisition of information on the impacts of AC and induces them to report beliefs that AC usage has low environmental impacts. Adding a costly behavioral change request to social norm salience fails to induce changes in AC thermostat settings. These findings are reinforced by field evidence from an energy conservation nudge: households avoid social information on their energy usage when high temperatures make AC use necessary. Our results highlight how context may trigger strategic information acquisition and motivated beliefs, potentially limiting the effectiveness of social norm nudges. Our study emphasizes the need to tailor environmental policies to the context and to broaden their scope to deal with all possible behavioural responses.

Keywords: Social norm salience; Nudges; Motivated belief; Moral wiggle room; Environmental behavior

JEL codes: D83; Q41; Z13

[*]Correspondence and requests for materials should be addressed to G.d'A. (email: giovanna.dadda@unimi.it)

[1]RFF-CMCC European Institute on Economics and the Environment (EIEE), Centro Euro-Mediterraneo sui Cambiamenti Climatici, Milan, 20144, Italy.

[2]University of Milan, Italy.

[3]Peking University, Guanghua School of Management (GSM), Beijing 100871, China.

[4]Carnegie Mellon University, Department of Social and Decision Sciences, Pittsburgh, PA 15213, USA.

[5]Politecnico di Milano, Department of Management, Economics and Industrial Engineering, Milan, 20156, Italy.

1. Introduction

Increasing the salience of social norms supporting desired behavior, for instance by making actions observable or conveying social information on what others do, is a way of nudging behavior applied in different domains, including energy and environment, healthy eating, exercise, voting, and donations. Even though the high cost-effectiveness of such nudges has been carefully evaluated and is widely acknowledged (Benartzi et al., 2017; Hummel & Maedche, 2019; DellaVigna & Linos, 2020), existing studies show highly heterogeneous effects of this type of interventions, including in the environmental domain (Farrow et al., 2017; Jachimowicz et al., 2018; Lange et al., 2020; Kristal & Whillans, 2020; Carlsson et al., 2021).

Researchers have attempted to identify the reasons behind such heterogeneity. One proposed explanation points to the role of strategic belief manipulation and information avoidance, supported by the premise that people care about "who they are" and continuously engage in identity management (Bénabou & Tirole, 2011). Indeed, as demonstrated by Grossman & Van der Weele (2017), individuals choose to be ignorant in order to pursue their private self-interest while maintaining a moral social and self-image. Similarly, Golman et al. (2017) point out that people often avoid information that would entail behavioral changes.

The environmental domain is one where the use of behavioral policy tools among households has greatly increased in recent years.[1] It is also one where information avoidance has been observed. Allcott & Kessler (2019) report that about 34% of their targeted households were willing to pay to avoid receiving one-page letters that compared their energy use to that of their neighbors. Studies based on interviews also show that many individuals are hesitant to learn about the facts of climate change (Norgaard, 2006). These avoidance behaviors cast doubt on the effectiveness of pro-environmental nudges -at least those leveraging social norms- in a world where rapid warming motivates calls for increasingly large and drastic changes in people's lifestyles.

In this work, we aim to identify conditions under which nudges induce self-serving belief-manipulation and strategic information avoidance in the context of energy conservation. We conducted an online experiment involving more than 2,000 US households on Amazon Mechanical Turk (MTurk). We assigned the respondents to treatments involving different perceived hedonic costs of environmentally friendly behavior through suggested AC temperature increases of 1 or 5 degrees Fahrenheit (°F).We also manipulated the salience of a social norm of energy conservation, by varying whether an environmental activist could observe participants' AC temperature readings or not. We directly observed participants' beliefs about the environmental consequences of their AC usage; and acquisition of information on such impacts. Finally, participants could choose to reset their thermostat temperature or not, but were required to take and upload a photo of their thermostat display.

[1] The environment is one of the main policy areas of the Behavioral Insights Team in the UK, and the EU encourages "the use of nudges in public policy-making in conjunction with traditional tools, in particular when nudges can help reach environmental, social or other objectives connected to sustainability" (see the EESC own-initiative opinion NAT/685-EESC-2016-1333 at https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/towards-applying-nudge-thinking-eu-policies-own-initiative-opinion).

We find that social norm salience induces belief manipulation and information avoidance when the suggested environmentally-friendly behavior has a non-trivial hedonic cost. This limits the effectiveness of the nudge in terms of the behavioural change that it targets, since social norm salience prompts more people to increase their AC thermostat temperature only when the hedonic cost is very low. These behavioral patterns suggest that individuals strategically manipulate their beliefs and try to avoid information to create moral wiggle room and justify selfish behavior when socially desirable conduct requires effort. Our findings are potentially valuable to researchers and policy makers in the energy conservation domain, as well as in other domains where privately demanding but socially beneficial behaviors need to be encouraged. They highlight the importance of context in explaining the heterogeneous effect of social norm nudges, and underscore the need for more systemic policy approaches, broadening the focus beyond the individual decision-maker.

We provide supporting field evidence on the generalizability of the online experiment findings, leveraging data on 400,000 customers of an Italian energy company. These users were targeted by another type of nudge making a social norm of energy conservation salient: a social information campaign.[2] We use administrative data to investigate how the likelihood of opening the campaign message email and clicking through it to obtain further information is affected by outside temperature in a month (a proxy of the hedonic cost of pro-environmental behavior, as reducing air conditioning usage on a hotter day is more effortful), and by whether the household is actually nudged through the campaign message in that month. Our analyses show that users who receive the social information message are less likely to open it and explore the related links as outside temperature increases. This result is in line with the online experiment, indicating that when the social norm of energy conservation is salient and complying with it requires effort, individuals are more inclined to avoid the information that the nudge prompts them to attend to.

Our research contributes to the literature on motivated beliefs and willful ignorance (Dana et al., 2007). Individuals have been found to avoid learning about the negative consequences of their selfish behavior in a wide range of settings, including pro-social choices in the laboratory (Dana et al., 2007; Grossman & Van der Weele, 2017; Serra-Garcia & Szech, 2019), charitable giving (Exley & Petrie, 2018; Carlsson et al., 2021), welcoming refugees (Freddi, 2019), and food choices (Epperson & Gerster, 2021). More specifically, people have been shown to wiggle their way out of normative pressure by strategically acquiring only information that can activate less costly prescriptions (Spiekermann & Weiss, 2016). This strategy has positive repercussions on self and social-image, since avoiding information on the consequences of one's actions is considered less inappropriate than knowingly taking actions with the same payoff consequences (Krupka & Weber, 2013). Our study shows that nudges that increase the salience of normative considerations induce self-serving belief manipulation and information avoidance when hedonic costs are high. These effects can explain the heterogeneous, sometimes limited, impacts of social norm nudges on targeted behavior. We deliberately focused our investigation on a policy-relevant domain, residential energy conservation, where behaviors and beliefs

[2] This sample is the treatment group in a Randomized Control Trial (RCT). The social information program's impact is evaluated by a separate paper (Bonan et al., 2020).

are typically unobservable. Our design precisely measures information acquisition, through clicks to reveal an information page and time spent on it; and beliefs, in terms of predicted impact of own AC usage on the environment.

We consider two types of nudges aimed at making social norms more salient. Firstly, in the online experiment, we make participants' responses observable to an environmental activist. Observability by a norm compliant individual is believed to impact pro-social behavior by increasing the image cost of non-compliance (Alpizar et al., 2008; Ariely et al., 2009) as well as by highlighting the injunctive norms of pro-social behavior (Cialdini et al., 1991). Secondly, our field data comes from households targeted by a social information program. Social information on others' behavior or opinions on appropriate actions is believed to provide a reference for people to conform to (Alpizar et al., 2008), to make a descriptive or injunctive norm of conduct more salient (Bicchieri, 2016), and thus to increase the self-image cost of deviating from the norm (Allcott, 2011). Similarly to other nudges, making individual behavior observable and providing information on others' conduct have been found to have heterogeneous impacts on pro-social conduct (Alpizar et al., 2008; Ariely et al., 2009; Powell et al., 2012; Lange et al., 2020; Sparks & Barclay, 2013; Jachimowicz et al., 2018; Andreoni et al., 2017; DellaVigna et al., 2012; Exley & Petrie, 2018).

Finally, our study contributes to the literature on the role of information provision to foster sustainable behaviors. Awareness of responsibility for climate change and perceived behavioral control are identified as key determinants of energy citizenship (Schlindwein & Montalvo, 2023). Environmental education and provision of information are therefore important tools to increase public understanding of the impact of their actions on the environment, and empower individuals to make more sustainable choices. Within our experiment, we test whether stressing individuals' ability to reduce energy usage through their AC thermostat setting decisions encourage acquisition of information on the environmental impact of AC usage, both alone and when coupled with a social norm nudge. Air conditioning is an important example in the climate domain as its diffusion is rapidly increasing as a result of both economic development in poor, hot countries and rising temperature from climate change. Our results show the limited role of information provision, when the possibility of avoiding it is available, and warn about the risk of nudging information acquisition when the behavioral change, that such information targets, is costly. This result emphasizes the need for broader policies and for lifestyle changes to ensure the building sector decarbonizes in line with objectives of climate neutrality set forth in many countries and needed to comply with the Paris climate agreement.[3]

Our study has limitations. First, our online experiment can only imperfectly identify nudges' impact on temporary AC usage, which is not the main outcome of our analysis. While we are not able to capture behavioral change reliably, for example using energy bills, our measure of air conditioning temperature is easy to report (and capture using camera) and innovative, and represents an improvement over self-reported behavior. Moreover, if we find that people are hesitant to even change their AC temperature temporarily

[3]The IPCC emphasizes the role of the building sector, see https://doi.org/10.1017/9781009157926.

and upload a picture, it is reasonable to believe that there will be no real behavioral change in the long run. Second, the online experiment is about AC usage specifically, which is a big component of household energy usage, whereas the field evidence deals with energy usage more generally. We believe that the field evidence, while not fully conclusive on its own, is broadly consistent with the experimental results. Finally, our study suffers from selective attrition, which affects the quantitative robustness of our results, although qualitatively our main findings are confirmed. We discuss attrition and its implications in depth in the paper.

The remainder of the paper is structured as follows. In Section 2 we outline our conceptual framework, within which we set our design and results. Section 3 describes the design and setting of the online experiment, and Section 4 presents its empirical strategy and results. In Section 5, we assess the external validity of our findings using field data. Section 6 concludes.

2. Conceptual framework

We sketch a conceptual framework to inform the experimental design and guide the interpretation of the empirical results. Our design is based on the premise that decision-makers care about their hedonic utility - i.e., they want to enjoy themselves - but also strive to maintain a positive social and self-image – i.e., they want to feel and be perceived as moral.

In social dilemma situations, pro-social behavior is at odds with individual self-interest due to the selfish conduct's negative externalities. When such trade-offs between self-interest and pro-sociality exist, feeling moral while pursuing selfish gains requires strategic belief manipulation. For example, individuals can choose to believe that their own deviation from the social norm pertinent to the specific situation does not entail relevant externalities. Alternatively, they can convince themselves that selfish behavior is not socially disapproved of, either because everyone else also acts selfishly or because another social norm, with less costly implications, can be applied to the particular scenario. Because people are limited in their freedom to hold motivated beliefs by their ability to reason their way to these beliefs, given the information they have Epley & Gilovich (2016), both forms of strategic belief manipulation may involve selectively acquiring or avoiding information. Information may reveal, for instance, the extent to which selfish behavior is adopted or disapproved of, or can indicate the size of the externalities it would entail. A person might avoid this information to help protect the desired belief that selfish behavior is socially acceptable or that the externalities are minimal.

To illustrate these points, we offer an example from the environmental decision domain, relating to the behavior that constitutes our online experiment's focus. Suppose that it is a hot day. You are considering turning on your AC system and need to decide at what temperature to set your thermostat. Turning the AC on at a low temperature would maximize your comfort but would entail high electricity consumption. If you are self-interested, you will choose the optimal temperature by trading off your comfort with energy usage. However, high electricity consumption may also be associated with negative externalities in terms of greenhouse gas emissions and global warming, and would thus be at odds with environmental conservation.

Including the externalities into your cost-benefit analysis will require you to sacrifice your own comfort. In this setting, strategic belief manipulation allows you to create the moral wiggle room to act selfishly while feeling moral. For example, one type of belief manipulation you may adopt consists in telling yourself that adherence to environmental conservation practices is not common in your community. Alternatively, you can argue that setting your AC thermostat at a low temperature would not contribute too much to greenhouse gas emissions and would not harm the environment. To sustain such beliefs, you would avoid information telling you that people around you approve of energy conservation through lesser AC usage, or information showing the negative impacts of AC on the environment and climate.

Your reliance on different types of belief manipulations depends on contextual features. For instance, if you are more concerned with compliance with an environmental conservation norm, you would feel more pressure to protect the environment. However, you would also be more motivated to engage in belief manipulation to relieve that pressure and still feel moral while enjoying the comfort provided by your AC.

Therefore, we expect increased social norm salience, such as that due to social observability or social information, to lead to higher avoidance of information on the impacts of your AC usage and motivated beliefs in an attempt to protect your identity as a moral person. We expect the incentive to engage in strategic belief manipulation and information avoidance to be particularly strong when the hedonic costs of energy conservation are high. In the AC example, the trade-off between private comfort and pro-environmental behavior will be stronger, if the difference between your preferred AC thermostat temperature and the "environmentally friendly" level is greater. In this sense, the possibility of self-serving belief manipulation and information avoidance reduces the predicted effect of energy conservation nudges, especially when the context entails salient image concerns and high perceived hedonic costs of energy conservation.

These predictions counter the ones of a standard theory of instrumental information acquisition, which posits that people acquire information to facilitate their cost-benefit trade-offs. According to the standard model, increasing the perceived importance of pro-environmental behaviors, either by making salient the image costs of not adopting them or by increasing the perceived hedonic cost of adopting them, makes information on the actual environmental consequences of behavior (weakly) more valuable, and therefore there should be no information avoidance.

Our online experiment allows us to test these predictions by varying norm salience and the perceived hedonic cost of acting pro-environmentally through experimental treatments. In the experiment we can directly observe reported beliefs about the impact of AC usage on the environment and decisions about whether to acquire information about this environmental impact, as well as the actual AC thermostat settings. Many individuals, of course, may choose not to read additional information about the environmental impact of AC usage, simply due to rational inattention, or not caring about environmental impacts. But, if making the social norm salient causes some people to no longer obtain this information, we can interpret this effect as evidence of active information avoidance.

3. Online experiment: Design and setting

3.1. Design

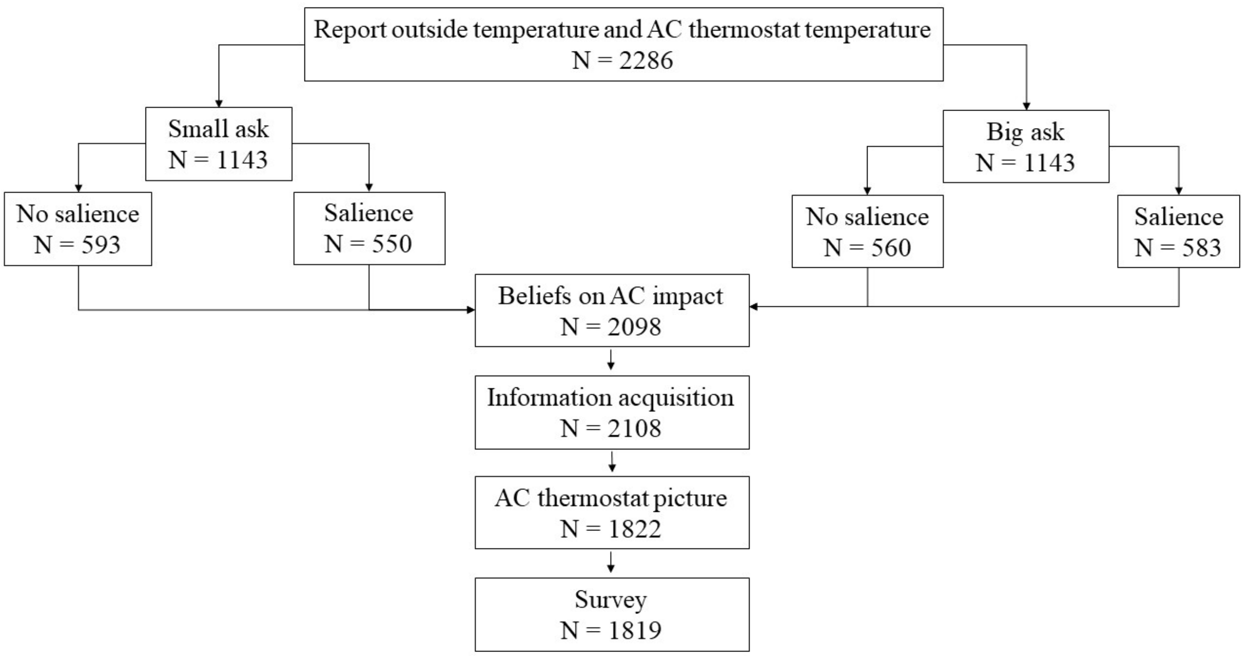

Figure 1: **Experimental design and sample size**

The experiment was carried out online and consisted of a survey, as depicted in Figure 1.[4] The survey began by asking participants questions on current outside temperature and AC thermostat temperature in their own home. Subjects were then exposed to experimental treatments varying in two dimensions, resulting in a 2 x 2 factorial design.

The first treatment dimension introduced variation in the perceived hedonic cost of environmentally-friendly behavior by asking subjects to make a big or small change in their behavior. Individuals assigned to the *Small ask* condition were told that setting their AC thermostat "even just 1 degree higher" was enough to reduce their greenhouse gas emissions, while for subjects in the *Big ask* condition the suggested thermostat increase was 5 °F. We expect a larger suggested temperature increase to raise the perceived hedonic cost of environmentally friendly behavior.[5]

The second treatment, administered immediately after the ask-size treatment, varied the observability of participants' behavior by an environmental activist. In the *No salience* condition, subjects were shown a photograph of a thermostat and were notified that they would shortly be asked to upload a photograph of

[4]Online Appendix D provides the full text of the survey.

[5]We acknowledge that we did not include in the survey a manipulation check to test that indeed the big ask treatment had the intended effect on perceived hedonic cost, as participants' could already manipulate their report at this stage. Nonetheless, our design is close in spirit to those adopted in the charitable giving literature to vary the suggested donation amounts (Cialdini & Schroeder, 1976; Adena et al., 2014).

their own AC thermostat display.[6] In the *Salience* condition, the photograph of the thermostat was replaced by one of a volunteer for the Sierra Club, a well-known US environmental non-governmental organization. The description of the environmental activist was accompanied by a quote from her, emphasizing that people need a clean environment to stay healthy. Importantly, the quote did not provide any information on the environmental impacts of AC usage. Participants assigned to this treatment were told that the volunteer would observe their survey responses and photographs of their AC thermostats. The volunteer was paid to review the survey responses and the photographs after the experiment. This manipulation was intended to increase the social pressure to act pro-environmentally, by making the environmentally-friendly social norm related to AC usage more salient.

Immediately after the treatments, the survey elicited subjects' beliefs regarding the impact of their own AC settings on the environment, on a scale from 1 to 10. We also asked for a specific estimate of impact using "Guess how much you would reduce your yearly CO_2 emissions (in pounds) if you raised your thermostat setting by 1 degree F (or 5 degrees F in the Big Ask treatment) for 8 hours a day from its normal setting." [7] After the belief elicitation, the respondents were asked whether they wanted to know more about the environmental impact of AC usage. Individuals that answered affirmatively to this question were directed to a page containing information provided by the US government about the impact of air conditioning on the environment in terms of emissions, and giving them the opportunity to compute their own CO2 emissions from AC usage using an online calculator.

Subjects were then invited to upload a photograph of their thermostat display. The request to upload a picture of the AC thermostat, rather than simply to numerically report the thermostat setting, is meant to provide verifiable information about the thermostat setting, so that subjects could not simply report socially desirable behavior without implementing it and could not make up a number if unwilling to get up and check. Of course, subjects could change their thermostat setting for the photo and then immediately change it back, but it is reasonable to assume that if an individual is unwilling to modify the AC temperature even temporarily, any long-term behavioral change would be unlikely. Therefore, the observed effect from uploaded pictures should provide an upper bound to the treatment effects.

The final part of the survey included a series of questions about respondents' demographic and socio-economic characteristics, typical AC usage patterns, beliefs about climate change, and their values.

This design allows us to collect a series of behavioral outcomes from subjects in all treatment groups. Participants' reported beliefs on the impact of their own AC usage on the environment are used to test treatment effects on strategic belief manipulation. The decision to acquire the information about their AC

[6]The thermostat shown in the photo displayed a 70 °F AC setting. Therefore, we may worry that it provided a reference point to subjects or licensed them to keep a low AC temperature during the experiment. However, the distribution of AC temperatures in the thermostat photos submitted by subjects did not peak at or around 70 °F in the *No salience* condition, and the reported temperatures were on average not significantly lower than those submitted by subjects in the *Salience* conditions.

[7]In their review paper, Charness et al. (2021) point out that introspection (non-incentivized responses) does as well as rather complex incentivized methods in general. We choose not to incentivize the belief questions because our aim is to detect belief manipulation due to image concerns, and any monetary incentive for accurate report of beliefs would confound this measurement.

usage's environmental impact constitutes direct evidence of strategic information acquisition. Data on AC temperature at baseline and from the thermostat photos are used to construct indicators of the extensive and intensive margins of temperature change, i.e. on whether subjects changed their AC settings and, if so, by how much. These are the behavioral outcomes that the treatments were intended to affect.

3.2. Implementation

We recruited participants from the online platform Amazon MTurk. To be eligible for the study, participants had to be aged 18 or older, be at home at the time of taking the survey, have an AC system that allowed manual selection of the thermostat temperature, and be able and willing to upload a photograph of their thermostat display. The survey took on average 12 minutes to complete, with a median duration of 9 minutes. Subjects were compensated 2 USD for their participation, corresponding to an average hourly wage of 10 USD.[8]

The full experimental sample comprises 2,286 participants who were randomly allocated to the four treatment conditions described earlier, whereby 593 were assigned to the small ask-no salience condition, 550 to the small ask-salience condition, 560 to the big ask-no salience condition, and 583 to the big ask-salience condition. Since answering any of the survey questions or submitting a photograph was not compulsory nor a necessary condition for payment, we observe attrition and variation in sample size across survey questions more generally (Figure 1 and Table A.1). Specifically 2,098 subjects answered to the AC impact belief elicitation, 2,108 made the information acquisition choice, 1,822 submitted a valid AC thermostat picture, and 1,819 reached the end of the survey.[9] Since attrition, particularly if selective, matters for the validity of the randomization and for the interpretation of the results, we discuss it in depth in Section 4 below.

We conducted a pilot study to run power calculations and determine the minimum sample size for the current experiment. For information acquisition, and the comparison between control and the experimental condition combining the salience and big ask treatments, a sample of 508 subjects per condition was deemed sufficient to detect differences significant at the 5 per cent level with a power of 0.85. The required sample size ranged between less than 100 and more than 39,000 subjects for other outcomes and treatment pairs. We thus a priori expected to be able to detect at least some treatment effects, particularly the ones that were the main focus of the analysis, with the planned sample size.

The focus of our experiment on AC usage guided our implementation and sampling strategies. Specifically, as the goal was to determine willingness to forego personal comfort for greater social responsibility, we conducted the experiment over the summer when temperatures are generally high and AC is extensively used. The sampling protocol controlled for factors that could potentially influence the actual and perceived cost of varying AC thermostat settings, such as location, time of day, and outside temperature at the time

[8]Ethical approval was provided by the IRB at Carnegie Mellon University .

[9]The sample size for the dependent variables related to changes in AC thermostat temperature, constructed using the difference between baseline AC temperature and the thermostat temperature in the picture, are non-missing for 1,817 participants because 5 subjects who submitted thermostat pictures did not report baseline AC temperature.

of completing the survey. We conducted the experiment in the three largest US states (by population) – California, Florida and Texas - on Monday over five consecutive weeks, starting from the first week of July 2019. At each of these five time points, subjects within each state were randomly allocated to one of the four experimental conditions.[10]

4. Online experiment: Results

Before reporting on the empirical analysis, we first present the respondents' characteristics and balance tests, examine attrition and discuss the descriptive statistics of outcome variables and their correlations. We then evaluate the treatment impacts on the three outcome variables - beliefs, information acquisition, and AC temperature- through pairwise tests and linear regression analysis; and examine sources of heterogeneity in treatment effects. Finally, we discuss and provide evidence against the possibility that our results are due to experimenter demand effects.

4.1. Summary statistics

Appendix Table A.1 reports summary statistics of the respondents' characteristics and outcome variables, as well as balance statistics from parametric and non-parametric tests. For each variable, we report the number of non-missing observations. Non-response is an issue particularly for survey questions requiring more effort to answer, such as whether the AC system owned by the respondent is EnergyStar (937 observations), or placed later in the survey flow, such as the respondent's beliefs on climate change (1,737 observations).

We test whether attrition is significantly correlated with treatment assignment or other respondents' characteristics. We construct indicators for non-missing AC impact beliefs, information acquisition, AC thermostat picture, and for survey completion. We also consider attrition in terms of the share of non-missing survey questions. We regress these outcome variables on treatment dummies and on the two variables elicited before the treatment messages, for which we have the most non-missing observations: reported outside temperature (2,285) and baseline AC temperature (2,272). We find that the salience and combined salience and big ask treatments reduce attrition across all outcomes (Appendix Table A.2). Since attrition is correlated with treatment, we test whether our results are robust to it by computing, reporting and discussing Lee bounds in the empirical analysis (Lee, 2009).

Respondents reporting higher baseline AC temperature are also less likely to drop out of the study or leave questions unanswered, while those reporting higher outside temperature are more likely to send a thermostat picture and to answer the survey questions. We further investigate these results and show that,

[10] This sampling protocol made it possible to detect temperature variation within day and location. We combined the experimental data with official records of the current local temperature. We located each subject using the IP address provided (based on the location API available from db-ip.com) and associated the daily temperature to each geographical location. Specifically, by employing the data provided in the daily version of the Global Historical Climatology Network (GHCN-D), we were able to extract the daily maximum and minimum temperatures measured by a wide set of certified measuring stations. For each location, we selected the closest station present in the GHCN-D, and extracted the maximum and minimum temperature for the day when the survey was conducted. We also computed monthly averages for the preceding 20-year period (1999-2018) to assess the daily temperature deviation from the historical average.

among subjects with non-missing impact beliefs and information acquisition questions, attrition in survey progress or completion does not depend on treatment status (Appendix Table A.3): we can therefore control for respondents' characteristics in our analysis without introducing further selective attrition. Also, baseline AC temperature does not affect attrition differently among subjects assigned to the different treatments (Appendix Table A.4): this is reassuring, as baseline AC temperature affects the scope for reacting to the treatments by changing the thermostat temperature.[11] We will discuss how these patterns affect the interpretation of our results in the remainder of this Section. Next, we show that we achieve balance across treatment groups in spite of the presence of selective attrition.

Both parametric and non-parametric tests confirm that the respondents' characteristics are balanced across treatments. Participants in the study are on average 36 years old, 50.4% of them are female, 43.4% have children, and 47% are married. Respondents' average education level is some college, and their average annual income category is 25,000 to 50,000 USD. In terms of political preferences, 44.8% of them are Democrats. Based on their survey responses, 44.3% of subjects were classified as having high environmental values. Participants on average agree on climate change's reality, although less so on climate change being caused by human activities.

The average temperature at which respondents report setting their AC thermostat at baseline, i.e., before the treatment, is 73.9 °F, and it is also balanced across treatments. Out of the subset of participants who provided information on the type of AC system in their home, 66.8% owned an EnergyStar system. Overall, 72.1% of the sample claim to be actively trying to limit their AC usage. Subjects report on average outside temperature of 82.5 degree F, which is lower than the actual temperature of 91.1 degrees F. Both measures of outside temperature are balanced across treatments.[12] Overall, attrition does not appear to have affected the overall balance in our sample.

On a scale from 1 to 10, the participants rate the impact of their own AC thermostat settings on the environment at 6.1 on average (the distribution is provided in Appendix Figure A.1), and 55.5% of respondents acquire the information on the environmental impact of AC usage. As noted previously, we can measure AC temperature change from baseline AC temperature and AC thermostat pictures only for 1,817 out of 2,286 respondents. The available information on AC temperature change reveals that 51% of respondents changed their AC temperature (this is the extensive margin of AC temperature change), increasing AC temperature by 1 degree (intensive margin) on average. The change in AC temperature distribution confirms the mode at 0, indicating no change. Besides, there are two peaks at 1 and 5 degrees, i.e., the temperature changes suggested by the treatments (Appendix Figure A.2). All outcome variables significantly differ by treatment.

As discussed in Section 2, the different behavioral outcomes are likely to be correlated with each other, as

[11]We cannot assess whether and how individual characteristics affect attrition in the study because they were elicited after the treatments and are thus only available for non-attriters.

[12]Baseline AC temperature and real and reported outside temperature are also balanced by treatment when considering only the sample of respondents with non-missing AC impact beliefs and information acquisition variables.

individuals' beliefs influence information acquisition; and beliefs and information acquisition guide, or licence, actions. Table 1 displays pairwise correlations between beliefs on AC impact, information acquisition, and AC temperature change. The reported findings confirm that higher beliefs on the impact of one's own AC usage on the environment are positively correlated with the likelihood of choosing to acquire information (p=0.000) and changing the AC temperature setting at home within the experiment (p=0.010), as well as with the amount of change in the AC temperature (p=0.063). Similarly, individuals who opt to acquire information on the impact of AC usage on the environment are more likely to change their AC temperature setting (p=0.001) and report positive AC temperature changes within the experiment (p=0.003).

Table 1: Pairwise correlation between beliefs, information acquisition and AC usage

	Belief on AC impact	Acquires information	Changes AC temp.	AC temp. change (°F)
Belief on AC impact (1-10)	1.000			
Acquires information (0/1)	0.223	1.000		
	(0.000)			
Changes AC temperature (0/1)	0.060	0.076	1.000	
	(0.010)	(0.001)		
AC temperature change (°F)	0.044	0.069	0.641	1.000
	(0.063)	(0.003)	(0.000)	

Notes: The table reports Pearson pairwise correlation coefficients and significance levels between beliefs on the impact of AC on the environment, information acquisition and AC temperature change within the experiment (extensive and intensive margins).

4.2. Impact on beliefs and information acquisition

We now turn to the analysis of the treatment effects. When conducting regression analysis, we regress outcome variables on indicators for the norm salience, big ask and combined salience and big ask treatment conditions, where each coefficient captures the effect of the corresponding condition with respect to the control one. We adopt two main specifications, respectively including state and week fixed-effects as the only controls, and adding controls selected through the post-double selection LASSO procedure applied to the variables featured in Panel A of Appendix Table A.1 and baseline AC temperature (Belloni et al., 2014).[13] The regression tables also report the p-values from Wald tests of the equality of coefficients: we test whether the combined norm salience and big ask treatment has a significantly different effect from the big ask treatment (without norm salience) and from the salience treatment (with small ask). These tests tell us whether the combination of nudges affects outcomes of interest differently from each nudge in isolation.

The regression analysis follows a pre-analysis plan (PAP) registered to the AEA RCT Registry.[14] We submitted the PAP during the data collection phase of this study, before having access to the complete clean

[13]The LASSO analysis excludes self-reported indicators of AC usage and climate change opinions that could potentially be affected by the treatments, even though they appear balanced and are not affected by any treatment condition individually (Appendix Table A.5).

[14]RCT ID: AEARCTR-0004485.

data and before having done any analysis on the data we had available, apart from power calculations after the pilot. The specifications presented in the main text differ from those in the PAP in two main respects: (1) the definition of the outcome variables related to beliefs and AC temperature setting, and (2) the use of the LASSO methodology to select the control variables to include in the regressions. The departures from the PAP are due to the progress in the empirical literature that has occurred since the submission of the PAP in 2019, to suggestions collected when circulating the paper, and to the desire to strengthen the focus and cohesiveness of the paper. Online Appendix C reports the results from the analysis pre-specified in the PAP, and discusses in detail each deviation from the pre-registered specifications and the reasons behind them. Overall, the results show that the main insights reported in this paper are supported by the pre-registered analysis.

We begin with the analysis of the treatment effects on beliefs on AC impact and information acquisition. In accordance with the view that individuals seek moral wiggle room to escape social pressure (as discussed in Section 2), we expect beliefs and information acquisition to respond negatively to the social pressure generated by the norm salience treatment, particularly when the ask is bigger. The big ask should increase motivation to seek moral wiggle room and thus to avoid information. On the other hand, according to the standard theory that information only has instrumental values, the big ask suggests larger potential economic or social benefits in terms of energy savings, so the big ask could increase information acquisition compared to the small ask. Critically, the information's instrumental value should not depend on norm salience, whereas the behavioral motivation to find moral wiggle room after the big ask should be amplified by salience.

We first test these predictions through regression analysis and present the results in Table 2. Columns 1 and 2 provide the outcomes of linear regressions of beliefs whereas Columns 3 and 4 report on the regression of information acquisition. Models in Columns 1 and 3 control for state and week fixed-effects only, while Columns 2 and 4 add individual controls, selected through the post-double LASSO method.

Being exposed to a salient environmentally-friendly norm and receiving a big ask in isolation do not reduce reported beliefs on the environmental impact of AC usage. The combination of the two treatments instead negatively and significantly affects reported beliefs relative to the control condition ($p<0.01$ both in Column 1 and 2).[15] Wald tests show that adding a suggested large behavioral change to norm salience leads to a significant reduction in reported beliefs with respect to norm salience alone ($p=0.051$ and $p=0.056$ in

[15] The results on the other belief variable – the guess of the CO_2 emission reduction in pounds from complying with the suggested increase in AC thermostat temperature– are provided in Table A.7. We deviate from the PAP in not reporting results for the CO2 guess in the main text for two reasons. First, the belief on emissions in pounds is noisier than the belief on AC impact, as the CO_2 emissions related to any activity are very difficult to estimate for the general population. Second, the elicitation question differed by ask-size treatment, so responses are not directly comparable across them. For this reason, in Table A.7 we report results for both the raw answers to the elicitation question and for the standardized ones, capturing the CO2 reduction per degree of AC thermostat change. Results using the raw answer are qualitatively similar to the ones reported in the main analysis, while results using the standardized measure are different in the coefficient on the BigAsk treatment, but similar when comparing the effect of the combined treatment to the control one. We also obtain similar results on the lack of significant effects of adding norm salience to a large behavioral change request, when controlling for individual characteristics.

Table 2: Treatment impact on beliefs about AC impact and information acquisition

	(1)	(2)	(3)	(4)
	Belief on AC impact		Acquires information	
BigAsk	-0.201	-0.251*	0.027	0.024
	(0.142)	(0.150)	(0.031)	(0.034)
Salience	-0.136	-0.238	-0.003	-0.020
	(0.145)	(0.156)	(0.031)	(0.034)
Sal. + BigAsk	-0.411***	-0.520***	-0.045	-0.051
	(0.139)	(0.147)	(0.030)	(0.033)
Mean of dep var	6.101	6.001	0.517	0.509
Number of Obs	2096	1787	2106	1793
R-Squared	0.020		0.024	
Demographic controls (LASSO)	No	Yes	No	Yes
Test BigAsk = Sal. + BigAsk	0.130	0.057	0.018	0.023
Test Salience = Sal. + BigAsk	0.051	0.056	0.167	0.343

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable in Columns 1 and 2 is a variable ranging between 1 and 10, capturing the respondents' beliefs on the impact of their own AC temperature settings on the environment. The dependent variable in Columns 3 and 4 is a dummy equal to 1 if an individual opts to view the information on the environmental impact of AC usage. *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by an environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., those whose suggested AC temperature increase is high. *Salience + BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. All regressions control for state and week fixed-effects. In addition, regressions reported in the evenly numbered columns include control variables selected through post-double LASSO procedure among reported and real outside temperature, gender, marital status, has children, democrat, education level, income level, is alone at home and baseline AC temperature. The last rows report the p-value of Wald tests. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Columns 1 and 2, respectively). Similarly, adding norm salience to the big ask reduces reported beliefs with respect to the big ask in isolation, significantly so when we control for demographic characteristics (p=0.130 and p=0.057 in Columns 1 and 2, respectively). An alternative way to present these results is through sub-sample analysis. Appendix Table A.8 reports regression results of the impact of norm salience on beliefs by ask size that confirm this insight: norm salience has no impact on beliefs in the small-ask treatment, while it decreases them in the big-ask one, significantly when we include controls.

Appendix Table A.6 reports regression results including the coefficients for control variables selected through LASSO. Baseline AC temperature has no significant correlation with beliefs. This is relevant for our discussion of the consequences of attrition, which we found to be lower among users reporting higher baseline AC temperature, and suggests that our results should not be affected by selective attrition along this dimension. We investigate the effect of differential attrition by treatment status by computing Lee bounds (Lee, 2009). The bounds estimator produces lower and upper bounds of treatment effects under the assumption that attriters are subjects with either the lowest or highest levels of the dependent variable, in this case AC impact beliefs. We report the upper and lower bounds for the effect of each treatment and compare them with the average treatment effects in Appendix Table A.9.[16] The results are qualitatively in

[16] Since bounds can only be computed for binary treatments, we create sub-samples, including the control treatment and one of the other treatments, and re-estimate each treatment effect at a time. This explains why the main treatment effects reported in Appendix Table A.9 do not perfectly correspond with those in the main text tables.

line with the main ones, in terms of the relative difference of the three treatments with respect to each other and the control.

Additional analysis of the distribution of participants' beliefs regarding the environmental impacts of AC usage confirms these results and illustrates them more clearly. Figure 2 presents the distribution of beliefs by norm salience when the ask is small (Panel A) and when it is big (Panel B). Norm salience has no impact on beliefs when the ask is small (chi-square test, p=0.533). However, salience significantly decreases beliefs when respondents face a more demanding suggested behavioral change (chi-square test, p=0.075).

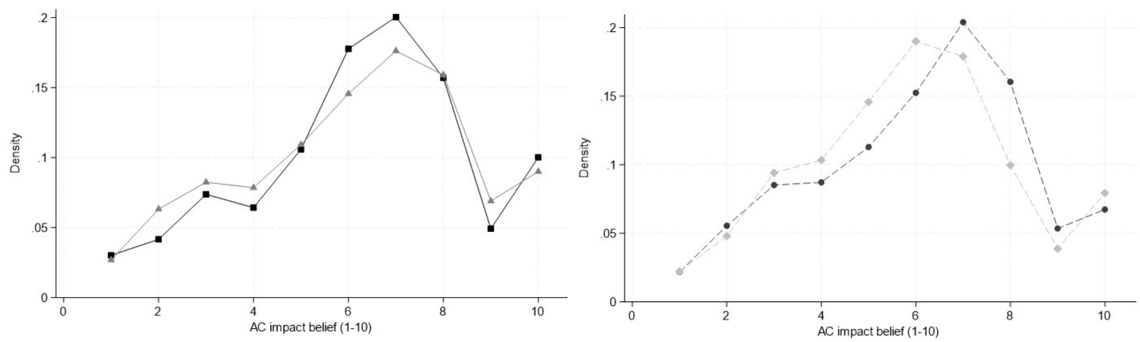

Figure 2: **Distribution of AC environmental impacts beliefs by treatment.** Panel A compares salience and no salience with the small ask, i.e. Control (black squares) versus Salience (grey triangles). Panel B compares salience and no salience with the big ask, i.e. BigAsk (black circles) versus Salience x BigAsk (grey diamonds).

The results related to information acquisition, reported in Columns 3 and 4 of Table 2, show that none of the treatments influence significantly information acquisition. However, Wald tests suggest that adding norm salience to a big ask leads to significantly lower propensity for information acquisition relative to the big ask alone (p=0.018 and p=0.023 in Columns 3 and 4, respectively).[17] Sub-sample regressions are presented in Appendix Table A.10 and confirm these results: the salience treatment reduces significantly information acquisition when the ask is big (p<0.05 both with and without controls), but not when the ask is small.

Appendix Table A.6 shows that, similarly to what we noted for beliefs, baseline AC temperature has no significant correlation with information acquisition. Lee bounds, shown in Appendix Table A.9, again show patterns that are qualitatively in line with the main ones: the coefficients of the combined treatment are negative and lower than those of the two nudges in isolation.

Graphical representation and pairwise tests again illustrate these results more clearly. Figure 3 displays the share of subjects acquiring the information by treatment, indicating that, while norm salience reduces information seeking in both ask conditions, its impact is statistically significant only when the ask is big (p-value of 2-sided t-test, p=0.981 with the small ask, p=0.014 with the big ask).

Until now, we have considered belief formation and information acquisition as two independent outcomes. However, it is plausible that the two behaviors are related, and indeed we show that the two outcome variables

[17]The analysis of Table 2 follows the pre-registered specification, except for the use of linear regressions. Online Appendix C shows that the results are unaffected when we use the pre-specified logit specification.

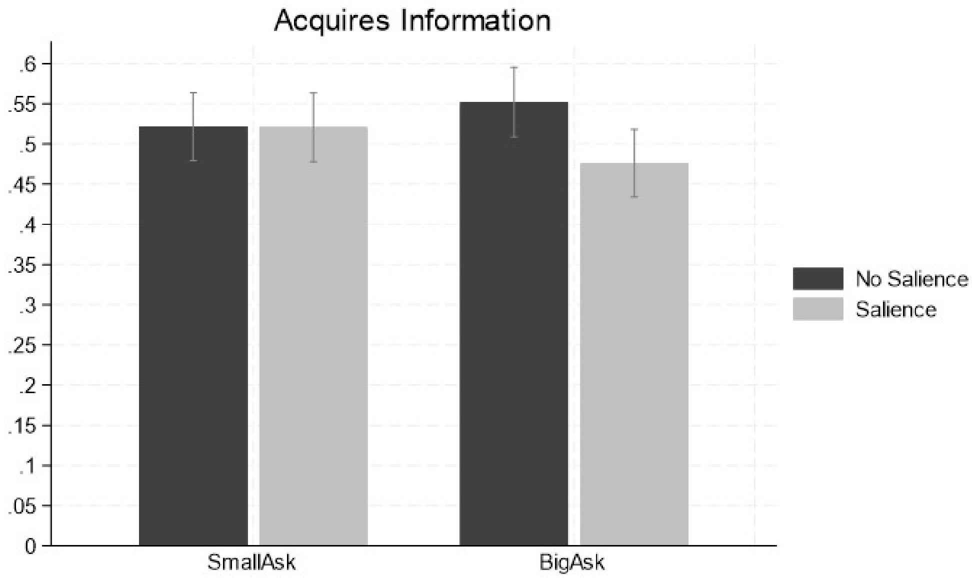

Figure 3: **Information acquisition by treatment.** Bars report means, whiskers 95% C.I.s.

are significantly correlated in Table 1 above. Specifically, in our study beliefs were always elicited before the offer to acquire information, so it is possible that beliefs guide the choice of acquiring information. The effect of the treatments on beliefs could thus be what drives any treatment effect on information acquisition. A formal test of this causal chain would require randomizing the order of belief elicitation and information acquisition within the survey. While we cannot run such test with the available data, we perform a mediation analysis to test whether controlling for beliefs affects the treatment effects on information acquisition. Results confirm that beliefs are positively and significantly correlated with information acquisition -subjects who believe that AC usage has large environmental impacts are more likely to get information on such impacts- but also show that treatment effects are virtually unaffected by the inclusion of beliefs as controls in the analysis (Appendix Table A.11). This suggests that the (not significant) impact of the treatments on information acquisition does not work entirely through the treatments' effect on beliefs.

Taken together, these results provide insights on the strategies adopted by subjects in response to an increase in the salience of a prescriptive norm of energy conservation. Participants exposed to a request of a large behavioral change entertain significantly lower beliefs about the environmental impact of AC usage and are significantly less likely to engage in information avoidance when the social norm is made salient. Similarly, adding a request of large behavioral change to the social norm significantly reduces elicited impact beliefs relative to norm salience alone.

4.3. Impact on AC temperature

We next examine the treatment effects on AC usage. We consider treatment impacts on the extensive and intensive margins of AC temperature change, i.e., on the likelihood that participants would change their AC thermostat temperature and on the temperature change in °F, respectively. We construct these variables by subtracting self-reported AC temperature at the start of the experiment from AC temperature visible in the photos taken by the participants.[18]

Table 3 presents the regression results, with Columns 1 and 2 focusing on the extensive margin of AC temperature change, and Columns 3 and 4 on the intensive margin. The reported findings indicate that, given the small ask, norm salience increases the likelihood that participants would change the temperature of their AC thermostat within the experiment by 20%, or 17% when including controls ($p<0.05$ both in Columns 1 and 2). When it is combined with the big ask, instead, norm salience has no effect on the extensive margin of temperature change relative to the control, as does the big ask alone. Wald tests show that, on the extensive margin, adding norm salience to the big ask has no effect on the likelihood to increase AC temperature with respect to the big ask alone (p=0.742 and p=0.762 in Columns 1 and 2, respectively). In turn, adding the big ask to norm salience significantly reduces the effect of the latter (p=0.001 and p=0.002, in Columns 1 and 2, respectively).

On the intensive margin, norm salience alone leads to 48% greater AC temperature increases on average in the regression without controls, and 41% in the one with controls ($p<0.05$ both in Columns 3 and 4). The big ask positively and significantly affects the intensive margin, and the magnitude of its effect is larger than that of norm salience in isolation. Combining norm salience and a higher suggested temperature increase also positively and significantly affects the overall AC temperature change on the intensive margin relative to the control treatment ($p<0.01$). However, the addition of norm salience to the big ask has no effect on AC temperature change relatively to the big ask in isolation (Wald test, p=0.733 and p=0.662 in Columns 3 and 4, respectively). The combined treatment appears instead more effective than norm salience alone, significantly so when we control for respondents' characteristics (p=0.044).

Appendix Table A.12 reports the results showing the coefficients of the control variables included through LASSO. Baseline AC temperature has a negative and statistically significant correlation with both the extensive and intensive margin of AC temperature change. This is not surprising, as the margin for raising AC temperature gets smaller as baseline AC temperature increases. Since respondents with higher baseline AC temperature are also less likely to drop out of the survey, we may speculate that our results come from a sample with lower ability to react to the treatments. We further examine the role of the margin for action in Section 4.4. Appendix Table A.9 reports Lee bounds to test robustness to differential attrition by treatment. Again, the differences between the coefficients are qualitatively consistent with our main results.

The combination of norm salience and demanding requests is therefore effective in inducing energy conservation among those subjects who are willing to change their behavior, despite failing to induce more people to do so. In addition, while norm salience is effective in fostering behavioral change on both the extensive and intensive margins when combined with the small ask, it has no effect when combined with an

[18] This analysis departs from the pre-specified one in several respects, which we detail in Online Appendix C. We also motivate the deviations, which are in this case driven primarily by incorrect specifications of the PAP analysis, which have been pointed out in feedback when circulating the paper.

hedonically costly suggested behavioral change.

Table 3: Treatment impact on AC temperature change

	Changes AC temp. (0/1)		AC temp change (°F)	
	(1)	(2)	(3)	(4)
BigAsk	-0.036	-0.039	0.673***	0.644***
	(0.032)	(0.032)	(0.194)	(0.181)
Salience	0.079**	0.066**	0.452**	0.386**
	(0.033)	(0.032)	(0.181)	(0.167)
Sal. + BigAsk	-0.025	-0.030	0.740***	0.723***
	(0.032)	(0.031)	(0.190)	(0.174)
Mean of dep var	0.384	0.382	0.936	0.934
Number of Obs	1816	1790	1816	1790
R-Squared	0.028		0.024	
Demographic controls (LASSO)	No	Yes	No	Yes
Test BigAsk = Sal. + BigAsk	0.742	0.762	0.733	0.662
Test Salience = Sal. + BigAsk	0.001	0.002	0.112	0.044

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable in Columns 1 and 2 is a dummy equal to 1 if the respondent changed the AC thermostat temperature, relative to the temperature reported at the start of the experiment. The dependent variable in Columns 3 and 4 is the difference between the AC thermostat temperature at the end of the experiment and the one reported at the start of the experiment. *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by en environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., persons whose suggested AC temperature increase is high. *Salience + BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. All regressions control for state and week fixed-effects. In addition, regressions in Columns 2 and 4 include control variables selected through post-double LASSO procedure among: reported and real outside temperature, gender, marital status, has children, democrat, education level, income level, is alone at home and baseline AC temperature. The last rows report the p-value of Wald tests. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

The impact of norm salience and ask size are made clearer by graphical representations and pairwise tests of means. Figure 4 shows the share of subjects who change their AC temperature (left) and the average number of degrees of AC temperature change (right), by treatment. The likelihood of modifying the thermostat temperature increases with norm salience when combined with the small ask, although the effect is marginally not significant (2-sided t-test, p=0.104), while it remains unchanged when accompanied by the big ask (p=0.831). Similarly, when the ask is small, norm salience significantly increases the average temperature change (p=0.039). In contrast, when the ask is big, norm salience has no effect on average temperature change (p=0.437). Overall, increasing the size of the ask has no impact on the extensive margin of temperature change, while it positively affects the intensive one.

The results on changes made by the participants to their AC temperature setting are expected, given the previously discussed beliefs on the AC's impact on the environment and propensity for information acquisition. Specifically, when the ask is small, norm salience has no impact on beliefs or information seeking, but it significantly and positively affects energy conservation through reductions in AC usage on both the extensive and intensive margin. Conversely, when combined with the big ask, norm salience induces significantly lower impact on beliefs and greater information avoidance, and no longer has a significant impact on AC usage relative to the big ask in isolation.

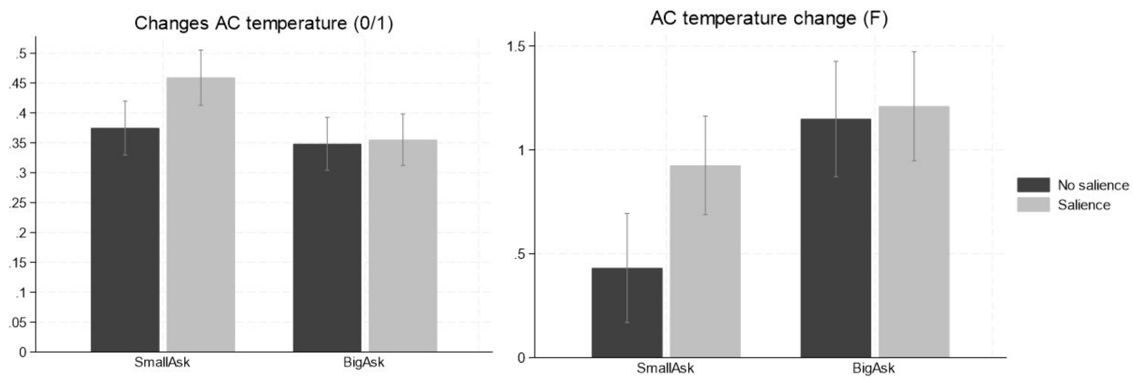

Figure 4: **AC temperature change by treatment: extensive (left panel) and intensive margin (right panel)** Bars indicate means, and whiskers demarcate 95% C.I.s.

4.4. Heterogeneity

Our results raise several questions on the mechanisms behind the effects of the treatments, which we address through heterogeneity analysis.

First, we ask whether the people avoiding information and manipulating their beliefs may be the ones who do not change the AC temperature in the combined treatment. To better illustrate the role that beliefs on AC impact and information acquisition play in determining treatment effects on AC temperature change, we estimate treatment effects separately for participants with above and below-median AC impact beliefs; and for participants who acquired and did not acquire the information. We find that the effects of the treatments are generally smaller in magnitude and not statistically significant among subjects with below-median AC impact beliefs and who do not acquire the information (Appendix Table A.13). These results suggest that individuals who state that their actions have limited consequences and do not attend to the information are better able to resist the pressure induced by the treatments on their AC usage.[19] Of course these results suffer from endogeneity issues, as the analysis does not rely on experimentally induced variations in beliefs and information acquisition, and should thus be taken with caution.

Second, we ask whether our results are due to the presence of ceiling effects, whereby subjects cannot comply with the requested AC temperature change given the baseline AC temperature and current outside temperature. We identify participants facing ceiling effects as those for whom the difference between their baseline AC temperature and their perceived AC temperature is smaller than the ask size. In other words, participants facing ceiling constraints could comply with the requested AC temperature increase only by setting their AC temperature above the outside temperature. 24% of the sample, or 554 respondents, fall into this category.[20] We run our main analysis excluding the sub-sample of subjects facing ceiling effects (Appendix Table A.14). Comparing these results with our main ones, it seems that the combined treatment

[19]Indeed, we know from Table 1 that higher impact beliefs and information acquisition are both positively and significantly correlated with AC temperature increase.

[20]If we define ceiling effects based on real outside temperature, nobody is identified as facing them.

has stronger negative effects in this sample on beliefs and information acquisition. As for temperature change, in this sample the big ask reduces the extensive margin, salience does not increase neither the extensive nor the intensive margin, and the combined effect of salience and big ask is marginally significant and negative on the extensive margin. Overall, these results suggest that our findings on the treatment effects are not due to the presence of ceiling effects. On the contrary, the stronger negative effects of the treatments on beliefs and information acquisition, and the more muted effects on AC temperature change among subjects facing no constraint in complying with the request, suggest that these individuals feel stronger pressure from the nudges, and thus a stronger desire to escape such pressure, than subjects who cannot comply with them.

Finally, we examine heterogeneity in treatment effects more broadly, to shed further light on the mechanisms behind them. We follow Semenova & Chernozhukov (2020) and use machine learning estimators of Conditional Average Treatment Effects (CATE) for each individual based on the survey variables that we have so far included in the LASSO regressions: reported and real outside temperature, baseline AC temperature, gender, marital status, education level, income level and indicator variables for having children, being a democrat and being alone at home. We plot the kernel density of predicted CATE for each treatment and outcome in Figure 5. The graphs reveal interesting patterns and confirm the results we obtained from the regression analysis. There is significant heterogeneity in predicted CATE across all outcomes. For AC impact beliefs and information acquisition, the distributions confirm the negative effect of adding salience to the big ask, but not to the small ask. For AC temperature change, it is apparent how the salience treatment shifts the likelihood of temperature change, but results in limited increases in temperature. Combining salience with the big ask appears to visibly affect the distribution of treatment effects only along the intensive margin of AC temperature change.

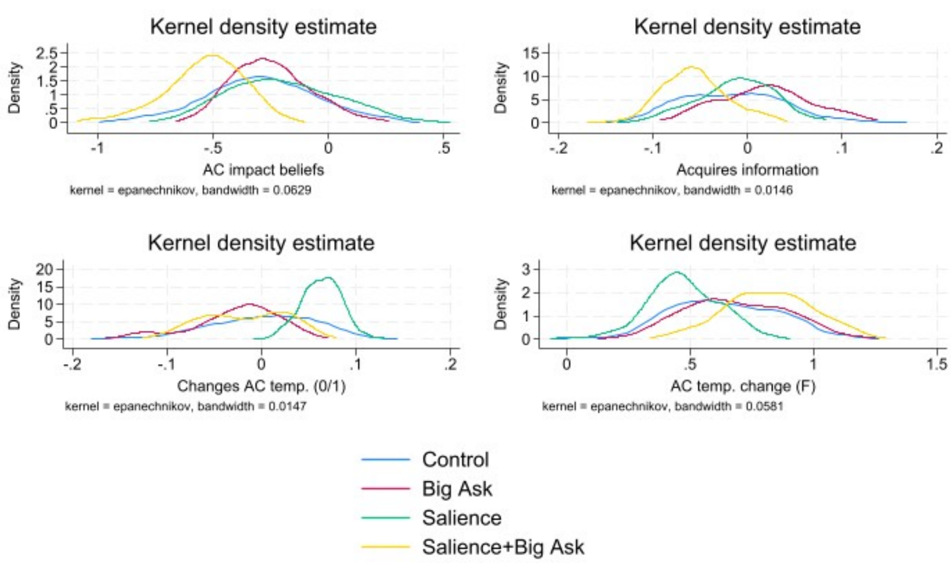

Figure 5: **Distribution of predicted CATE by treatment and outcome**

We can examine whether respondents with lower and higher CATE differ in terms of their observable characteristics. This may shed some light on the mechanisms behind the treatment effects. Moreover, by comparing the characteristics of least and most affected respondents across the different outcomes, we may infer whether the same subjects who respond to the treatments through belief manipulation and information avoidance are also those who do not react by changing AC temperature. We conduct this exercise by pooling all treatments, sorting respondents by their predicted CATE and splitting the sample in half. We then compare the average characteristics of the half of the sample with the lower and higher predicted CATE. We repeat this exercise for each outcome variable. Appendix Table A.15 reports the results. In terms of demographic characteristics, traits that are associated with high predicted treatment effects consistently for beliefs on AC impact and information acquisition are associated with low predicted treatment effects for AC temperature change. For instance, married individuals with children are more likely to respond to the treatments by increasing their AC impact beliefs and acquiring information. However, they are also less likely to respond to the treatments by increasing AC temperature, both on the extensive and on the intensive margin. We therefore cannot identify observable characteristics, among those available in our data, that can predict consistent responses to the treatments across all outcomes.[21]

4.5. Demand effects

All non-natural experiments are subject to the concern of experimenter demand effects, defined as changes in behavior by participants trying to infer the experimenter's objective (Zizzo, 2010). As the demand effects can never be completed ruled out, we offer evidence in support of our claim that they are not major drivers of behavior within our sample.

First, the study's possible perceived intent is to decrease AC usage or promote environmentally-friendly actions in general. If these demand effects were relevant, we would expect subjects in different treatment groups to report different AC usage and environmental attitudes. However, summary statistics provided in Appendix Table A.1 show that self-reported AC usage, as well as values and beliefs on climate change, all of which were elicited after the treatment, are strongly balanced across treatments. [22]

Second, there is a potential risk that the treatment impacts on information acquisition are being driven by demand effects. Indeed, it is possible that knowing that their choices would be observed may have led some of the subjects to seek or avoid the pertinent information just to please or spite the observer, without any impact on their intrinsic preferences about information acquisition or actual processing of information. In Appendix Table A.16, we exploit the available data on time spent on the information page by subjects who acquired the information to show that there are no treatment effects on the number of seconds participants spend reading the information. On average, these participants spent 47 seconds on the information page. These results suggest that our measure of information seeking is not cheap talk, as individuals that expressed

[21] These results are confirmed if we perform this exercise for the combined treatment alone.

[22] To further support our claim that treatment does not exert any effects on self-reported AC usage or beliefs on climate change, Appendix Table A.5 shows the full regression results.

willingness to learn more about the subject did indeed acquire and process the information.

Third, the evidence from the field discussed in the next section (Section 5), where any demand effect would be minimal due to the natural setting, produced consistent patterns in the results.

5. Generalizability: Evidence from a social information energy efficiency program

We exploit available empirical data from an independent large-scale energy conservation program to show that the hedonic cost of acting upon a social nudge influences its effectiveness. The program relies on a social comparison nudge, a widely adopted and evaluated behavioral intervention in the residential energy sector (Jachimowicz et al., 2018). Specifically, the intervention consists of a Home Energy Report (HER), comparing customers' consumption with that of their neighbors and giving positive feedback to efficient users (Allcott, 2011). Using the terminology adopted by Bicchieri (2016), the HER thus contains descriptive and injunctive social information. These features are meant to prime a social norm of energy conservation, leverage people's self-image concerns and increase the moral cost of deviating from socially accepted behaviors.

The program was conducted between July 2016 and August 2018 and involved 464,763 customers of a large Italian energy company, who were randomized to the treatment ($N = 418,395$) or the control ($N = 46,364$) group. The HER was sent bimonthly by email to all treated customers. However, to evenly distribute mail generation costs over time, half of the treated users received the report during even months and the other half during odd months. Our analysis focuses on treated customers.[23]

The HER was distributed by email, which contained a clickable link to energy saving tips and the user's personal page on the utility company's portal. Users could open an email and click on the links provided as they received it or shortly after, but they could also search their inbox for previously received reports, and peruse all provided information. Our data include detailed information on whether and when customers opened the HER or clicked on the link to view the tips or their personal page. We combine these data with monthly temperature in customers' municipalities of residence.

We exploit this setting to provide evidence on the correlation between information acquisition, proxied by opening the email and clicking on the HER, and the hedonic cost of energy conservation, proxied by outside temperature. Temperature affects the value of the information contained in the HER and the energy saving tips: knowing more about energy conservation is most useful when the potential savings from efficiency are the highest, which is the case when heat drives up electricity consumption due to widespread AC usage. Therefore, according to the standard theory of rational information acquisition, we would expect an increase in the share of customers viewing the information as the ambient temperature increases. On the other hand, saving energy is costliest in terms of lost comfort when temperature is high, because it entails reducing AC use. Making an energy conservation norm salient will lead to greater information avoidance when the

[23] In Online Appendix B, we discuss in greater detail the characteristics of the sample, the balance among treatments and the estimation strategy. The data on the full experimental sample and randomized treatment assignment was used by Bonan et al. (2020) to evaluate the program's impact on energy usage. This makes the analysis of the impact of weather on engagement with the campaign among treated customers, conducted here, a distinct empirical exercise from the one reported there.

outside temperature is higher, if people strategically avoid information to create moral wiggle room. This view contrasts with the prediction of rational information acquisition. This setting provides observations of real information acquisition in a natural environment. Furthermore, it is a panel data set allowing us to evaluate the same individual's behavior under different conditions.

In order to test whether the impact of outside temperature on information acquisition changes depending on whether customers are nudged to conserve energy, we exploit the variation in the timing of delivery of a report. In particular, we distinguish between months when customers are nudged to save energy by the receipt of a report, and months when they are not. We define a user opening/clicking on an HER during the same month when the HER was sent as being nudged to acquire the information. Conversely, a user opening/clicking on a HER during a month when the HER was not sent is considered to be actively seeking the information, ie., not under the impulse of the nudge. We expect strategic information avoidance to prevail when users are nudged to attend to information, while the standard theory of information acquisition to dominate when they actively seek information.

We test these predictions by regressing dummies for opening or clicking on the HER in a month on an indicator equal to one if a customer received the HER in the same month, the quartile of the maximum temperature recorded in the consumer's municipality over that month, and their interactions (Equation OA.1 in Online Appendix B). Crucially, as the regressions control for month-by-year and individual fixed effects, we control for seasonality and other factors varying across months (such as the likelihood that people are on vacation during the summer), and for individual time-invariant characteristics. In other words, the regressions reveal whether the same customer is more or less likely to open the HER and click on the links provided within in a month depending on whether she/he receives the HER and outside temperature in her municipality in that month.

We present the regression results in Figure 6: the figure displays the likelihood that customers open the report (left) and click on the link within it to access further information (right), as the maximum temperature recorded within a month increases – distinguishing between months when they receive a report and months when they do not. Differences are evaluated with respect to customers not targeted by the report in a month, and those living in municipalities with low maximum recorded temperature.

During months when no HER is received, the percentage of customers that open the email and click on the link increases with the maximum temperature recorded in that month: this positive correlation is consistent with information acquisition increasing with its instrumental value. Receiving the HER boosts both open and click rates. Report receipt also changes the effect of temperature, as higher temperature significantly lowers customer engagement (measured by open and click rates) in months when a report, which is in its essence a social norm nudge, is received. This pattern is suggestive of the presence of information avoidance among individuals, who would otherwise feel compelled by the nudge to perform costly adjustments to their behavior. Table OA.1 in Online Appendix B reports the regression results and shows that they are robust to

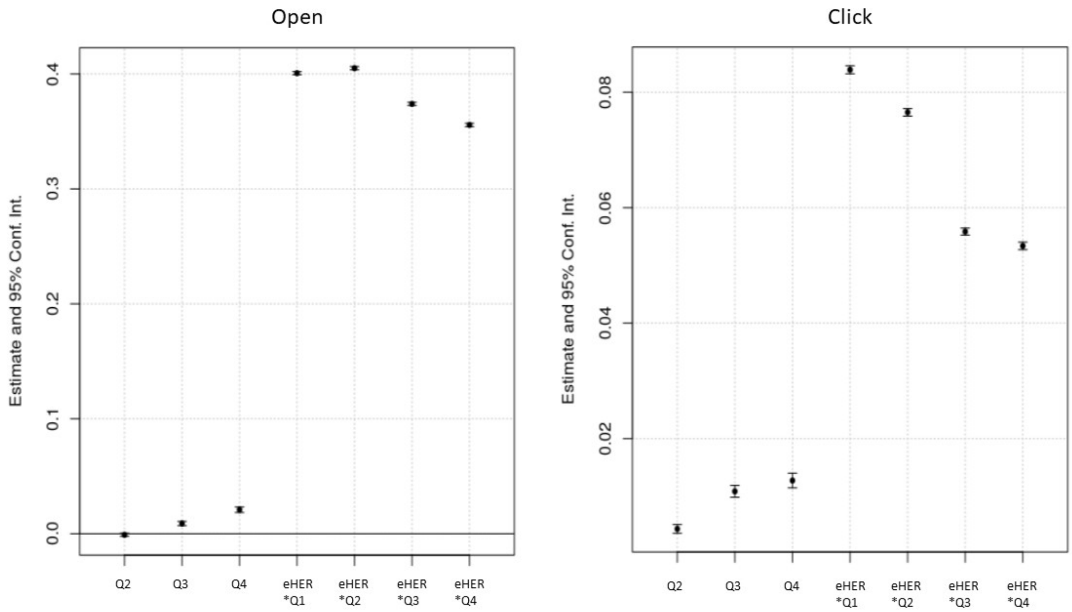

Figure 6: **Information acquisition and temperature** The figure reports marginal effects and 95% C.Is. of temperature quartiles (Q1-Q4), depending on whether or not a customer received an electronic Home Energy Report (HER). The results are based on a regression of opening (the left panel) the email and clicking (the right panel) on a report on quartiles of the maximum temperature reported in the user's municipality during a month, a dummy for receiving the report during a month, and their interaction (see Columns 5 and 6 of Appendix Table OA.1). The omitted category comprises of customers not receiving the report and living in a municipality in the first temperature quartile. Regressions control for month-by-year and individual fixed-effects.

different outside temperature indicators and definitions of high temperature.[24] These results are also robust to restricting the analysis to summer months (May to September), when AC is more likely to be needed (Appendix Figure OA.1).

These findings suggest that pressure to act pro-environmentally increases compliance, but also generates avoidance behaviors. However, when interpreting these conclusions, the limitations of this field setting need to be considered. First, the adopted design does not allow us to directly test the impact of the nudge on energy consumption at different cost levels, as weather influences energy use in several important ways (Auffhammer et al., 2017; Li et al., 2019). Second, and related to this point, energy usage is the product of several factors, which may prompt participants to react differently to the nudge and hedonic cost. Third, our ability to identify the impact of hedonic cost is limited by the fact that outside temperature may be correlated with unobservable factors affecting the likelihood that the participants would open their emails and click on the links provided within.

It is also worth noting that the online experiment and the RCT studies differ under several respects,

[24]We use two other proxies of outside temperature for robustness: the number of days in a month with temperature above 90 °F (or 32.2 degrees Celsius); and the average maximum daily temperature over the month. For each proxy, we compute the temperature quartiles and median to include in the regressions. We follow Mukherjee & Nateghi (2017) when defining these variables.

including the setting, the specific action targeted by the nudge, the source of variation in hedonic cost and the type of the norm salience nudge. We therefore see them as complementing each other in terms of internal and external validity. The fact that we obtain consistent findings from both studies is, in our opinion, a strength and allows us to reach broader conclusions regarding the effectiveness of nudges.

6. Conclusion

Through our experiment, we make two original contributions. First, we provide the first direct evidence of how the salience of social norms and the magnitude of the requested behavioral change affect strategic belief manipulation and information avoidance, and offer suggestive evidence on their subsequent effect on behavior. We show these effects in the realm of environmental behavior where the mixed findings of the effectiveness of social nudges warrant further examination. Second, we find that social observability of behavior - a commonly used tool to increase social pressure and norm salience, with expected positive impacts on pro-social and pro-environmental behavior - is less effective when coupled with requests for behavioral change if individuals have the opportunity to strategically manipulate their beliefs and avoid information on the consequences of their actions. The combined negative effect of norm salience on beliefs and information acquisition, and null effect on the extensive margin of AC usage behavior suggests that self-serving belief manipulation and avoidance of information are likely to limit the effectiveness of similar environmental nudges documented in the literature.

An implication of our results is that leveraging social pressure is helpful only for marginal behavioural changes when opportunities for creating a moral wiggle room exist. Thus, our findings cast doubt on the scope of application of social norm nudges in our changing climate. Due to rapid global warming and increased risks to humans and ecosystems, there is an urgent need for non-marginal changes in behaviors which can trigger positive social tipping points. Energy demand from air conditioning is expected to increase as a result of growing temperatures (Van Ruijven et al., 2019); this will make it harder to reduce emissions in the residential sector Colelli et al. (2022), emphasizing the need to foster sufficiency in a sector which is proving hard to decarbonize. This also a high level recommendation from the 6th assessment report of the IPCC. Our results suggest that an unintended consequence of social norm nudges to reduce individual environmental impact, when the target behavior is costly, might be an increase in the share of people who deliberately ignore the messages coming from the scientific and activist communities and who display fatalistic or skeptical views in order to justify retaining the status quo.

Our results leave open the question of whether different types of nudges may generate similar effects, or instead be less conducive to avoidance behavior. The cost-effectiveness of nudges, or combination of nudges, may also be different. Existing evidence comparing energy conservation per USD spent on different types of interventions suggests the higher relative effectiveness of social information nudges relative to incentives, alone or combined with education (Benartzi et al., 2017). It is not clear whether these findings would be confirmed in the presence of possibilities for self-serving belief manipulation and information avoidance.

Further research should systematically assess the relative cost-effectiveness of different types of nudges when avoidance behavior is possible, and depending on the target behavioral outcome. The results of such an investigation should guide policy makers in taking into account the type of behavioral change required when choosing the more appropriate type of nudge to foster it. We believe this to be an important direction for future research.

References

Adena, M., Huck, S., & Rasul, I. (2014). Charitable Giving and Nonbinding Contribution-Level Suggestions — Evidence from a Field Experiment. *Review of Behavioral Economics*, *1*, 275–293. URL: https://www.nowpublishers.com/article/Details/RBE-0010. doi:10.1561/105.00000010. Publisher: Now Publishers, Inc.

Allcott, H. (2011). Social norms and energy conservation. *Journal of Public Economics*, *95*, 1082–1095. URL: http://www.sciencedirect.com/science/article/pii/S0047272711000478. doi:10.1016/j.jpubeco.2011.03.003.

Allcott, H., & Kessler, J. B. (2019). The welfare effects of nudges: A case study of energy use social comparisons. *American Economic Journal: Applied Economics*, *11*, 236–276. URL: https://www.aeaweb.org/articles?id=10.1257/app.20170328. doi:10.1257/app.20170328.

Alpizar, F., Carlsson, F., & Johansson-Stenman, O. (2008). Anonymity, reciprocity, and conformity: Evidence from voluntary contributions to a national park in Costa Rica. *Journal of Public Economics*, *92*, 1047–1060. URL: http://www.sciencedirect.com/science/article/pii/S0047272707001909. doi:10.1016/j.jpubeco.2007.11.004.

Andreoni, J., Rao, J. M., & Trachtman, H. (2017). Avoiding the Ask: A Field Experiment on Altruism, Empathy, and Charitable Giving. *Journal of Political Economy*, *125*, 625–653. URL: https://www.journals.uchicago.edu/doi/abs/10.1086/691703. doi:10.1086/691703. Publisher: The University of Chicago Press.

Ariely, D., Bracha, A., & Meier, S. (2009). Doing Good or Doing Well? Image Motivation and Monetary Incentives in Behaving Prosocially. *American Economic Review*, *99*, 544–555. URL: https://www.aeaweb.org/articles?id=10.1257%2Faer.99.1.544&source=post_page---------------------------. doi:10.1257/aer.99.1.544.

Auffhammer, M., Baylis, P., & Hausman, C. H. (2017). Climate change is projected to have severe impacts on the frequency and intensity of peak electricity demand across the United States. *Proceedings of the National Academy of Sciences*, *114*, 1886–1891. URL: https://www.pnas.org/content/114/8/1886. doi:10.1073/pnas.1613193114. ISBN: 9781613193112 Publisher: National Academy of Sciences Section: Social Sciences.

Belloni, A., Chernozhukov, V., & Hansen, C. (2014). Inference on Treatment Effects after Selection among High-Dimensional Controls. *The Review of Economic Studies*, *81*, 608–650. URL: https://academic.oup.com/restud/article/81/2/608/1523757. doi:10.1093/restud/rdt044.

Bénabou, R., & Tirole, J. (2011). Identity, morals, and taboos: Beliefs as assets. *The Quarterly Journal of Economics*, *126*, 805–855.

Benartzi, S., Beshears, J., Milkman, K. L., Sunstein, C. R., Thaler, R. H., Shankar, M., Tucker-Ray, W., Congdon, W. J., & Galing, S. (2017). Should governments invest more in nudging? *Psychological science*, *28*, 1041–1055.

Bertrand, M., Duflo, E., & Mullainathan, S. (2004). How Much Should We Trust Differences-In-Differences Estimates? *The Quarterly Journal of Economics*, *119*, 249–275. URL: https://academic.oup.com/qje/article/119/1/249/1876068. doi:10.1162/003355304772839588.

Bicchieri, C. (2016). *Norms in the Wild: How to Diagnose, Measure, and Change Social Norms*. Oxford University Press. Google-Books-ID: 7PuSDQAAQBAJ.

Bonan, J., Cattaneo, C., d'Adda, G., & Tavoni, M. (2020). The interaction of descriptive and injunctive social norms in promoting energy conservation. *Nature Energy*, *5*, 900–909. URL: https://www.nature.com/articles/s41560-020-00719-z. doi:10.1038/s41560-020-00719-z. Number: 11 Publisher: Nature Publishing Group.

Carlsson, F., Gravert, C., Johansson-Stenman, O., & Kurz, V. (2021). The use of green nudges as an environmental policy instrument. *Review of Environmental Economics and Policy*, *15*, 216–237. URL: https://doi.org/10.1086/715524. doi:10.1086/715524. arXiv:https://doi.org/10.1086/715524.

Charness, G., Gneezy, U., & Rasocha, V. (2021). Experimental methods: Eliciting beliefs. *Journal of Economic Behavior & Organization*, *189*, 234–256.

Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A Focus Theory of Normative Conduct: A Theoretical Refinement and Reevaluation of the Role of Norms in Human Behavior. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (pp. 201–234). Academic Press volume 24. URL: http://www.sciencedirect.com/science/article/pii/S0065260108603305. doi:10.1016/S0065-2601(08)60330-5.

Cialdini, R. B., & Schroeder, D. A. (1976). Increasing compliance by legitimizing paltry contributions: When even a penny helps. *Journal of Personality and Social Psychology*, *34*, 599–604. doi:10.1037/0022-3514.34.4.599. Place: US Publisher: American Psychological Association.

Colelli, F. P., Emmerling, J., Marangoni, G., Mistry, M. N., & De Cian, E. (2022). Increased energy use for adaptation significantly impacts mitigation pathways. *Nature Communications*, *13*, 4964. URL:

https://www.nature.com/articles/s41467-022-32471-1. Publisher: Nature Publishing Group UK London.

Dana, J., Weber, R. A., & Kuang, J. X. (2007). Exploiting moral wiggle room: experiments demonstrating an illusory preference for fairness. *Economic Theory*, *33*, 67–80. URL: https://doi.org/10.1007/s00199-006-0153-z. doi:10.1007/s00199-006-0153-z.

DellaVigna, S., & Linos, E. (2020). *Rcts to scale: Comprehensive evidence from two nudge units*. Technical Report National Bureau of Economic Research.

DellaVigna, S., List, J. A., & Malmendier, U. (2012). Testing for Altruism and Social Pressure in Charitable Giving. *The Quarterly Journal of Economics*, *127*, 1–56. URL: https://doi.org/10.1093/qje/qjr050. doi:10.1093/qje/qjr050.

Epley, N., & Gilovich, T. (2016). The mechanics of motivated reasoning. *Journal of Economic perspectives*, *30*, 133–140.

Epperson, R., & Gerster, A. (2021). Information avoidance and moral behavior: Experimental evidence from food choices. *Available at SSRN 3938994*, .

Exley, C. L., & Petrie, R. (2018). The impact of a surprise donation ask. *Journal of Public Economics*, *158*, 152–167. URL: https://linkinghub.elsevier.com/retrieve/pii/S0047272717302177. doi:10.1016/j.jpubeco.2017.12.015.

Farrow, K., Grolleau, G., & Ibanez, L. (2017). Social Norms and Pro-environmental Behavior: A Review of the Evidence. *Ecological Economics*, *140*, 1–13. URL: http://www.sciencedirect.com/science/article/pii/S0921800915301543. doi:10.1016/j.ecolecon.2017.04.017.

Freddi, E. (2019). Do people avoid morally relevant information? evidence from the refugee crisis. *Review of Economics and Statistics*, (pp. 1–45).

Golman, R., Hagmann, D., & Loewenstein, G. (2017). Information Avoidance. *Journal of Economic Literature*, *55*, 96–135. URL: https://www.aeaweb.org/articles?id=10.1257/jel.20151245. doi:10.1257/jel.20151245.

Grossman, Z., & Van der Weele, J. J. (2017). Self-image and willful ignorance in social decisions. *Journal of the European Economic Association*, *15*, 173–217.

Guiso, L., Sapienza, P., & Zingales, L. (2016). Long-term persistence. *Journal of the European Economic Association*, *14*, 1401–1436. URL: https://onlinelibrary.wiley.com/doi/abs/10.1111/jeea.12177. doi:10.1111/jeea.12177.

Hummel, D., & Maedche, A. (2019). How effective is nudging? a quantitative review on the effect sizes and limits of empirical nudging studies. *Journal of Behavioral and Experimental Economics*, *80*, 47–58.

Jachimowicz, J. M., Hauser, O. P., O'Brien, J. D., Sherman, E., & Galinsky, A. D. (2018). The critical role of second-order normative beliefs in predicting energy conservation. *Nature Human Behaviour*, *2*, 757–764. URL: https://doi.org/10.1038/s41562-018-0434-0. doi:10.1038/s41562-018-0434-0.

Kristal, A. S., & Whillans, A. V. (2020). What we can learn from five naturalistic field experiments that failed to shift commuter behaviour. *Nature Human Behaviour*, *4*, 169–176.

Krupka, E. L., & Weber, R. A. (2013). Identifying social norms using coordination games: Why does dictator game sharing vary? *Journal of the European Economic Association*, *11*, 495–524.

Lange, F., Brick, C., & Dewitte, S. (2020). Green when seen? No support for an effect of observability on environmental conservation in the laboratory: a registered report. *Royal Society Open Science*, *7*, 190189. URL: https://royalsocietypublishing.org/doi/full/10.1098/rsos.190189. doi:10.1098/rsos.190189. Publisher: Royal Society.

Lee, D. S. (2009). Training, Wages, and Sample Selection: Estimating Sharp Bounds on Treatment Effects. *The Review of Economic Studies*, *76*, 1071–1102. URL: https://doi.org/10.1111/j.1467-937X.2009.00536.x. doi:10.1111/j.1467-937X.2009.00536.x. arXiv:https://academic.oup.com/restud/article-pdf/76/3/1071/18350419/76-3-1071.pdf.

Li, Y., Pizer, W. A., & Wu, L. (2019). Climate change and residential electricity consumption in the Yangtze River Delta, China. *Proceedings of the National Academy of Sciences*, *116*, 472–477. URL: https://www.pnas.org/content/116/2/472. doi:10.1073/pnas.1804667115. Publisher: National Academy of Sciences Section: Social Sciences.

Mukherjee, S., & Nateghi, R. (2017). Climate, weather, socio-economic and electricity usage data for the residential and commercial sectors in fl, u.s. *Data in Brief*, *13*, 192–195. URL: https://www.sciencedirect.com/science/article/pii/S2352340917302226. doi:https://doi.org/10.1016/j.dib.2017.05.031.

Norgaard, K. M. (2006). "We Don't Really Want to Know": Environmental Justice and Socially Organized Denial of Global Warming in Norway. *Organization & Environment*, *19*, 347–370. URL: https://doi.org/10.1177/1086026606292571. doi:10.1177/1086026606292571. Publisher: SAGE Publications Inc.

Powell, K. L., Roberts, G., & Nettle, D. (2012). Eye Images Increase Charitable Donations: Evidence From an Opportunistic Field Experiment in a Supermarket. *Ethology*, *118*, 1096–1101. URL: https://onlinelibrary.wiley.com/doi/abs/10.1111/eth.12011. doi:https://doi.org/10.1111/eth.12011. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/eth.12011.

Schlindwein, L., & Montalvo, C. (2023). Energy citizenship: Accounting for the heterogeneity of human behaviours within energy transition. *Energy Policy*, *180*, 113662. URL: https://www.sciencedirect.com/science/article/pii/S0301421523002471. doi:https://doi.org/10.1016/j.enpol.2023.113662.

Semenova, V., & Chernozhukov, V. (2020). Debiased machine learning of conditional average treatment effects and other causal functions. *The Econometrics Journal*, *24*, 264–289. URL: https://doi.org/10.1093/ectj/utaa027. doi:10.1093/ectj/utaa027. arXiv:https://academic.oup.com/ectj/article-pdf/24/2/264/46748087/utaa027_online_appendix.pdf.

Serra-Garcia, M., & Szech, N. (2019). *The (In)Elasticity of Moral Ignorance*. SSRN Scholarly Paper ID 3357132 Social Science Research Network Rochester, NY. URL: https://papers.ssrn.com/abstract=3357132.

Sparks, A., & Barclay, P. (2013). Eye images increase generosity, but not for long: the limited effect of a false cue. *Evolution and Human Behavior*, *34*, 317–322. URL: http://www.sciencedirect.com/science/article/pii/S1090513813000494. doi:10.1016/j.evolhumbehav.2013.05.001.

Spiekermann, K., & Weiss, A. (2016). Objective and subjective compliance: A norm-based explanation of 'moral wiggle room'. *Games and Economic Behavior*, *96*, 170–183. URL: http://www.sciencedirect.com/science/article/pii/S0899825615001554. doi:10.1016/j.geb.2015.11.007.

Van Ruijven, B. J., De Cian, E., & Sue Wing, I. (2019). Amplification of future energy demand growth due to climate change. *Nature communications*, *10*, 2762. URL: https://www.nature.com/articles/s41467-019-10399-3. Publisher: Nature Publishing Group UK London.

Zizzo, D. J. (2010). Experimenter demand effects in economic experiments. *Experimental Economics*, *13*, 75–98.

Appendix A. Additional Tables and Figures

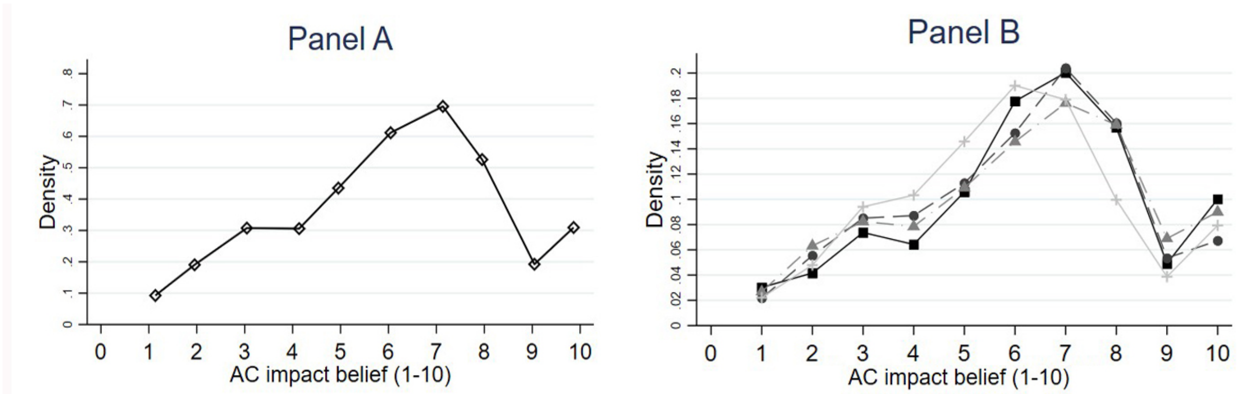

Figure A.1: **Distribution of AC impact beliefs.** Panel A shows the overall distribution, while Panel B the distribution by treatment. Panel B legend: Control-black squares; BigAsk-black circles; Salience-grey triangles; Salience x BigAsk-grey crosses.

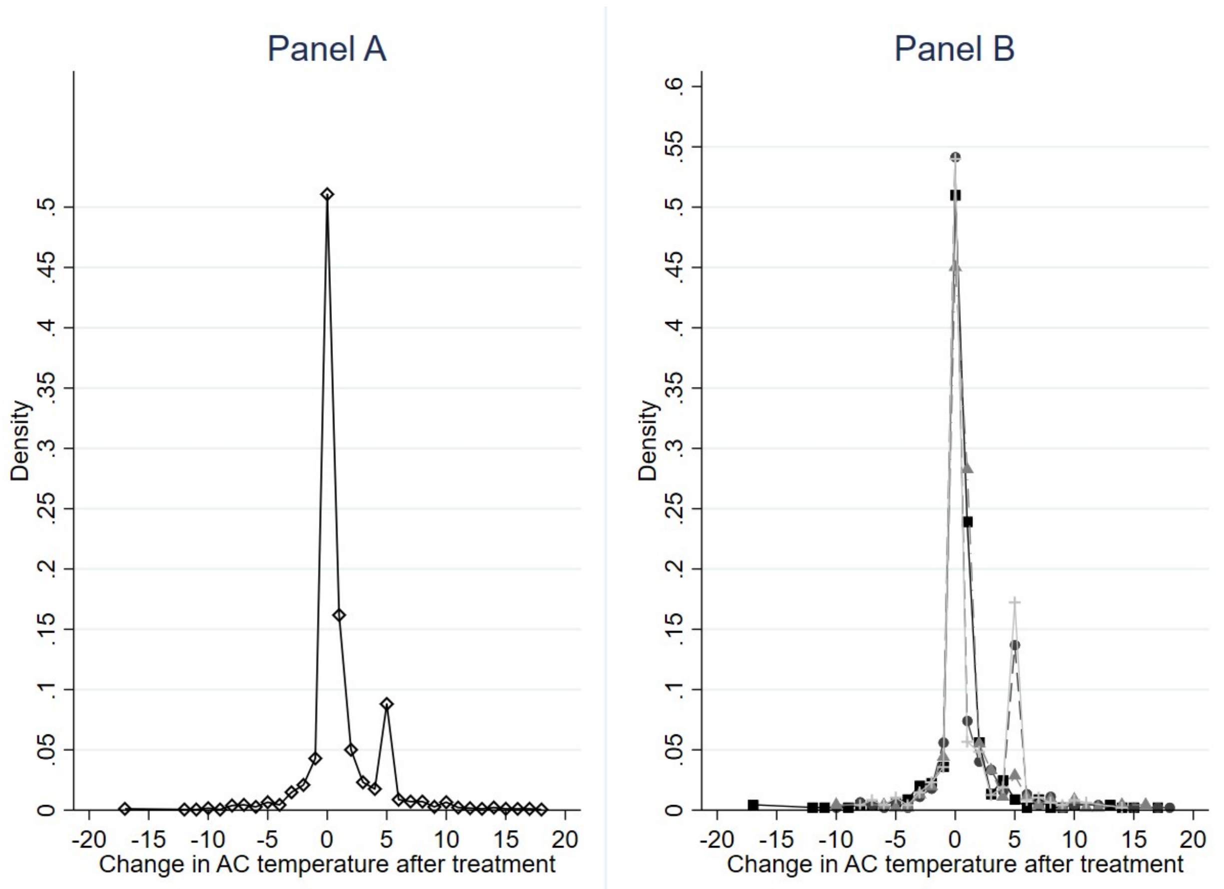

Figure A.2: **Distribution of AC temperature change (°F).** Panel A shows the overall distribution, while Panel B the distribution by treatment. Panel B legend: Control-black squares; BigAsk-black circles; Salience-grey triangles; Salience x BigAsk-grey crosses.

Table A.1: Sample characteristics and balance across treatments

	N	Control		BigAsk		Salience		Sal. + BigAsk		Total		P-value	F-stat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
A. Demographic characteristics													
Female	1,820	0.530	(0.500)	0.517	(0.500)	0.497	(0.501)	0.476	(0.500)	0.504	(0.500)	0.504	1.044
Year of birth	1,817	1983.2	(11.67)	1984.1	(10.39)	1983.2	(10.86)	1983.2	(11.09)	1983.4	(11.01)	0.484	0.866
Married	1,823	0.484	(0.500)	0.454	(0.498)	0.493	(0.501)	0.450	(0.498)	0.470	(0.499)	0.580	0.875
Single	1,823	0.429	(0.495)	0.474	(0.500)	0.401	(0.491)	0.466	(0.499)	0.443	(0.497)	0.189	2.165
Divorced	1,823	0.0871	(0.282)	0.0719	(0.259)	0.106	(0.308)	0.0840	(0.278)	0.0872	(0.282)	0.851	1.071
Has children	1,811	0.436	(0.496)	0.405	(0.491)	0.483	(0.500)	0.412	(0.493)	0.434	(0.496)	0.164	2.297
Education level	1,822	3.096	(1.228)	3.072	(1.219)	3.055	(1.186)	3.124	(1.224)	3.087	(1.214)	0.840	0.285
Income level	1,817	2.996	(1.376)	2.917	(1.367)	2.907	(1.376)	2.985	(1.406)	2.952	(1.381)	0.649	0.497
Democrat	1,820	0.447	(0.498)	0.429	(0.496)	0.465	(0.499)	0.450	(0.498)	0.448	(0.497)	0.838	0.381
Alone at home	1,822	0.464	(0.499)	0.463	(0.499)	0.433	(0.496)	0.422	(0.494)	0.445	(0.497)	0.599	0.843
Real outside temperature (F)	2,286	91.01	(7.150)	91.19	(6.736)	91.16	(6.884)	91.27	(6.749)	91.15	(6.881)	0.953	0.143
Reported outside temperature (F)	2,285	82.02	(13.59)	83.37	(12.65)	82.30	(13.51)	82.24	(13.06)	82.47	(13.21)	0.397	1.249
B. AC usage (elicited after the treatment unless otherwise specified)													
Baseline AC temperature (elicited before the treatment)	2,272	74.02	(4.790)	73.97	(4.653)	73.82	(4.918)	73.94	(4.729)	73.94	(4.770)	0.875	0.176
Energystar AC	937	0.602	(0.491)	0.685	(0.466)	0.692	(0.462)	0.685	(0.465)	0.668	(0.471)	0.308	1.707
Usual AC temperature (F)	1,821	74.17	(4.209)	74.16	(4.310)	74.18	(4.428)	74.11	(4.490)	74.15	(4.359)	0.942	0.025
AC when outside home	1,817	1.928	(0.778)	1.921	(0.788)	1.938	(0.826)	1.951	(0.799)	1.935	(0.797)	0.959	0.127
Tries to limit AC	1,822	0.710	(0.454)	0.755	(0.431)	0.718	(0.450)	0.704	(0.457)	0.721	(0.449)	0.553	1.213
C. Values and opinions (elicited after the treatment)													
Climate change is real (1-5)	1,774	4.368	(0.938)	4.360	(0.959)	4.378	(0.885)	4.320	(0.977)	4.356	(0.941)	0.910	0.325
Climate change caused by human act. (1-5)	1,737	2.782	(0.461)	2.786	(0.465)	2.792	(0.450)	2.786	(0.465)	2.786	(0.460)	0.997	0.033
Worries about climate change (1-5)	1,816	2.733	(0.886)	2.702	(0.875)	2.713	(0.876)	2.633	(0.880)	2.694	(0.879)	0.424	1.136
Moral disengagment scale (1-7)	1,821	2.762	(1.194)	2.655	(1.164)	2.798	(1.186)	2.709	(1.129)	2.731	(1.168)	0.266	1.275
High environmental values	1,818	0.421	(0.494)	0.485	(0.500)	0.444	(0.497)	0.423	(0.495)	0.443	(0.497)	0.306	1.618
High hedonic values	1,818	0.463	(0.499)	0.488	(0.500)	0.470	(0.500)	0.467	(0.499)	0.472	(0.499)	0.927	0.206
High altruistic values	1,818	0.488	(0.500)	0.463	(0.499)	0.514	(0.500)	0.533	(0.499)	0.500	(0.500)	0.279	1.712
High moral values	1,818	0.472	(0.500)	0.499	(0.501)	0.519	(0.500)	0.501	(0.500)	0.498	(0.500)	0.681	0.669
D. Outcome variables													
Belief on AC impact (1-10)	2,098	6.289	(2.291)	6.081	(2.251)	6.161	(2.389)	5.875	(2.217)	6.100	(2.291)	0.006	3.193
Acquires information	2,108	0.522	(0.500)	0.552	(0.498)	0.521	(0.500)	0.476	(0.500)	0.517	(0.500)	0.198	2.082
Changes AC temperature	1,817	0.375	(0.485)	0.348	(0.477)	0.459	(0.499)	0.355	(0.479)	0.384	(0.487)	0.014	4.887
AC temperature change (F)	1,817	0.431	(2.816)	1.148	(2.983)	0.925	(2.571)	1.210	(2.920)	0.934	(2.841)	0.099	6.886

Notes: The table reports the number of non-missing observations (Column 1), means and, standard deviations (in parentheses) by treatment (Columns 2-5) and overall (Columns 6) of row variables. Column 7 reports the p-values of Kruskal-Wallis tests, and Column 8 the F-test of joint significance of the independent variables in a regression of the row variables on treatment dummies. Variable definitions: *education level* is a categorical variable with the following options "some high school","completed high school", "some college", "associate's degree", "bachelor's degree", "master's degree", and "professional or doctoral degree"; *income level* is a categorical variable comprising of "under 25k", "25-50k","50-75k", "75-100k", "100-150k" and "over 150k" annual household income before taxes, in USD; *EnergyStar AC, Tries to limit AC usage* and *Alone at home* are dummies; *AC when outside home* captures whether the respondent lowers or switches off the AC when leaving the house, and ranges between 1 (leave AC on at usual temperature) and 3 (switches the AC off); *High environmental, Hedonic, Moral* and *Altruistic values* are dummies equal to 1 if the respondent displays above-median ratings of importance of the corresponding values (based on the responses to questions taken from the World Value Surveys); the answers to the questions on climate change are expressed on a scale from 1 to 5, where higher values denote higher agreement with the statement; *Moral disengagement* is expressed on a scale from 1 to 7, where higher values denote higher disengagement; *Max. real outside temperature* is the real maximum outside temperature recorded on the day of the survey at the weather station closest to the participant's home; *Reported outside temperature* is the outside temperature as reported by the participant at the time of taking the survey.

Table A.2: The impact of treatments and baseline temperature on non-missing variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Not missing									
	Belief on AC impact		Acquires information		AC thermostat picture		Survey complete (0/1)		Survey progress (0-100)	
BigAsk	0.010	0.005	0.013	0.009	0.043*	0.032	0.039	0.029	2.638	1.924
	(0.018)	(0.018)	(0.017)	(0.017)	(0.025)	(0.023)	(0.025)	(0.023)	(1.713)	(1.638)
Salience	0.057***	0.055***	0.061***	0.057***	0.073***	0.074***	0.070***	0.069***	5.467***	5.323***
	(0.016)	(0.016)	(0.015)	(0.015)	(0.024)	(0.023)	(0.024)	(0.023)	(1.625)	(1.550)
Sal. + BigAsk	0.038**	0.034**	0.034**	0.030*	0.066***	0.063***	0.061**	0.057**	4.440***	4.138***
	(0.017)	(0.016)	(0.016)	(0.016)	(0.024)	(0.023)	(0.024)	(0.023)	(1.646)	(1.581)
Reported outside temp.		0.000		0.000		0.008***		0.008***		0.466***
		(0.000)		(0.000)		(0.001)		(0.001)		(0.048)
AC baseline temp.		0.003**		0.003**		0.010***		0.010***		0.649***
		(0.001)		(0.001)		(0.002)		(0.002)		(0.135)
Constant	0.892***	0.647***	0.895***	0.672***	0.752***	-0.651***	0.754***	-0.613***	83.037***	-2.969
	(0.013)	(0.098)	(0.013)	(0.094)	(0.018)	(0.138)	(0.018)	(0.141)	(1.231)	(9.363)
F-stat	5.607	4.606	6.562	4.750	3.714	46.475	3.296	43.822	4.246	39.853
Number of Obs	2286	2271	2286	2271	2286	2271	2286	2271	2286	2271
R-Squared	0.007	0.010	0.007	0.010	0.005	0.109	0.005	0.106	0.006	0.087

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable is a dummy equal to 1 for non-missing observations of the corresponding variables in Columns 1-6; a dummy equal to 1 for completed survey, where completed means that at least 98% of the questions were non-missing, in Columns 7-8; and the percentage of survey completed by the respondent in Columns 9-10. *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by an environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., those whose suggested AC temperature increase is high. *Salience&BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.3: Impact of treatment on survey completion and progress: sample of respondents with non-missing beliefs, information acquisition and thermostat picture

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.	Survey complete (0/1)			Survey progress (0-100)		
	AC	Acquires	AC temp.	AC	Acquires	AC temp.
Sample: Not missing	belief	info.	change	belief	info.	change
BigAsk	0.032	0.030	0.000	1.900	1.805	-0.024
	(0.022)	(0.022)	(0.003)	(1.275)	(1.279)	(0.083)
Salience	0.019	0.019	-0.002	1.136	1.163	-0.148
	(0.022)	(0.022)	(0.004)	(1.289)	(1.290)	(0.146)
Sal. + BigAsk	0.033	0.035	-0.004	2.004	2.082*	-0.238
	(0.021)	(0.021)	(0.004)	(1.250)	(1.251)	(0.181)
Constant	0.843***	0.842***	0.998***	90.603***	90.525***	99.790***
	(0.016)	(0.016)	(0.002)	(0.935)	(0.936)	(0.058)
F-stat	1.028	1.025	0.412	1.055	1.057	0.837
Number of Obs	2098	2108	1817	2098	2108	1817
R-Squared	0.002	0.002	0.001	0.002	0.002	0.001

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable is a dummy equal to 1 for completed survey, where completed means that at least 98% of the questions were non-missing, in Columns 1-3; and the percentage of survey completed by the respondent in Column 4-6. The sample is made of subjects with non-missing AC impact belief question in Columns 1 and 4; information acquisition in Columns 2 and 5; and AC thermostat picture in Columns 3 and 6 *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by an environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., those whose suggested AC temperature increase is high. *Salience&BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.4: Differential impact of baseline temperature by treatment on non-missing variables

	(1)	(2)	(3)	(4)	(5)
		Not missing			
	AC belief	Acquires info.	AC picture	Survey complete	Survey progress
BigAsk	0.030	0.070	0.040	-0.069	3.381
	(0.315)	(0.296)	(0.443)	(0.451)	(29.618)
Salience	0.175	0.208	0.070	0.078	12.914
	(0.259)	(0.252)	(0.432)	(0.443)	(28.331)
Sal. + BigAsk	0.278	0.269	0.076	0.125	16.034
	(0.294)	(0.289)	(0.421)	(0.427)	(28.396)
AC baseline temp.	0.005	0.004	0.018***	0.018***	1.178***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.281)
BigAsk x AC baseline temp.	-0.000	-0.001	0.000	0.001	-0.010
	(0.004)	(0.004)	(0.006)	(0.006)	(0.397)
Salience x AC baseline temp.	-0.002	-0.002	0.000	-0.000	-0.099
	(0.003)	(0.003)	(0.006)	(0.006)	(0.380)
Sal. + BigAsk x AC baseline temp.	-0.003	-0.003	-0.000	-0.001	-0.157
	(0.004)	(0.004)	(0.006)	(0.006)	(0.380)
Constant	0.556**	0.565***	-0.586*	-0.540*	-3.954
	(0.223)	(0.217)	(0.309)	(0.319)	(20.943)
F-stat	3.873	3.849	13.626	12.374	11.947
Number of Obs	2272	2272	2272	2272	2272
R-Squared	0.010	0.010	0.052	0.048	0.043

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable is a dummy equal to 1 for non-missing observations of the corresponding variables in Columns 1-3; a dummy equal to 1 for completed survey, where completed means that at least 98% of the questions were non-missing, in Column 4; and the percentage of survey completed by the respondent in Column 5. *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by an environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., those whose suggested AC temperature increase is high. *Salience&BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.5: Treatment impact on self-reported AC usage and opinions on climate change elicited after the treatments

	(1) Tries to limit AC	(2) Climate change real	(3) Climate change caused by man	(4) Worries about climate change	(5) AC when not home	(6) Moral diseng. scale
BigAsk	0.044	-0.014	0.006	-0.041	-0.013	-0.115
	(0.029)	(0.064)	(0.032)	(0.060)	(0.049)	(0.080)
Salience	0.001	0.004	0.010	-0.031	-0.021	0.033
	(0.030)	(0.062)	(0.031)	(0.059)	(0.051)	(0.080)
Sal. + BigAsk	-0.021	-0.054	0.003	-0.109*	-0.017	-0.063
	(0.029)	(0.064)	(0.031)	(0.058)	(0.049)	(0.077)
Constant	0.775***	4.352***	2.759***	2.730***	1.743***	2.540***
	(0.067)	(0.162)	(0.095)	(0.147)	(0.130)	(0.178)
Number of Obs	1820	1774	1735	1814	1815	1819
R-Squared	0.063	0.008	0.006	0.010	0.134	0.010

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable in Columns 1 is a dummy equal to 1 if the respondent tries to limit AC usage; the dependent variables in Columns 2 to 4 are opinions on climate change, expressed on a scale from 1 to 5, where higher values denote higher agreement with the statement; in Column 6 is the moral disengagement scale, expressed on a scale from 1 to 7, where higher values denote higher disengagement. *Salience* is a dummy equal to one for subjects randomly assigned to the norm salience treatment, i.e., whose actions are observed by en environmentalist. *BigAsk* is a dummy equal to one for subjects randomly assigned to the big ask treatment, i.e., whose suggested AC temperature increase is high. *Sal.& BigAsk* is a dummy equal to 1 for subjects assigned to the combined treatment. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.6: Treatment impact on beliefs about AC impact and information acquisition: showing control variables coefficients

	(1)	(2)	(3)	(4)
	Belief on AC impact		Acquires information	
BigAsk	-0.201	-0.251*	0.027	0.024
	(0.142)	(0.150)	(0.031)	(0.034)
Salience	-0.136	-0.238	-0.003	-0.020
	(0.145)	(0.156)	(0.031)	(0.034)
Sal. + BigAsk	-0.411***	-0.520***	-0.045	-0.051
	(0.139)	(0.147)	(0.030)	(0.033)
Has kids		0.232**		-0.009
		(0.109)		(0.024)
Real outside temp.		-0.009		-0.002
		(0.008)		(0.002)
Reported outside temp.		-0.006		-0.003**
		(0.006)		(0.001)
Baseline AC temp.		0.009		-0.000
		(0.013)		(0.003)
Democrat		0.498***		
		(0.107)		
Income over 150k USD		0.035		0.001
		(0.223)		(0.057)
Associate's degree		0.238*		0.048
		(0.139)		(0.033)
Female		0.446***		0.045*
		(0.109)		(0.024)
Mean of dep var	6.101	6.001	0.517	0.509
Number of Obs	2096	1787	2106	1793
R-Squared	0.020		0.024	
Demographic controls (LASSO)	No	Yes	No	Yes
Test BigAsk = Sal. + BigAsk	0.130	0.057	0.018	0.023
Test Salience = Sal. + BigAsk	0.051	0.056	0.167	0.343

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable in Columns 1 and 2 is a variable ranging between 1 and 10, capturing the respondents' beliefs on the impact of their own AC temperature settings on the environment. The dependent variable in Columns 3 and 4 is a dummy equal to 1 if an individual opts to view the information on the environmental impact of AC usage. *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by an environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., those whose suggested AC temperature increase is high. *Salience&BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. All regressions control for state and week fixed-effects. In addition, regressions reported in the evenly numbered columns include control variables selected through post-double LASSO procedure among reported and real outside temperature, gender, marital status, has children, democrat, education level, income level, is alone at home and baseline AC temperature. The last rows report the p-value of Wald tests. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.7: Treatment impact on beliefs about AC's CO_2 emissions in pounds

	Guess of CO2 emission			
	Raw		Standardized	
	(1)	(2)	(3)	(4)
BigAsk	8.956	4.550	-206.862***	-196.050***
	(17.000)	(17.361)	(12.152)	(12.674)
Salience	-17.178	-9.718	-16.747	-10.375
	(16.861)	(17.649)	(16.814)	(17.548)
Sal. + BigAsk	-22.621	-18.157	-213.023***	-200.491***
	(16.264)	(16.796)	(12.070)	(12.529)
Has kids		-6.929		4.405
		(12.292)		(9.009)
Real outside temp.		1.439		1.224*
		(0.880)		(0.674)
Reported outside temp.		-0.095		-0.391
		(0.768)		(0.603)
Baseline AC temp.		0.513		0.111
		(1.480)		(1.137)
Income over 150k USD		52.441*		52.524**
		(29.256)		(22.887)
Associate's degree		10.069		12.436
		(16.242)		(12.226)
Female		-9.554		-14.227
		(12.397)		(9.007)
Mean of dep var	252.286	239.264	151.534	142.849
Number of Obs	2103	1791	2103	1791
R-Squared	0.011		0.217	
Demographic controls (LASSO)	No	Yes	No	Yes
Test BigAsk = Sal. + BigAsk	0.055	0.174	0.090	0.256
Test Salience = Sal. + BigAsk	0.739	0.620	0.000	0.000

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable is a variable capturing the respondents' beliefs on the CO_2 emission reduction if they raise the thermostat settings by the number of degrees suggested in the ask-size treatment (Columns 1 and 2); or by 1 degree F (i.e., 5 degrees F divided by 5 in the BigAsk treatment) (Columns 3 and 4). *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by an environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., those whose suggested AC temperature increase is high. *Salience&BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. All regressions control for state and week fixed-effects. In addition, regressions reported in Columns 2 and 4 include control variables selected through post-double LASSO procedure among reported and real outside temperature, gender, marital status, has children, democrat, education level, income level, is alone at home and baseline AC temperature. The last rows report the p-value of Wald tests. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.8: Impact of observability on beliefs on AC impact: sub-sample analysis by ask size treatment

Dependent variable	Belief on AC impact			
Sub-sample	Big ask	Small ask	Big ask	Small ask
	(1)	(2)	(3)	(4)
Salience	-0.200	-0.132	-0.266*	-0.232
	(0.139)	(0.145)	(0.142)	(0.157)
Real outside temperature (f)			-0.015	-0.005
			(0.011)	(0.012)
Reported outside temperature			-0.005	-0.006
			(0.009)	(0.009)
Baseline AC temperature			0.016	-0.010
			(0.017)	(0.020)
Democrat			0.553***	
			(0.144)	
Income			0.226	-0.307
			(0.294)	(0.357)
Female			0.459***	0.665***
			(0.146)	(0.158)
Divorced				0.343
				(0.269)
Constant	5.191***	5.988***	5.394***	7.518***
	(0.495)	(0.606)	(1.842)	(1.916)
Mean of dep var	5.975	6.227	5.850	6.155
Number of Obs	1046	1050	905	882
R-Squared	0.025	0.024		

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable is a variable ranging between 1 and 10, capturing the respondent's beliefs on the impact of her own AC temperature settings on the environment. *Salience* is a dummy equal to one for subjects randomly assigned to the norm salience treatment. All regressions control for state and week fixed-effects. Regressions in Columns 3 and 4 include control variables selected through post-double LASSO procedure among: reported and real outside temperature, gender, marital status, has children, democrat, education level, income level, is alone at home and baseline AC temperature. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.9: Treatment effects: Lee bounds

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Belief on AC impact			Acquires information			Changes AC temp. (0/1)			AC temp. change (F)		
	Big ask	Salience	Salience + Big ask	Big ask	Salience	Salience + Big ask	Big ask	Salience	Salience + Big ask	Big ask	Salience	Salience + Big ask
Main	-0.210	-0.130	-0.414***	0.031	-0.002	-0.046	-0.028	0.085**	-0.018	0.708***	0.489***	0.786***
	(0.142)	(0.145)	(0.138)	(0.031)	(0.031)	(0.030)	(0.032)	(0.033)	(0.032)	(0.194)	(0.180)	(0.190)
Lower	-0.269*	-0.386**	-0.586***	0.023	-0.033	-0.069**	-0.041	0.045	-0.053	0.552**	-0.018	0.435**
	(0.162)	(0.163)	(0.163)	(0.033)	(0.034)	(0.034)	(0.036)	(0.037)	(0.036)	(0.280)	(0.191)	(0.221)
Upper	-0.158	0.150	-0.238	0.036	0.033	-0.027	-0.020	0.124***	0.001	0.829***	0.748***	1.060***
	(0.171)	(0.165)	(0.162)	(0.034)	(0.034)	(0.035)	(0.034)	(0.036)	(0.034)	(0.251)	(0.190)	(0.215)
Number of Obs	1033	1050	1069	1039	1056	1071	888	896	918	888	896	918

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable in Columns 1-3 is a variable ranging between 1 and 10, capturing the respondents' beliefs on the impact of their own AC temperature settings on the environment. The dependent variable in Columns 4-6 is a dummy equal to 1 if an individual opts to view the information on the environmental impact of AC usage. The dependent variable in Columns 1 and 2 is a dummy equal to 1 if the respondent changed the AC thermostat temperature, relative to the temperature reported at the start of the experiment. The dependent variable in Columns 3 and 4 is the difference between the AC thermostat temperature at the end of the experiment and the one reported at the start of the experiment. *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by an environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., those whose suggested AC temperature increase is high. *Salience&BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. The rows 'Main' report the average treatment effects from regressions of the corresponding treatment versus the control one, controlling for week and state fixed-effects. Lower and Upper report, respectively, lower and upper Lee bounds estimators from the same regression specifications. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.10: Impact of observability on information acquisition: sub-sample analysis by ask size treatment

	Acquires information			
	Big ask	Small ask	Big ask	Small ask
	(1)	(2)	(3)	(4)
Salience	-0.077**	-0.000	-0.084**	-0.019
	(0.031)	(0.031)	(0.033)	(0.033)
Real outside temp.			-0.002	-0.001
			(0.002)	(0.003)
Reported outside temp.			-0.002	-0.003*
			(0.002)	(0.002)
Income over 150k USD			0.030	-0.025
			(0.079)	(0.082)
Female			0.015	
			(0.034)	
Baseline AC temp.				-0.003
				(0.004)
Divorced				0.047
				(0.055)
Constant	0.388***	0.500***	0.827***	1.105***
	(0.102)	(0.119)	(0.317)	(0.391)
Mean of dep var	0.512	0.521	0.506	0.512
Number of Obs	1050	1056	907	886
R-Squared	0.050	0.024		
Demographic controls (LASSO)	No	Yes	No	Yes

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable is a dummy equal to 1 if the respondent acquires information on the impact of AC usage on the environment. *Salience* is a dummy equal to one for subjects randomly assigned to the norm salience treatment. All regressions control for state and week fixed-effects. Regressions in Columns 3 and 4 include control variables selected through post-double LASSO procedure among: reported and real outside temperature, gender, marital status, has children, democrat, education level, income level, is alone at home and baseline AC temperature. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.11: Treatment impact on information acquisition: mediation analysis

	(1)	(2)
	Acquires information	
BigAsk	0.036	0.036
	(0.030)	(0.033)
Salience	0.006	-0.010
	(0.030)	(0.033)
Sal. + BigAsk	-0.025	-0.029
	(0.030)	(0.032)
AC impact belief (1-10)	0.049***	0.044***
	(0.004)	(0.005)
Has kids		-0.014
		(0.024)
Real outside temp.		-0.001
		(0.002)
Reported outside temp.		-0.003**
		(0.001)
Baseline AC temp.		-0.000
		(0.003)
Democrat		0.052**
		(0.023)
Income over 150k USD		-0.006
		(0.057)
Associate's degree		0.040
		(0.033)
Female		0.023
		(0.024)
Mean of dep var	0.517	0.510
Number of Obs	2096	1787
R-Squared	0.074	
Demographic controls (LASSO)	No	Yes
Test BigAsk = Sal. + BigAsk	0.041	0.045
Test Salience = Sal. + BigAsk	0.298	0.545

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable is a dummy equal to 1 if an individual opts to view the information on the environmental impact of AC usage. *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by an environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., those whose suggested AC temperature increase is high. *Salience&BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. AC impact beliefs variable ranging between 1 and 10, capturing the respondents' beliefs on the impact of their own AC temperature settings on the environment. All regressions control for state and week fixed-effects. In addition, regressions in column 2 include control variables selected through post-double LASSO procedure among reported and real outside temperature, gender, marital status, has children, democrat, education level, income level, is alone at home and baseline AC temperature. The last rows report the p-value of Wald tests. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.12: Treatment impact on AC temperature change: including control variables

	Changes AC temp. (0/1)		AC temp change (°F)	
	(1)	(2)	(3)	(4)
BigAsk	-0.036	-0.039	0.673***	0.644***
	(0.032)	(0.032)	(0.194)	(0.181)
Salience	0.079**	0.066**	0.452**	0.386**
	(0.033)	(0.032)	(0.181)	(0.167)
Sal. + BigAsk	-0.025	-0.030	0.740***	0.723***
	(0.032)	(0.031)	(0.190)	(0.174)
Has kids		-0.006		-0.090
		(0.023)		(0.128)
Real outside temp.		-0.000		0.000
		(0.002)		(0.009)
Reported outside temp.		0.003**		0.031***
		(0.001)		(0.010)
Baseline AC temp.		-0.027***		-0.260***
		(0.003)		(0.023)
Income over 150k USD		0.062		0.155
		(0.052)		(0.269)
Associate's degree		-0.011		0.023
		(0.030)		(0.170)
Female		-0.006		-0.105
		(0.023)		(0.130)
Mean of dep var	0.384	0.382	0.936	0.934
Number of Obs	1816	1790	1816	1790
R-Squared	0.028		0.024	
Demographic controls (LASSO)	No	Yes	No	Yes
Test BigAsk = Sal. + BigAsk	0.742	0.762	0.733	0.662
Test Salience = Sal. + BigAsk	0.001	0.002	0.112	0.044

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable in Columns 1 and 2 is a dummy equal to 1 if the respondent changed the AC thermostat temperature, relative to the temperature reported at the start of the experiment. The dependent variable in Columns 3 and 4 is the difference between the AC thermostat temperature at the end of the experiment and the one reported at the start of the experiment. *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by en environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., persons whose suggested AC temperature increase is high. *Salience&BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. All regressions control for state and week fixed-effects. In addition, regressions in Columns 2 and 4 include control variables selected through post-double LASSO procedure among: reported and real outside temperature, gender, marital status, has children, democrat, education level, income level, is alone at home and baseline AC temperature. The last rows report the p-value of Wald tests. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.13: Treatment impact on AC temperature change: sub-sample analysis by beliefs and information acquisition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Changes AC temp.		AC temp. Change		Changes AC temp.		AC temp. Change	
					Low	High	Low	High
	No info	Info	No info	Info	beliefs	beliefs	beliefs	beliefs
BigAsk	-0.069	-0.022	0.378	0.889***	-0.089**	0.017	0.374*	0.978***
	(0.047)	(0.045)	(0.277)	(0.273)	(0.044)	(0.047)	(0.220)	(0.324)
Salience	0.074	0.087*	0.413	0.458*	0.058	0.093**	0.063	0.800***
	(0.047)	(0.046)	(0.274)	(0.238)	(0.046)	(0.047)	(0.195)	(0.297)
Sal. + BigAsk	-0.035	-0.027	0.582**	0.853***	-0.045	0.001	0.568***	0.955***
	(0.044)	(0.046)	(0.270)	(0.269)	(0.042)	(0.049)	(0.216)	(0.327)
Mean of dep var	0.346	0.421	0.734	1.128	0.358	0.418	0.817	1.084
Number of Obs	887	929	887	929	984	826	984	826
R-Squared	0.039	0.031	0.023	0.041	0.038	0.040	0.036	0.039
Test BigAsk = Sal. + BigAsk	0.435	0.932	0.434	0.901	0.276	0.75	0.412	0.943
Test Salience = Sal. + BigAsk	0.014	0.015	0.511	0.121	0.015	0.065	0.017	0.615

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable in Columns 1-2 and 5-6 is a dummy equal to 1 if the respondent changed the AC thermostat temperature, relative to the temperature reported at the start of the experiment. The dependent variable in Columns 3-4 and 7-8 is the difference between the AC thermostat temperature at the end of the experiment and the one reported at the start of the experiment. Columns 1 and 3 restrict the sample to subjects who did not acquire information, Columns 2 and 4 to those who acquired it; Columns 5 and 7 to subjects with below-median AC impact beliefs; Columns 6 and 8 to subjects with above-median beliefs. *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by en environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., persons whose suggested AC temperature increase is high. *Salience&BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. All regressions control for state and week fixed-effects. The last rows report the p-value of Wald tests. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.14: Treatment effects: sub-sample of subjects not facing ceiling effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	AC impact beliefs		Acquires information		Changes AC temp. (0/1)		AC temp. change (F)	
Sample: feasible to comply with ask								
BigAsk	-0.135	-0.145	0.012	0.000	-0.078**	-0.083**	0.439**	0.440**
	(0.161)	(0.165)	(0.035)	(0.037)	(0.036)	(0.036)	(0.193)	(0.185)
Salience	-0.164	-0.225	-0.020	-0.043	0.056	0.046	0.262	0.253
	(0.163)	(0.170)	(0.035)	(0.037)	(0.036)	(0.036)	(0.183)	(0.173)
Sal. + BigAsk	-0.505***	-0.541***	-0.059*	-0.044	-0.052	-0.066*	0.700***	0.633***
	(0.161)	(0.168)	(0.035)	(0.037)	(0.036)	(0.036)	(0.201)	(0.189)
Has kids		0.124		-0.009		-0.010		-0.017
		(0.122)		(0.028)		(0.026)		(0.136)
Real outside temp.		-0.009		-0.003		-0.001		-0.004
		(0.009)		(0.002)		(0.002)		(0.009)
Reported outside temp.		0.006		-0.004*		0.002		0.011
		(0.011)		(0.002)		(0.002)		(0.018)
Baseline AC temp.		0.007		0.002		-0.024***		-0.212***
		(0.016)		(0.003)		(0.003)		(0.025)
Democrat		0.502***						
		(0.120)						
Income over 150k USD		-0.125		-0.017		0.122*		0.108
		(0.271)		(0.069)		(0.065)		(0.328)
Associate's degree		0.324**		0.073**		0.005		0.249
		(0.151)		(0.036)		(0.034)		(0.189)
Female		0.492***		0.045		-0.016		-0.209
		(0.124)		(0.027)		(0.026)		(0.137)
Divorced		0.282		0.017		-0.026		-0.153
		(0.209)		(0.048)		(0.044)		(0.187)
Mean of dep var	5.994	5.973	0.511	0.517	0.395	0.392	1.048	1.043
Number of Obs	1594	1420	1600	1426	1446	1424	1446	1424
R-Squared	0.020		0.022		0.041		0.038	
Demographic controls (LASSO)	No	Yes	No	Yes	No	Yes	No	Yes
Test BigAsk = Sal. + BigAsk	0.022	0.015	0.050	0.233	0.467	0.631	0.203	0.328
Test Salience = Sal. + BigAsk	0.037	0.061	0.271	0.983	0.003	0.002	0.027	0.046

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable in Columns 1-2 is a variable ranging between 1 and 10, capturing the respondents' beliefs on the impact of their own AC temperature settings on the environment. The dependent variable in Columns 3-4 is a dummy equal to 1 if an individual opts to view the information on the environmental impact of AC usage. The dependent variable in Columns 5-6 is a dummy equal to 1 if the respondent changed the AC thermostat temperature, relative to the temperature reported at the start of the experiment. The dependent variable in Columns 7-8 is the difference between the AC thermostat temperature at the end of the experiment and the one reported at the start of the experiment. *Salience* is a dummy equal to 1 for subjects randomly assigned to the norm salience treatment, i.e., those whose actions are observed by en environmentalist. *BigAsk* is a dummy equal to 1 for subjects randomly assigned to the big ask treatment, i.e., persons whose suggested AC temperature increase is high. *Salience&BigAsk* is a dummy equal to 1 for subjects randomly assigned to the combined treatment. All regressions control for state and week fixed-effects. In addition, regressions in even columns include control variables selected through post-double LASSO procedure among: reported and real outside temperature, gender, marital status, has children, democrat, education level, income level, is alone at home and baseline AC temperature. The last rows report the p-value of Wald tests. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.15: Summary statistics of sub-samples with below and above-median predicted CATE by outcome

	AC impact beliefs			Acquires information			Changes AC temp. (0/1)			Ac temp. change (F)		
	High CATE	Low CATE	Diff.	High CATE	Low CATE	Diff.	High CATE	Low CATE	Diff.	High CATE	Low CATE	Diff.
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Female	0.607	0.401	-0.206***	0.498	0.510	0.012	0.449	0.559	0.110***	0.489	0.519	0.030
	(0.489)	(0.490)	(0.023)	(0.500)	(0.500)	(0.024)	(0.498)	(0.497)	(0.023)	(0.500)	(0.500)	(0.024)
Has children	0.542	0.326	-0.216***	0.514	0.354	-0.161***	0.401	0.468	0.067***	0.371	0.498	0.127***
	(0.498)	(0.469)	(0.023)	(0.500)	(0.478)	(0.023)	(0.490)	(0.499)	(0.023)	(0.483)	(0.500)	(0.023)
Single	0.346	0.537	0.191***	0.374	0.509	0.135***	0.468	0.415	-0.053**	0.494	0.388	-0.106***
	(0.476)	(0.499)	(0.023)	(0.484)	(0.500)	(0.023)	(0.499)	(0.493)	(0.023)	(0.500)	(0.488)	(0.023)
Married	0.548	0.394	-0.154***	0.535	0.407	-0.127***	0.445	0.497	0.051**	0.425	0.517	0.091***
	(0.498)	(0.489)	(0.023)	(0.499)	(0.492)	(0.023)	(0.497)	(0.500)	(0.024)	(0.495)	(0.500)	(0.023)
Divorced	0.106	0.069	-0.037***	0.091	0.084	-0.008	0.087	0.088	0.001	0.080	0.095	0.015
	(0.308)	(0.254)	(0.013)	(0.288)	(0.277)	(0.013)	(0.282)	(0.284)	(0.013)	(0.272)	(0.293)	(0.013)
Democrat	0.399	0.496	0.097***	0.438	0.456	0.019	0.479	0.415	-0.064***	0.396	0.498	0.101***
	(0.490)	(0.500)	(0.023)	(0.496)	(0.498)	(0.023)	(0.500)	(0.493)	(0.023)	(0.489)	(0.500)	(0.023)
Alone at home	0.449	0.444	-0.005	0.459	0.434	-0.025	0.484	0.408	-0.076***	0.560	0.333	-0.228***
	(0.498)	(0.497)	(0.023)	(0.499)	(0.496)	(0.023)	(0.500)	(0.492)	(0.023)	(0.497)	(0.471)	(0.023)
Income cat. 1	0.126	0.151	0.025	0.115	0.162	0.047***	0.146	0.131	-0.015	0.117	0.160	0.043***
	(0.332)	(0.358)	(0.016)	(0.319)	(0.369)	(0.016)	(0.353)	(0.337)	(0.016)	(0.322)	(0.366)	(0.016)
Income cat. 2	0.305	0.298	-0.007	0.262	0.342	0.080***	0.311	0.292	-0.018	0.381	0.222	-0.159***
	(0.461)	(0.458)	(0.022)	(0.440)	(0.474)	(0.022)	(0.463)	(0.455)	(0.022)	(0.486)	(0.416)	(0.021)
Income cat. 3	0.234	0.252	0.018	0.269	0.217	-0.053***	0.222	0.265	0.043**	0.187	0.299	0.112***
	(0.424)	(0.435)	(0.020)	(0.444)	(0.412)	(0.020)	(0.416)	(0.441)	(0.020)	(0.390)	(0.458)	(0.020)
Income cat. 4	0.148	0.147	-0.001	0.178	0.117	-0.061***	0.138	0.157	0.019	0.150	0.145	-0.005
	(0.355)	(0.355)	(0.017)	(0.383)	(0.322)	(0.017)	(0.345)	(0.364)	(0.017)	(0.358)	(0.352)	(0.017)
Income cat. 5	0.133	0.113	-0.020	0.125	0.121	-0.004	0.130	0.115	-0.015	0.119	0.126	0.007
	(0.339)	(0.316)	(0.015)	(0.331)	(0.326)	(0.015)	(0.337)	(0.319)	(0.015)	(0.324)	(0.332)	(0.015)
Income cat. 6	0.055	0.039	-0.016	0.051	0.042	-0.009	0.053	0.040	-0.013	0.046	0.048	0.002
	(0.227)	(0.194)	(0.010)	(0.221)	(0.202)	(0.010)	(0.225)	(0.196)	(0.010)	(0.209)	(0.214)	(0.010)
Education cat. 1	0.108	0.102	-0.006	0.097	0.113	0.016	0.108	0.102	-0.006	0.114	0.096	-0.018
	(0.311)	(0.302)	(0.014)	(0.296)	(0.316)	(0.014)	(0.311)	(0.302)	(0.014)	(0.317)	(0.295)	(0.014)
Education cat. 2	0.268	0.280	0.012	0.239	0.309	0.070***	0.272	0.277	0.005	0.253	0.296	0.043**
	(0.443)	(0.449)	(0.021)	(0.427)	(0.462)	(0.021)	(0.445)	(0.448)	(0.021)	(0.435)	(0.457)	(0.021)
Education cat. 3	0.084	0.221	0.137***	0.151	0.153	0.001	0.160	0.144	-0.016	0.180	0.124	-0.057***
	(0.277)	(0.415)	(0.017)	(0.359)	(0.360)	(0.017)	(0.367)	(0.351)	(0.017)	(0.385)	(0.330)	(0.017)
Education cat. 4	0.431	0.297	-0.134***	0.410	0.318	-0.092***	0.360	0.368	0.009	0.327	0.401	0.073***
	(0.495)	(0.457)	(0.023)	(0.492)	(0.466)	(0.023)	(0.480)	(0.483)	(0.023)	(0.470)	(0.490)	(0.023)
Education cat. 5	0.109	0.100	-0.009	0.102	0.107	0.005	0.100	0.109	0.009	0.126	0.084	-0.042***
	(0.312)	(0.301)	(0.014)	(0.303)	(0.309)	(0.014)	(0.300)	(0.312)	(0.014)	(0.332)	(0.277)	(0.014)
Baseline AC temp. quart.. 1	0.175	0.247	0.072***	0.252	0.170	-0.082***	0.253	0.169	-0.084***	0.282	0.140	-0.142***
	(0.380)	(0.431)	(0.019)	(0.434)	(0.376)	(0.019)	(0.435)	(0.375)	(0.019)	(0.450)	(0.347)	(0.019)
Baseline AC temp. quart.. 2	0.388	0.318	-0.069***	0.344	0.362	0.018	0.336	0.369	0.033	0.333	0.373	0.040*
	(0.487)	(0.466)	(0.023)	(0.475)	(0.481)	(0.023)	(0.473)	(0.483)	(0.023)	(0.472)	(0.484)	(0.023)
Baseline AC temp. quart.. 3	0.188	0.193	0.005	0.263	0.118	-0.145***	0.179	0.202	0.023	0.186	0.195	0.009
	(0.391)	(0.395)	(0.019)	(0.440)	(0.323)	(0.018)	(0.384)	(0.402)	(0.019)	(0.389)	(0.397)	(0.019)
Baseline AC temp. quart.. 4	0.249	0.242	-0.007	0.141	0.350	0.209***	0.232	0.260	0.028	0.199	0.292	0.093***
	(0.433)	(0.429)	(0.020)	(0.349)	(0.477)	(0.020)	(0.422)	(0.439)	(0.020)	(0.400)	(0.455)	(0.020)
Outside temp. quart.. 1	0.262	0.250	-0.012	0.290	0.222	-0.067***	0.241	0.271	0.031	0.219	0.292	0.073***
	(0.440)	(0.433)	(0.021)	(0.454)	(0.416)	(0.021)	(0.428)	(0.445)	(0.021)	(0.414)	(0.455)	(0.021)
Outside temp. quart.. 2	0.329	0.260	-0.068***	0.296	0.292	-0.004	0.329	0.260	-0.068***	0.312	0.277	-0.035
	(0.470)	(0.439)	(0.021)	(0.457)	(0.455)	(0.022)	(0.470)	(0.439)	(0.021)	(0.463)	(0.448)	(0.022)
Outside temp. quart.. 3	0.207	0.262	0.055***	0.219	0.250	0.031	0.202	0.268	0.066***	0.246	0.223	-0.023
	(0.405)	(0.440)	(0.020)	(0.414)	(0.433)	(0.020)	(0.401)	(0.443)	(0.020)	(0.431)	(0.417)	(0.020)
Outside temp. quart.. 4	0.203	0.228	0.025	0.195	0.235	0.041**	0.229	0.201	-0.029	0.223	0.208	-0.015
	(0.402)	(0.420)	(0.019)	(0.396)	(0.425)	(0.019)	(0.421)	(0.401)	(0.019)	(0.416)	(0.406)	(0.019)
Perceived outside temp. quart.. 1	0.124	0.281	0.158***	0.271	0.134	-0.137***	0.314	0.090	-0.224***	0.278	0.126	-0.152***
	(0.329)	(0.450)	(0.019)	(0.445)	(0.341)	(0.019)	(0.464)	(0.287)	(0.018)	(0.448)	(0.332)	(0.019)
Perceived outside temp. quart.. 2	0.251	0.311	0.061***	0.359	0.203	-0.155***	0.320	0.242	-0.077***	0.292	0.270	-0.022
	(0.434)	(0.463)	(0.021)	(0.480)	(0.403)	(0.021)	(0.467)	(0.429)	(0.021)	(0.455)	(0.444)	(0.021)
Perceived outside temp. quart.. 3	0.268	0.244	-0.024	0.218	0.295	0.076***	0.205	0.308	0.103***	0.223	0.290	0.067***
	(0.443)	(0.430)	(0.021)	(0.413)	(0.456)	(0.021)	(0.404)	(0.462)	(0.020)	(0.416)	(0.454)	(0.021)
Perceived outside temp. quart.. 4	0.357	0.163	-0.195***	0.153	0.368	0.216***	0.161	0.359	0.198***	0.207	0.314	0.106***
	(0.480)	(0.370)	(0.020)	(0.360)	(0.483)	(0.020)	(0.368)	(0.480)	(0.020)	(0.405)	(0.464)	(0.021)
Observations	898	896	1,794	898	896	1,794	898	896	1,794	898	896	1,794

Notes: *High CATE* denotes the sub-sample of respondents with the higher predicted CATE, and *Low CATE* the sub-sample with the lower predicted CATE. Columns report the mean and standard deviation, in parentheses, of the row variables for the two sub-samples, and the difference between the subsamples, as well as the associated standard error, for each outcome variable. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.16: Treatment effect on time spent reading the information

	(1)	(2)
	Time spent on information (sec)	
BigAsk	-0.390	-3.429
	(5.717)	(10.480)
Salience	-3.982	-7.325
	(5.367)	(10.010)
Sal. + BigAsk	-4.090	-1.253
	(5.140)	(9.069)
Mean of dep var	24.309	47.116
Number of Obs	2103	1085
R-Squared	0.015	0.027

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable is the number of seconds spent by the respondent on the information page, which is coded as 0 if a respondent does not acquire any information. *Salience* is a dummy equal to one for subjects randomly assigned to the norm salience treatment, i.e. whose actions are observed by en environmentalist. *BigAsk* is a dummy equal to one for subjects randomly assigned to the big-ask treatment, i.e. whose suggested AC temperature increase is high. *Salience&BigAsk* is the interaction of the two treatment dummies. The sample in Column 1 is the full sample, and in Column 2 the sample of respondents who acquired the information. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Online Appendix

B: Social information program

This section reports further details on the data, sample and empirical strategy used in the analysis in Section 5.

For all customers, we have access to engagement data, detailing whether they received, opened or clicked on an eHER during a month; to historical electricity consumption data from July 2015 to August 2018; and to time-invariant characteristics. Conditional on being assigned to the treated group, 91% of customers received at least one eHER, on average 8.8 over the period of analysis. About 21.5% of customers leave the dataset between the launch of the program and August 2018. The main reason of that is termination of the contract with the utility.

We use the data available to check for balance between the sub-samples of customers receiving the eHER in even or odd months. We compute the average pre-treatment electricity usage in a month, calculated over the period July 2015-June 2016. As time invariant controls we use dummies for the main geographical areas, i.e., North-East, North-West, Centre, South and Islands, and the population of the municipality where the customers live in 2001, obtained by matching the contract municipality data with data from Guiso et al. (2016) on municipalities' characteristics. Overall, we find that the two sub-samples are not balanced along a few of the characteristics considered, namely being located in the North-West and in the Islands, and pre-treatment consumption. The inclusion of individual fixed-effects as controls in our regression specifications should deal with any issue related to unbalanced covariates.

We evaluate the impact of the program by estimating the following model:

$$y_{imt} = \beta_1 Temp_{mt} + \beta_2 eHER_{it} + \beta_3 Temp_{mt} * eHER_{it} + h_t + g_i + \varepsilon_{imt} \tag{OA.1}$$

where y_{imt} captures customer's i, living in municipality m, engagement in month t, where engagement with the program is measured by a dummy equal to one if the customer opened (open) or clicked (click) on the email. $Temp$ is the indicator of monthly temperature in the municipality, $eHER$ is a dummy equal to one when customers receive an eHER during a month. The regression also includes month-by-year fixed effects, h_t, and household fixed effects g_i. Standard errors are clustered at the level of household, to allow for the presence of within customer correlation over time in the error term (Bertrand et al., 2004). We use three different proxies of temperature in the analysis: the maximum temperature recorded in a month; the number of days in a month with temperature above 32.2 degrees Celsius; and the average maximum daily temperature over the month. For each proxy, we compute temperature quartiles and median to include in the regressions.

Our identification strategy thus relies on variation over time and space in temperatures; and on variation in the timing of receipt of the eHER. The inclusion in the regression models of individual fixed-effect should control for any systematic differences between customers related to their location, and thus exposure to high temperatures. Moreover, month-by-year fixed-effects should control for any time-varying factors occurring when customers receive the report.

Table OA.1 presents regression results. Regardless of the indicator of engagement, the temperature proxy or definition of high temperature used, the same pattern emerges: among customers seeking the information during months when they do not receive the information, higher temperatures are associated with higher degrees of engagement, while the opposite holds for customers nudged to attend to the information.

Table OA.1: Impact of outside temperature on engagement with the eHER, depending on receipt of the eHER in a month.

	Mean maximum temperature		No. Days with max temperature $\geq$ 32.2°C		Maximum daily temperature	
Dependent Variables:	Open	Click	Open	Click	Open	Click
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Quartiles						
Q2	-0.0022***	0.0026***	-0.0004	0.0001	-0.0009	0.0044***
	(0.0006)	(0.0004)	(0.0003)	(0.0001)	(0.0007)	(0.0004)
Q3	0.0060***	0.0088***	0.0015***	0.0008***	0.0089***	0.0109***
	(0.0010)	(0.0005)	(0.0003)	(0.0001)	(0.0009)	(0.0005)
Q4	0.0245***	0.0133***	0.0163***	0.0072***	0.0209***	0.0127***
	(0.0017)	(0.0009)	(0.0005)	(0.0002)	(0.0012)	(0.0006)
eHER	0.4005***	0.0831***	0.3936***	0.0730***	0.4007***	0.0839***
	(0.0007)	(0.0003)	(0.0007)	(0.0004)	(0.0007)	(0.0003)
eHERxQ2	-0.0005	-0.0085***	-0.0002	-0.0011**	0.0043***	-0.0074***
	(0.0006)	(0.0004)	(0.0007)	(0.0004)	(0.0007)	(0.0004)
eHERxQ3	-0.0206***	-0.0248***	-0.0038***	-0.0028***	-0.0268***	-0.0280***
	(0.0007)	(0.0004)	(0.0007)	(0.0004)	(0.0007)	(0.0004)
eHERxQ4	-0.0478***	-0.0304***	-0.0317***	-0.0157***	-0.0451***	-0.0305***
	(0.0007)	(0.0004)	(0.0008)	(0.0004)	(0.0007)	(0.0004)
R^2	0.40119	0.14483	0.40095	0.14415	0.40125	0.145
Within R^2	0.24064	0.033	0.24034	0.03224	0.24071	0.03319
Panel B: Median						
Above median	0.0134***	0.0089***	0.0076***	0.0034***	0.0120***	0.0082***
	(0.0007)	(0.0004)	(0.0002)	(0.0001)	(0.0007)	(0.0003)
eHER	0.4003***	0.0788***	0.3936***	0.0725***	0.4028***	0.0803***
	(0.0006)	(0.0003)	(0.0006)	(0.0003)	(0.0006)	(0.0003)
Above medianxeHER	-0.0324***	-0.0230***	-0.0158***	-0.0079***	-0.0368***	-0.0255***
	(0.0005)	(0.0003)	(0.0005)	(0.0003)	(0.0005)	(0.0003)
R^2	0.40108	0.14474	0.40083	0.14402	0.40119	0.14494
Within R^2	0.2405	0.03291	0.24018	0.03209	0.24064	0.03314
Individual fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Month-by-year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,614,157	7,614,157	7,614,157	7,614,157	7,614,157	7,614,157

Notes: Linear regressions, standard errors clustered at the individual level in parentheses. The dependent variable is a dummy equal to 1 if an individual opens or clicks on the eHER in a month in odd and even columns of the table, respectively. eHER is equal to one if a customer received the eHER in a month. Q2 to Q4 denote the quartiles of the temperature proxy specified in each column. *Mean maximum temperature* is the average maximum temperature in the user's municipality over the month. *No. days with maximum temperature above 32.2* denotes the number of days in a month when the temperature in the user's municipality was above 32.2 degrees Celsius. *Maximum daily temperature* is the maximum temperature reached in a month in the user's municipality. All regressions control for month-by-year and individual fixed-effects. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

We repeat the exercise focusing on summer months (May to September), when AC is likely to be needed. The patterns found in the main analysis are confirmed.

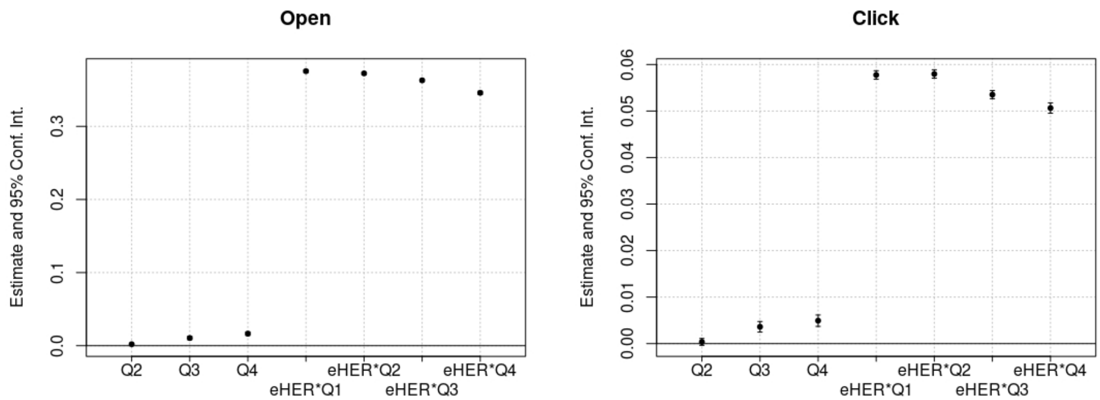

Figure OA.1: **Information acquisition and temperature: summer months** The figure reports marginal effects and 95% C.Is. of temperature quartiles (Q1-Q4), depending on whether or not a customer received an electronic Home Energy Report (eHER). The results are based on a regression of opening (the left panel) the email and clicking (the right panel) on a report on quartiles of the maximum temperature reported in the user's municipality during a month, a dummy for receiving the report during a month, and their interaction. The omitted category comprises of customers not receiving the report and living in a municipality in the first temperature quartile. The analysis focuses on May-September. Regressions control for month-by-year and individual fixed-effects.

C: Pre-Analysis Plan Results

C.1. Beliefs: perceived impact of AC usage and thermostat temperature increase.

The specification reported in the main text and in Table A.7 deviates from the PAP as follows: the pre-registered specification does not include an interaction term between the two treatment indicators, and controls for the difference between outside temperature on the day of the survey and the average temperature in the survey's location on the same date in the previous 20 years. We deviate from the pre-registered specification in the main analysis because we believe that reporting the same specification for both beliefs and information acquisition improves the conceptual focus, readability and transparency of the paper (the pre-registered specification for information acquisition is the one reported in the main text).

We show results from the pre-registered specification in Table OA.2. The results on beliefs on the impact of AC usage, which we consider the more precise and less problematic measure of beliefs available in our data, confirm that making an environmentally-friendly norm salient leads to a reduction in perceived impact. A higher suggested temperature increase also leads to lower perceived impact. An increase in the difference between outside temperature on the day of the survey and the average temperature in the survey's location on the same date in the previous 20 years, which we consider as another proxy of the hedonic cost of increasing AC temperature, similarly has a negative correlation with reported AC impact beliefs, although not a statistically significant one.

The results on the estimated CO2 emission reduction associated with the requested AC thermostat increase are consistent in terms of the impact of the norm salience treatment. The coefficient on the ask size treatment dummy is positive and not significant in this specification, but it is important to bear in mind that the raw answer to the belief elicitation question, which is the pre-specified outcome variable, is problematic, in that it conflates the effect of the treatment with the fact that the question itself varies by ask-size treatment. For this reason, in Table A.7 we also report results for the standardized version of this variable.

C.2. Information Acquisition

The specification presented in the main text corresponds to the pre-specified one, with the exception that in the main text we use a linear regression model, rather than the pre-specified logit model. We opted for a linear regression in the main text because the model features interaction terms. The results are consistent when using a logit model (Table OA.3).

The PAP also features a regression, where the BigAsk treatment is replaced by the difference between outside temperature on the day of the survey and the average temperature in the survey's location on the same date in the previous 20 years. We do not report this analysis in the main text to improve the focus and readability of the paper, even though the effect of the norm salience treatment is negative and significant also in this specification.

Table OA.2: Treatment impact on perceived AC impact

Dependent variable	Belief on AC impact (1)	Belief on CO2 reduction (2)
Salience	-0.186*	-20.74*
	(0.102)	(12.11)
BigAsk	-0.256**	4.640
	(0.103)	(12.14)
Temperature difference	-0.0291	4.819*
	(0.0234)	(2.752)
Constant	5.569***	219.7***
	(0.402)	(41.26)
Observations	1,985	1,990
R-squared	0.023	0.011

Notes: OLS regressions, robust standard errors in parentheses. The dependent variable in Column 1 is the individual's guess of how much impact her AC thermostat setting has on the environment, on a scale from 0 (no impact) to 10 (very large impact). The dependent variable in Column 2 is the individual's guess of how much raising her AC thermostat setting by the suggested number of degrees (1 or 5) every day would reduce her yearly CO2 emissions in pounds. *Salience* is a dummy equal to one for subjects randomly assigned to the norm salience treatment, i.e. whose actions are observed by en environmentalist. *BigAsk* is a dummy equal to one for subjects randomly assigned to the big ask treatment, i.e. whose suggested AC temperature increase is high. *Temperature difference* is the difference between the maximum outside temperature on the day and place of the interview, relative to the 20-years average maximum outside temperature in the same place on the same date. All regressions control for state and week fixed-effects. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

Finally, in the main text we add a model where, in addition to the pre-specified controls, we control for variables selected through LASSO, a technique which has become available since the time of writing of the PAP.

C.3. AC usage

Here the pre-specified analysis differs from the one reported in the main text both in terms of the outcome variables and of the regression model. The PAP lists as outcome variables for AC usage (1) the self-reported willingness to change the AC setting; (2) endline AC temperature from the pictures; (3) an indicator equal to 1 if the subject complied with the suggested AC thermostat increase, computed as the difference between self-reported baseline AC temperature and endline picture temperature; (4) an index of these three variables. We opted to report simply the extensive and intensive margin of temperature change as outcome variables due to the following issues with the pre-specified outcomes.First, self-reported willingness to change AC settings is pure cheap talk: while AC thermostat pictures do not constitute a hard behavioral measure nor a measure of long-lasting behavioral change, they at least require subjects to actively change their AC thermostat setting before taking a picture of it, so they represent an improvement with respect to stated willingness to act. Second, compliance with the suggested increase is an imperfect and not transparent proxy of what we truly care about, which is behavior change. For instance, if subjects in the BigAsk treatment raise temperature by more degrees than those in the SmallAsk treatment, without however complying with the suggested increase of 5 degrees precisely, we may interpret the treatment as unsuccessful based on the compliance

Table OA.3: Treatment impact on information acquisition

Dependent variable	Acquires information	
	(1)	(2)
Salience	-0.137	-0.230***
	(0.122)	(0.0857)
BigAsk	0.0726	
	(0.122)	
Salience × BigAsk	-0.180	
	(0.172)	
Temperature difference		-0.0392
		(0.0267)
Salience × TempDiff.		0.0217
		(0.0354)
Constant	-0.274	-0.233
	(0.324)	(0.316)
Observations	2,283	2,283
Test BigAsk = Sal. × BigAsk	0.295	
Test Sal. + BigAsk + Sal. × BigAsk = 0	0.039	
Test TempDiff = Sal. × TempDiff		0.540
Test Sal. + TempDiff + Sal. × TempDiff = 0		0.005

Notes: Logit regressions, robust standard errors in parentheses. The dependent variable is a dummy equal to 1 if an individual opts to view the information on the environmental impact of AC usage. *Salience* is a dummy equal to one for subjects randomly assigned to the norm salience treatment, i.e. whose actions are observed by en environmentalist. *BigAsk* is a dummy equal to one for subjects randomly assigned to the big ask treatment, i.e., whose suggested AC temperature increase is high. *Temperature difference* is the difference between the maximum outside temperature on the day and place of the interview, relative to the 20-years average maximum outside temperature in the same place on the same date. All regressions control for state and week fixed-effects. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

indicator, while in effect the BigAsk has induced larger behavioral change. Third, as a consequence, the combined index is a measure even harder to interpret. In contrast, the extensive (i.e., probability to change AC temperature) and intensive (i.e., AC temperature change) margin of behavior are more standard and transparent outcomes. This way of measuring behavioral change is also similar to that used in other settings, such as charitable giving, where existing studies look at the probability to giva and donation amounts as outcomes.

In terms of specification, the PAP one features a fully interacted model between norm salience, big ask and information acquisition. Including information acquisition as an independent variable in the analysis of AC usage is inappropriate, since information acquisition is itself affected by the treatments. In addition, the triple interactions make it very hard to interpret the regression results.

Overall, we acknowledge that the pre-specified analysis has limitations.We report the PAP results in OA.4. We note that treatment effects are more pronounced for the sample of subjects who do acquire the information than for those who do not.

C.4. Heterogeneity

The PAP pre-specifies a series of potential sources of heterogeneity in treatment effects on information acquisition. The analysis is reported in OA.5. Overall, we have not enough statistical power to detect any

Table OA.4: Treatment impact on AC usage

Dependent variable	Stated willingness to comply with suggested AC increase	AC thermostat temperature	Complies with suggested AC increase	Index of AC action
	(1)	(2)	(3)	(4)
Salience	0.0985	0.874**	0.124	0.145
	(0.192)	(0.390)	(0.183)	(0.0947)
BigAsk	-1.107***	0.272	-0.994***	-0.622***
	(0.192)	(0.414)	(0.203)	(0.0959)
Salience × BigAsk	-0.00113	-0.502	0.0453	-0.0711
	(0.265)	(0.559)	(0.275)	(0.132)
Acquires information	1.657***	0.459	0.535***	0.418***
	(0.248)	(0.389)	(0.172)	(0.0848)
Salience × Acquires info.	-0.135	-1.200**	-0.0643	-0.0721
	(0.351)	(0.550)	(0.246)	(0.119)
BigAsk × Acquires info.	-0.0234	0.617	0.281	0.234*
	(0.316)	(0.551)	(0.258)	(0.124)
Sal.× BigAsk × Acq. info.	-0.319	0.648	-0.0121	-0.0939
	(0.441)	(0.779)	(0.361)	(0.174)
Constant	-0.0926	77.35***	-0.374	0.0216
	(0.365)	(0.543)	(0.341)	(0.163)
Observations	2,103	1,820	2,283	1,820
R-squared		0.051		0.154

Notes: Logit (Columns 1 and 3) and OLS (Columns 2 and 4) regressions, robust standard errors in parentheses. The dependent variable in Column 1 is a dummy equal to 1 if an individual claims she's willing to turn up her AC thermostat as suggested. The dependent variable in Column 2 is the individual's self-reported AC thermostat temperature after the treatment. The dependent variable in Column 3 is a dummy equal to 1 if an individual complied with the suggested AC temperature increase. The dependent variable in Column 4 is an index of the other dependent variables, constructed using the procedure in Anderson (2008). *Acquires information* is a dummy equal to 1 if an individual opts to view the information on the environmental impact of AC usage. All regressions control for state and week fixed-effects. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

significant heterogenous effects.

Table OA.5: Heterogeneity of treatment impact on information acquisition

Dependent variable	Acquires information			
	(1)	(2)	(3)	(4)
Salience	-0.0234	-0.0212	0.0763	0.00599
	(0.0709)	(0.0474)	(0.0837)	(0.0449)
BigAsk	0.0428	0.0474	0.0330	0.0174
	(0.0703)	(0.0471)	(0.0837)	(0.0435)
Salience × BigAsk	-0.0286	-0.0558	-0.154	-0.0994
	(0.0995)	(0.0664)	(0.118)	(0.0616)
Moral values	0.00837			
	(0.0133)			
Salience × Moral values	-0.000644			
	(0.0186)			
BigAsk × Moral values	-0.00625			
	(0.0185)			
Sal. × BigAsk × Moral values	-0.00734			
	(0.0260)			
High moral values		0.0544		
		(0.0424)		
Salience × High moral values		-0.00423		
		(0.0606)		
BigAsk × High moral values		-0.0401		
		(0.0597)		
Sal. × BigAsk × High moral values		0.00167		
		(0.0849)		
Disengagement			-0.00639	
			(0.0195)	
Salience × Disengagement			-0.0356	
			(0.0275)	
BigAsk × Disengagement			-0.00509	
			(0.0282)	
Sal. × BigAsk × Disengagement			0.0354	
			(0.0395)	
High disengagement				0.00163
				(0.0417)
Salience × High disengagement				-0.0539
				(0.0595)
BigAsk × High disengagement				0.0120
				(0.0582)
Sal. × BigAsk × High disengagement				0.0811
				(0.0830)
Constant	0.402***	0.397***	0.445***	0.430***
	(0.0899)	(0.0826)	(0.0962)	(0.0829)
Observations	1,818	2,286	1,823	2,286
R-squared	0.025	0.039	0.028	0.039

Notes: Logit regressions, robust standard errors in parentheses. The dependent variable is a dummy equal to 1 if an individual opts to view the information on the environmental impact of AC usage. *Salience* is a dummy equal to 1 for subjects in the norm salience treatment. *BigAsk* is a dummy equal to one for subjects in the big ask treatment. *Moral values* indicates agreement with the statement "It is important to this person to always behave properly; to avoid doing anything people would say is wrong" on a scale from 1 to 6. *High moral values* denotes higher than median *Moral values*. *Disengagement* is an index constructed from answers to three items of the moral disengagement scale (Bandura 2016): for the list of specific items, see the Experimental Material. *High disengagement* denotes higher than median *Disengagement*. All regressions control for state and week fixed-effects. *, **, and ***indicate significance at the 10%, 5%, and 1% levels, respectively.

D: Experimental Instructions

Welcome

To begin, please enter your Amazon Mechanical Turk WorkerIDhere:

(Please see below for where you can find your WorkerID.)

Intro

Consent for Participation in Research

Individual decision making study

Principal Investigators: Giovanna d'Adda, Yu Gao, Russell Golman and Massimo Tavoni

This is a study being conducted by researchers atCarnegie Mellon University and Milan Polytechnic. We are studying individual decision making. In order to participate in this online study, you must satisfy the following conditions:

1. You are 18 or older
2. You are currently at home
3. You have AC in your home, and your AC has a thermostat for controlling the temperature
4. You have a camera and are willing and able to upload a photo of your AC display.

We will use the information that our subjects provide in published articles or academic presentations, but no information regarding your personal identity or your involvement as a research subject will be published or revealed. Information collected during this study will be retained by these researchers and may be used in future research projects, but this information will not be linked to you in any way. Please be aware that any work performed on Amazon MTurk can potentially be linked to information about you on your Amazon public profile page, depending on the settings you have for your Amazon profile. We will not be accessing any personally identifying information about you that you may have put on your Amazon public profile page. We will store your mTurk worker ID separately from the other information you provide to us.

Q1: What is the temperature outdoors right now (°F)? If you don't know, you can check the weather on your phone or on the web.

Q2: At what temperature is your AC currently set (°F)?

Treatment: Ask size

Respondents saw one of the paragraphs randomly

SET YOUR THERMOSTAT 1 DEGREE HIGHER

Did you know? Setting your thermostat **EVEN JUST 1 DEGREE HIGHER** on a hot day helps you save energy and money, and reduce your emissions of greenhouse gases, such as CO2, which contribute to global warming.

SET YOUR THERMOSTAT 5 DEGREES HIGHER

Did you know? Setting your thermostat **5 DEGREES HIGHER** on a hot day helps you save energy and money, and reduce your emissions of green house gases, such as CO2, which contribute to global warming.

Treatment: Norm salience

Respondents saw one of the paragraphs randomly

We will shortly ask you to send us a picture of your AC thermostat or AC remote control display. Naomi

Swerdlow will observe your survey responses and the picture of your AC thermostat. Naomi volunteers with the Sierra Club, the nation's largest and most influential grassroots environmental organization. She cares about the environment because she believes, "Everyone deserves clean water and clean air. People need to stay healthy and breathe free. Our planet needs to stay nice for our future."

We will shortly ask you to send us a picture of your AC thermostat or AC remote control display.

Perception of impact

Q3: On a scale of 1-10, in your best guess, how much impact does your AC thermostat setting have on the environment?

Respondents saw Q4.1 or Q4.2, depending on the assigned treatment

Q4.1: Guess how much you would reduce your yearly CO2 emissions (in pounds) if you raised your thermostat setting by 1 degree F for 8 hours a day from its normal setting. (For reference, recycling 3 aluminum cans reduces your CO2 emissions by 1 pound.)

Please enter an integer number between 0 and 1000

Q4.2: Guess how much you would reduce your yearly CO2 emissions (in pounds) if you raised your thermostat setting by 5 degrees F for 8 hours a day from its normal setting. (For reference, recycling 3 aluminum cans reduces your CO2 emissions by 1 pound.)

Please enter an integer number between 0 and 1000

Info avoidance

Q5: Would you like to know more about the environmental impacts of AC use and estimate the reduction in your CO2 emissions from raising your thermostat setting? Yes/No

if Q5==Yes

MAIN SOURCES OF AC'S IMPACT ON THE ENVIRONMENT

Energy Use

In the Annual Energy Outlook 2019, the U.S. Energy Information Administration (EIA) estimates that the residential sector's electricity use for cooling was about 214 billion kWh in 2018, which was equal to about 15% of total residential sector electricity consumption and 5% of total U.S. electricity consumption (for more details, see here).

The electricity generated to power air conditioning carries both global and personal health consequences. In burning fossil fuels such as coal to supply electricity to homes and workplaces, power plants discharge clouds of soot and other pollutants into the atmosphere. Among these are mercury and carbon dioxide (CO2). Air conditioner use in the U.S. results in an average of about 100 million tons of CO2 emissions from power plants every year.

HCFCs

Formerly used as cooling agents, ozone-depleting chlorofluorocarbons (CFCs) have been replaced by hydrochlorofluoro carbons (HCFCs), which deplete 95 percent less ozone. However, booming demand for air conditioners in hot climates such as India and China has upped the chemical's output in developing countries 20 to 35 percent each year, causing damage at an alarming rate and possibly setting back ozone recovery by 25 years. In industrial countries, HCFCs are being replaced with ozone-safe cooling agents and will be banned in the U.S. by 2010. But HCFCs will be allowed in developing countries through 2040, and because they're still cheaper to use than ozone-safe chemicals, production in developing countries is expected to increase five fold by 2010.

WHAT IMPACT DO YOUR ACTIONS HAVE?

Beyond the average impact of AC use and of setting AC thermostats higher, you can estimate the reduction in your CO2 emissions from raising your thermostat setting, thanks to the EPA calculator that you can find at this link.

Action

Respondents saw Q6.1 or Q6.2, depending on the assigned treatment

Q6.1: Are you willing to raise the temperature of your AC by 1 degree F?

Q6.2: Are you willing to raise the temperature of your AC by 5 degree F?

We now request that you take and upload a photo of your AC thermostat or your AC remote control. Please note that your compensation does not in any way depend on the temperature setting you choose.

INSTRUCTIONS FOR SENDING A VALID PHOTO:

1. Make sure that the temperature, at which your thermostat is set, is clearly visible on the display you are taking a picture of

2. Take a photo of the display and upload it below. Try to match the following photo as closely as possible:

Please indicate here the temperature reported on your AC thermostat in the picture that you uploaded.

Survey

Q7: Are you alone in the house?

Yes/No

Q8: At what temperature do you typically set your AC on a hot day(°F)?

Q9: Do you normally raise your AC temperature or turn it off completely when you leave the house?

Turn off AC/Raise AC temperature/Do nothing (leave on at unchanged temperature)

Q10: Is your AC energy star?

Yes/No/I don't know

Q11: Do you try to limit AC use?

Yes/No

Q12: What is your ZIP code?

Q13: What is your gender?

Q14: What year were you born?

Q15: Do you have children?

Q16: What is your marital status?

Q17: What is the highest level of education that you have completed?

Q18: Please indicate your approximate yearly household income before taxes. (Include total income of all adults living in your household.)

Q19: Which political party do you most strongly support and/or identify with?

Q20: Please indicate to what extent you agree with the following statements (1= strongly disagree ; 7= strongly agree)

a. Considering the ways people grossly misrepresent themselves, it's hardly a sin to inflate your own accomplishments a bit.

b. People should not be held accountable for doing questionable things when they were just doing what an authority figure told them to do.

c. People can't be blamed for doing things that are technically wrong when all their friends are doing it too.

Recently you may have noticed that global warming has been getting some attention in the news. Global warming refers to the idea that the world's average temperature has been increasing over the past 150 years, may be increasing more in the future, and that the world's climate may change as a result.

Q21: What do you think? Do you think that global warming is happening?

Definitely not/Probably not/I don't know/Probably yes/Definitely yes

Q22: Assuming global warming is happening, do you think it is ...

Caused mostly by human activities/Caused mostly by natural changes in the environment/Other

Q23: How much do you personally worry about global warming?

None of the above because global warming isn't happening/Not at all/Only a little/A fair amount/A great deal

Q24: How often do you play the lottery?

Daily/Weekly/Monthly/Yearly/Rarely (only a few times in my life)/I've never done it

Now I will briefly describe some people. Would you please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you? (Code one answer for each description):

a. It is important to this person to have a good time; to "spoil" oneself.

b. It is important to this person to do something for the good of society.

c. It is important to this person to always behave properly; to avoid doing anything people would say is wrong.

d. Looking after the environment is important to this person; to care for nature and save life resources.

Q25: For this study, it was important that you paid attention to all the descriptions and carefully read the question text. From the choices below, please select the city that begins with the letter B to indicate that you have been reading the questions. San Francisco/New York/Baltimore/Chicago/Pittsburgh

Q26: Did any part of this survey seem familiar to you?

Yes/No

if Q26==Yes

Q27: Please explain what part of the survey seemed familiar to you and why it seemed familiar.

Q28: Do you have a guess for what the research question of this survey is?