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Looking for information? A survey experiment on citizens' information seeking behaviour.

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ABSTRACT:

How do citizens form and update their opinion about political topics? While the literature generally agrees that new information has to be received and accepted to affect political preferences, research on the exact mechanism of information acquisition and the condition under which this process is more or less likely remains scarce. This is what we tackle in this paper by paying special attention to the active search for information as well as to the source of it. We designed and pre-registered an experiment that isolates the process of information acquisition and especially differentiates between outcomes both as change in salience, persuasion and changes in intended behavior. Importantly, we also take the source of information (experts vs citizens) into account. While both passive and active encounters with information makes individuals more knowledgeable about the topic, an active information search makes them attributing a greater importance, making them more likely to adapt their attitudes and also become more willing to take action around it. By studying the influence of an active search for two new topics and by leveraging several countries in our research, we provide a robust basis for how the process of information acquisition shapes attitudes. Our findings have important implications for the public opinion formation literature but also for designers of survey experiments more broadly.

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Introduction

Informed citizens are critical for the working of democracy. Political information is a key for a great number of democratic tasks such as the evaluation of politicians, vote choice and the formation and the update of political preferences and attitudes. While the literature generally agrees that information has to be received and accepted to affect political preferences, research on the exact mechanism of information acquisition and the condition under which this process is more or less likely remains scarce in political science. This is even more surprising in light of the fact that we live in an age of information abundance where selection of information is key (Druckman and Lupia 2016a).

A rare exception is Vössing and Weber (2019) who recently provided new insights that active information search and the quality of information is key to retain new information. They reason that the lack of attention to the process of information acquisition is a consequence of the prevalence of survey experiments which typically provide a short sketch of information to respondents while varying the specific frame or content of this information. In this setting, the respondents remain passive in the process but are expected to take up the presented information and adapt their political attitudes as a consequence. This setting seems at odds with a sizeable literature in psychology (e.g. Bates 2002; Case 2007; Markant et al. 2014) but also with the growing literature on selective exposure (e.g. Stroud 2010; Valentino et al. 2009) which postulate that the exact process of information search is crucial in how much of this information is retained and accepted. Also, such a setting seems not fully appropriate in a real-world environment where political information is abundantly available but the attention of citizens and thus their decision to take the effort and search for information is key (Druckman and Lupia 2016b). In this work, we present evidence from a pre-registered survey experiment which allows us to differentiate between active and passive information acquisition. This renders it possible to learn more about the very process of information acquisition and how it matters for political outcomes.

How the information looks like is obviously also an important part of the story.

We build on a large literature in political communication research about source credibility (e.g. Hovland and Weiss 1951; Metzger and Flanagin 2015) but also evidence that the similarity between the source and the receiver plays a role (O'Keefe 2015) and argue that information from other citizens has a higher chance to be accepted than information from experts. This resonates also with the literature on populism where anti-elitism and anti-expertism is an important part (e.g. Hawkins et al. 2018).

We designed and pre-registered an experiment that isolates the process of information acquisition and especially shed light on the two mechanisms that could drive the results by Vössing and Weber (2019) and which the literature was not able to differentiate so far: *larger salience* of the attitude or *information updating*, i.e. adapting attitudes (e.g. Coppock 2023). Importantly, it also takes the source of information (experts vs citizens) into account as this has been shown to be an important moderator (e.g. Lupia 2002). We study two political issues with varying salience at the macro-level but also between individuals: economic inequality and climate change. These two topics with arguably more prior knowledge and thus pressure for attitude stability seems a harder case to detect effects of active vs passive information search. In our multi-country survey experiment we obtained detailed information about knowledge, salience and evaluation of these issues after treatment. This makes it possible to get much more comprehensive and detailed view on the mechanisms as for example Vössing and Weber (2019) where the outcome of interest is measured more downstream as

effect on the strength of issue voting. In sum, by studying the influence of an active search for two new topics and by leveraging several countries in our research, we provide a robust basis for how the process of information acquisition shapes attitudes.

In particular, our results indicate that active information search makes a difference. If participants actively looked for more information, they are more concerned about the issue, more likely to change their attitudes on it and more willing to take action about it while the effects for increased knowledge are about equal for passive or active exposure to information. Additional robustness tests indicate that especially the relevance and intended behavior effects are stronger for active vs passive information exposure. Source credibility strengthens these patterns: if individuals read an article emphasising the position of other citizens, they are more worried by the same topic and – most importantly – more likely to take action. Yet, knowledge acquisition and persuasion seems more to get boosted when the article emphasized the view of experts.

Theory

Informed citizens are key to democratic systems and a lot of political science work is concerned with how information shapes political preferences and behaviour. Example include but are not restricted to work on issue voting (Hobolt and Wittrock 2011), the evaluation of politicians (Vavreck 2009) or the formation of (rational) policy opinions (Fisher et al. 2018) and obviously the study of campaign effects including priming and agenda setting. However, despite the high significance of information for political attitude formation, the very process of information acquisition and acceptance has received less attention in the literature so far.

Where do citizens' political opinions come from? According to the seminal work by Zaller (1992), information has a key role in shaping the political attitudes of people. In particular, Zaller assumes that the simple fact of being exposed to information should have an impact on citizens' political preferences. In other words, Zaller's model posits a direct and simple relationship between information and political behaviour, where it is sufficient to *receive* information to induce a change in political opinion.

However, in current times, information abounds (especially online) and scholars have underlined how citizens engage in more selective attention and reception than ever before. As a result, receiving information has become only the first step of a more complex process that links information and politics. Specifically, it is not sufficient to receive information to influence a person's political attitudes. On the contrary, information should be *retained* (that is, acquired and memorized) and also *accepted* in order to have an impact on people's opinion.

To put it differently, the relationship between information and political attitude is made of three steps: 1) receiving, 2) retaining and 3) accepting information. Only passing through these three stages we can therefore expect to see an impact of information on citizens' preferences. In this paper we evaluate the determinants of each of these steps, analysing what the factors that favour the memorization and the acceptance of information are and what their consequences for people's political opinion.

Figure 1 summarises our theoretical framework and the two steps that link information to citizens' opinion, i.e., retaining and acceptance. In the figure we also anticipate the two factors that we examine in the remaining of our theoretical argument and that we posit facilitate respectively,

information retaining and acceptance. Specifically, we study how active information behaviour and source credibility have a positive impact on how individuals incorporate messages they were exposed to in their thinking.

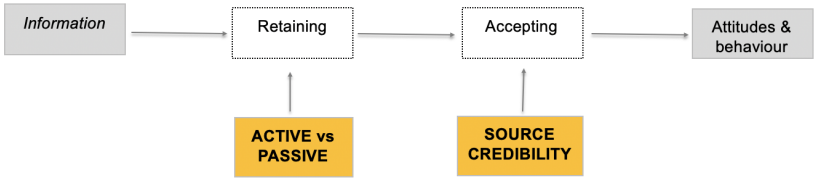

Figure 1: Theoretical model of the relationship between information and citizens' attitude and behaviour

The determinants of information retaining

The *modality* through which individuals seek information is an important factor affecting the memorization of the information itself. In particular, the literature has distinguished between two different information behaviours, that is, passive and active information search (see, e.g., Bates 2002). Passive information behaviour refer to situations in which individuals "encounter" information while being occupied in other tasks. On the contrary, when people actively seek information it means that they perform an intentional search, that is, they demand/request it (Wilson 2000). To put it shortly, people can either engage in active/purposive information behaviour or in passive encountering of it (Nwone and Mutula 2020).

What are the consequences of actively seeking information versus passively encountering it? According to psychologists like Jean Piaget, action is the prerequisite for knowledge more than perception (for a review of Piaget's work, see Beilin and Fireman 1999). If citizens are more actively involved in the search for information, this increases the chances that the new piece of information is retained in the memory and thus becomes consequential later on. In simple words, knowledge acquisition is superior when we are actively involved in the process. This pattern has been proven in relation to several human activities: For instance, car drivers are better in spatial knowledge than passengers (Sandamas and Foreman 2015). Similarly, works on language learning suggest that individuals have a superior memorization of a second language when they actively look for more information (Atkinson 1972). Vössing and Weber (2019) prove that the same applies to political information. In an experimental setting around the EU elections in Germany, the authors assign respondents to (a) a vignette providing information on policy positions of major German parties, (b) let them decide themselves whether they want to read the article or (c) expose them to a mock choice inducing active search but assign them all to read a policy-related article. The findings suggest that issue voting, i.e. a policy match, is a stronger predictor for party choice (PTV) when the information is search in an active manner and when the information is of high quality.

A similar argument about the pertinence of the search mode has also been made by communication scholars, who distinguish between forced and selected media exposure (Arceneaux and Johnson 2013). Empirically there seems to be a difference between the opinion of citizens who freely choose whether to get exposed to news and those who are obliged to do so (Levendusky 2013). Stroud et al. (2019)

explain the psychological mechanisms that drive this reaction in individuals, highlighting in particular the role of two processes: reactance and cognitive dissonance. Most importantly, Stroud et al. (2019) find that when a news message is imposed on individuals they will rate the issue as less important than those given a choice of news media content.

Yet, the exact mechanism through which the active search affects preference formation remains unclear. Vössing and Weber (2019) for example measure *policy match* as outcome which seems rather far downstream and does not allow shedding light on the exact mechanism through which a closer match is obtained. However, taking participation at the EP elections as a proxy for a high salience of the EU topic, the authors' additional analyses seem to suggest that priming or more precisely high issue salience seems a likely pathway to explain the effects observed. Other studies focusing on the persuasive effects of (partisan) media exposure find that at least among a subset of their participants persuasion is the prevalent mechanism(Benedictis-Kessner et al. 2019).

In short, the literature lists several factors that potentially are affected by the mode of information retaining: Positive effects on knowledge (Stroud et al. 2019, e.g.), an increase in the saliency of the topic (e.g. Iyengar, Peters, and Kinder 1982) or persuasion (e.g. Coppock 2023).

A first set of hypotheses[2] thus pertains to test exactly these outcomes that we discuss above: effects on knowledge about the issue, its salience and attitude updating.

In general, the literature has not settled whether the process of information acquisition is merely a question of issue salience and thus weight of certain considerations for the decision-making process (e.g. Iyengar, Peters, and Kinder 1982) or whether it works primarily through information updating and learning (e.g. Coppock 2023).

Our design [3] allows us to further advance the literature on this point as we test both mechanisms separately and for two issues. For this purpose, we designed our interventions to initiate both mechanisms by talking about the importance of the issue as well as providing new information on it. This approach further adds to the realism of the experiment as real-world campaign messages or news articles most often does both as well.

We thus postulate the following hypotheses[4]:

Hypothesis 1 *If individuals actively seek information, they are more likely to retain the information and thus to be more knowledgeable about the issue.*

Hypothesis 2 *If individuals actively seek information about a topic, this topic will become more salient for them.*

Hypothesis 3 *If individuals actively seek information about a topic, they adapt their attitudes towards the topic.*

These first three hypotheses pertain to the very process of information acquisition and its effects on attitudes. Ultimately though, we are interested in how these new pieces of information are influential for political behaviour later on. While clearly the link between attitudes and behavior is complex and

[2] All hypotheses are pre-registered. A second set of the pre-registered hypotheses will be part of a different project.

[3] We refrain from showing any party or candidate position in the information text to avoid biasing towards learning, see (Lenz 2009).

[4] In the pre-analysis plan, we had a slightly different and more demanding version of the third hypothesis: that attitudes should be more in line with ideology. However, with some distance, this seemed both hard to prove empirically and especially overly arduous to measure persuasion which is the concept we are interested in (as also specified in the pre-analysis plan). We thus choose to examine this more straight-forward formulation of persuasion.

cannot be taken for granted (e.g. Fazio and Olson 2007), an active mode of information acquisition could still be seen as reinforcing this link. Ultimately, to find an effect of the mode of information acquisition on (intended) behavior can in our view provides be seen as a hard test for our claim. We thus formulate a separate hypothesis for the effects on intended behavior:

Hypothesis 4 *If individuals actively seek information about a topic, they are more likely to take action for the issue.*

The determinants of information acceptance

What are the factors that help individuals to accept the information they have been exposed to? Information acceptance is essential to achieve an attitudinal change (Vössing and Weber 2019). It is therefore crucial to understand what can help individuals not just to retain knowledge, but also to being persuaded by it, i.e., factoring that piece of news into their thinking and planning.

For the purpose of this work, we focus on source credibility as a factor facilitating information acceptance. Indeed, a large literature in political communication documents that source credibility is essential for whether information is taken seriously or not for political matters (e.g. Hovland and Weiss 1951; Metzger and Flanagin 2015). Importantly, lupia2002can specifies two important dimensions of source credibility: knowledge and trustworthiness.

We posit that source credibility interacts with active information behaviour. We expect, hence, that the positive effect of actively seeking information will be reinforced if the source of the message is perceived as credible. Works in psychology indicates that credibility facilitates persuasion but also strengthens the processing of messages (Stephenson, Benoit, and Tschida 2001).

Specifically, we focus on two potential sources with varying levels of credibility, that is, experts and ordinary citizens. Regarding the two crucial dimensions of source credibility outlined by (Lupia 2002), we argue that for both a fellow citizens as the source of the statement should score high. First to hear information from other citizens is more frequent and frequent interactions increase the trustworthiness of a source. Second, it makes sense to assume a common interest within citizens which adds to the ”knowledge” dimension of trust.

A second argument pertains to the recent rise of anti-elitism and anti-expertism (e.g. Hawkins et al. 2018). We know that feelings of anti-elitism are widespread in Western societies. Therefore, we postulate that a message coming from other citizens will be perceived less suspiciously and will be seen as more credible compared to information coming from experts.

In sum, we expect that the greater credibility of citizens' communication will reinforce the positive effect of active information acquisition. We test – hence – the following additional hypothesis.

Hypothesis 5 *The effect of active searching is more pronounced if the information is from other citizens than if it comes from experts.*

Experiment design and flow

To test our hypotheses, we designed an experiment that has two main treatments, one looking at how citizens acquire information and the second focusing on the impact of different information sources. As

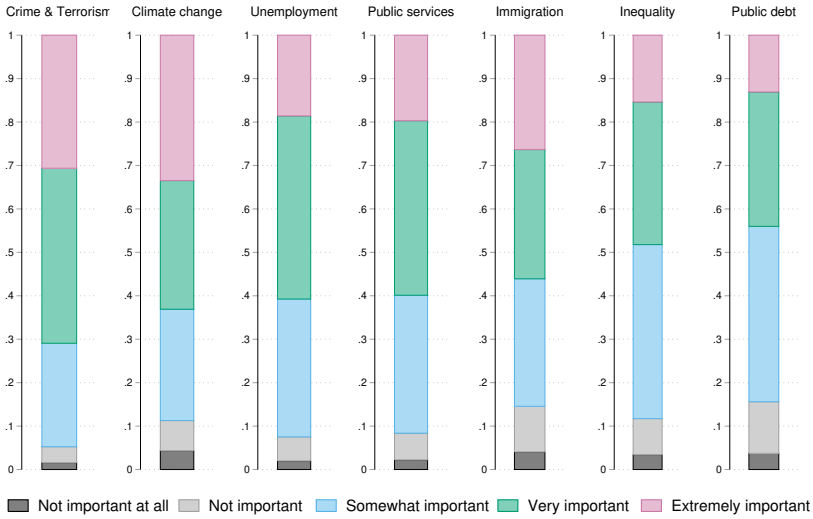

Figure 2: Saliency of economic inequality and climate change among our respondents (pre-treatment)

a first step we asked our respondents about the salience of six different topics[5]. The survey also included items inquiring about left-right self-positioning and questions about specific issues. In addition, we measured political sophistication with political knowledge questions [6].

Next, we randomly split in two the group of respondents so that half of them dealt with economic inequality and the other half with climate change.[7] We chose to include two issues first to have a broader and thus more robust bases for our conclusions and second due to their different levels of macro-level salience as indicated in Figure 2. While 48.2% of our respondents believe that economic disparities are a highly important topic which makes this topic the second least salient issue among our respondents, the share of those who think that climate change the same is over 63% rendering this among the top-two issues in terms of salience. We believe that to test the implications of active versus passive search for information across a broader range of topics provides a harder test case as these issues are known to individuals and they are thus likely to have an opinion on them. This makes it harder to find effects of the treatment and we can thus learn from our experiment how the mode of information acquisition impacts opinion formation and change in a realistic setting. [8]

Figure 3 summarizes the survey flow for one issue and it highlights the two treatments that were shown to the participants. The first treatment builds on Vössing and Weber (2019) and aims at testing citizens' info-seeking behaviour. Our participants were split in three main subgroups. Those assigned to the *assignment condition* either received no additional information whatsoever (and were redirected immediately to the final questionnaire) or they were forced to read more details about the issue itself.

[5]Exact wording of the question: *"How important are the following topics for you? Economic inequality, Crime and terrorism, Unemployment, Public debt, Immigration, Public services, Climate change.* Answers: 5-point scale from "Not important at all" to "Extremely important".

[6]In detail, we include three items inquiring about the number of governing parties, the largest right wing party in parliament and the share of women in parliament (coded correct within a three percentage range).

[7]One goal of our study was also to compare individuals' attitudes towards climate change and economic inequality but this comparison will be part of a separate project. Here, we simply control for potential differences across topics in our models.

[8]The setting in Vössing and Webers' experiment in the context of the European Parliament elections where policy information on party positions is provided seems a context where citizens have less intensive priors and are thus more likely to be "treated" with information in our view.

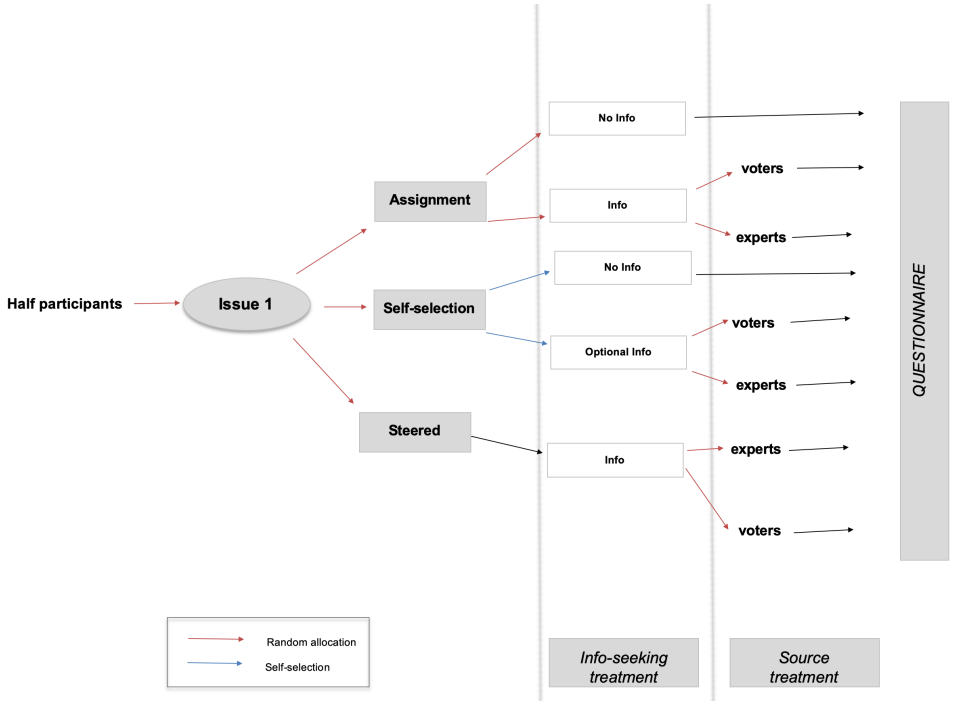

Figure 3: Summary of survey flow and experimental groups

This condition, thus, implies that information is passively acquired which is the standard setting in the widely applied vignette experiments in political science and beyond. Participants who were randomly assigned to the *self-selection condition* were given the option between either seeking more information on the issue or not. This second condition allow us to include an active selection into the treatment in the design. Finally, respondents from the third sub-group, that is, within the *steered-selection condition*, were asked to read additional information on the topic but they were free whether they wanted to read an article about the current situation or the past situation of the topic at hand.[9] In fact, regardless of their choice, they got the same article that contained information both about the present and the past situation. This condition *induces* information seeking and therefore helps us to exclude the role of composition effects, that is present in the second condition, instead.

In fact, the introduction of an active selection condition into our experiment leaves some uncertainty as to potential composition effects not captured by our model. Indeed, in the self-selection condition, our participants are free to seek more information or not. This choice might actually be due to some specific individual characteristics and not be completely random. For this reason we also included a *steered selection* as an alternative way of testing the effect of active information seeking as such. As explained above, all participants in this condition received the same information – providing answers to both choices – while they believe they are actively selecting into a condition of their own interest. The advantage of the steered selection condition is that no composition effects can occur. On the contrary, the advantage of the self-selection condition is its realistic opt-out possibility. Yet, the self-selection condition has a likelihood of selective exposure, i.e. individuals with specific characteristics choosing one option more frequently and thus it does not allow us to be sure that the differences that we find between groups are exclusively related to the

[9] In fact, about 76% decided to read about the present while 23% wanted to read about the past. Participants were debriefed at the end about this small deception.

treatment of interest (a problem called "composition effect"). Only by triangulating these two strategies, we maximize the robustness of our analysis and avoid the problem of composition effects.

To test the interaction between information seeking behaviour and the impact of different sources of information, we exposed our participants to a second treatment, that we called the "*Source treatment*". At this stage, all participants who got information[10] (irrespective of whether they got it passively or actively) were randomly assigned to get an article that either stressed the position of experts on the topic or that, on the contrary, enhanced other voters' views[11].

For instance, for those who dealt with economic inequality, the articles were about the development of the phenomenon in Europe compared to the United States. While the topic and the general content was exactly the same (the ensure comparability and limiting the dimensions of variation that might affect our outcome of interest), the two articles differed on the following two key aspects:

1. *Wording*: The experts' article used a more technical language, while the citizens' article showed a simpler language style (e.g., using terms like "rich" and "poor" rather than the more abstract concept of "economic inequality", see Piston (2018) for more details on the use of language related to inequality issues).

2. *Quotes*: In the experts' article we used a direct quote from scholars on the evolution of inequality. In the other article, instead, we quoted regular citizens, making sure that these people could be identified as a member of the middle class, e.g., a teacher[12].

In the final questionnaire (after the two treatments) we asked individuals first about their knowledge on the issue, second about the salience this issue has for them[13], third about their evaluation or position on the topic (fairness evaluation for inequality/severeness of the implications of climate change) and finally about their willingness to take action around it (intended behavior).

To summarize, our intention was to survey citizens' information seeking behaviour. Thanks to the first treatment we are able to test whether citizens who voluntarily seek information display different attitudes on a topic than those who acquired information passively, or did not read it at all. Moreover, with the second treatment, we can see how citizens respond to information coming from different sources. We have in total 8 subgroups of respondents and this allows us to make multiple comparisons between the two main treatments and the various outcomes variables.

Data, measurement, and methods

The experimental designed presented above was tested in an online survey among citizens in four Western European countries, namely Germany, Great Britain, the Netherlands and France in Summer

[10] In other words, those who do not get any information during the first treatment were not exposed to the second step, but were directly redirected to the final survey part.

[11] The two randomizations were independent of each other. For the exact wording of the articles, see Figures A2-A5 in the Appendix. Note that in the four articles we decided to make reference to a specific country, that is, Finland. So both experts and voters were from Finland. The experts that we quoted are real and not fictitious.

[12] We tested the readability of our four texts on the Flesch Kincaid scale that ranges from 0 to 100 (higher values indicate a better readability, that is, a text that is more easy to understand). The two texts by experts are – as expected – slightly less readable than the citizens' pieces. Specifically, we obtained the following results in increasing order of readability: climate change expert text (33.7), inequality expert text (41.2), climate change citizen text (46.1) and inequality citizen text (56.7).

[13] For consistency with the other outcomes, we analyze this question in a between-group design. Our results hold when we analyze the question in an intra-person comparison design however (comparing pre- and post-treatment salience within persons.

2021. The number of observations per country is about 2'500, so 10'000 in total, like indicated in Figure A1. The survey was distributed by an external contractor and it included quotas for gender, region and education. The number of observations across conditions and topic is well-powered and balanced, as indicated in Table 1. Moreover, the randomisation of the two treatments worked correctly as the balance tables (A1 and A2) in the Appendix report (there are no significant differences between treatment groups on some key covariates).

Table 1: Number of observations for the two treatments by the different topics

	Climate change	Inequality	Total
1) Information behaviour			
Control	1'273	1'271	2'544
Assignment	1'271	1'261	2'532
Self-selected	1'266	1'265	2'531
Steered Condition	1'273	1'271	2'544
Total	5'083	5'068	10'151
2) Source			
Experts	1'599	1'555	3'154
Voters	1'605	1'574	3'179
Total	3'204	3'129	6'333

Hypotheses 1 to 4 look at the effect of different information seeking behaviours on the four outcomes of interest, that is, knowledge acquisition, issue saliency, attitudes towards the topics, and intention to act. The four hypotheses do not make any distinction between the two topics and so we generated four outcome variables aggregating together the items related to climate change and economic inequality. Specifically, we created the following variables:

1. *Knowledge acquisition*: The variable takes value 0 when respondents did not give the correct answer to the question about the evolution of climate change or the difference in the extent of economic inequality between Europe and the United States, and 1 otherwise.

2. *Saliency:* the variable ranges between 1 (minimum saliency) to 5 (maximum) based on the items recording the saliency of economic inequality or climate change, depending on the topic respondents had to deal with. For example, the variable takes value 1 when a respondent ranked economic inequality as "not important at all" or when climate change received the same score.

3. *Evaluation:* This variable ranges from 1 ("Completely unworrisome/Fair") to 5 ("Extremely worrisome/Unfair"), aggregating the answers given either on the fairness of inequality or on the seriousness of the consequences of climate change. People who scored the maximum on the topic that they were confronted with, received, for example, a score of 5.

4. *Likelihood to sign a petition*: The variable varies between 1 (minimum likelihood) to 5 (maximum) depending on the reported probability to sing a petition on climate change/economic inequality.

We have one predictor of interest, that is, the information seeking behaviour of our respondents. We divided our respondents based on whether they were actively involved in the choice of reading

more information (active information acquisition[14]) or not (passive acquisition[15]) and we compared these two groups to a control group made by those who did not read any article. Based on our theoretical argument, we expect that the maximum effects on the outcomes will be recorded for respondents who actively seeked information.

We additionally control for three variables to render our estimates more precise, namely, gender, age and ideological profile (measured as self-positioning on the left-right scale). Moreover, we include a dummy variable that records whether the topic the respondent dealt with was inequality or climate change. Finally, to control for potential difference between the four countries, we use country fixed effects. The model specification is a linear regression model (linear probability model for the first outcome).

To test Hypotheses 5, evaluating the impact of the second treatment, i.e., whether the information acquired emphasised the position of other voters or experts, in the second part of the analysis we include a dummy variable that indicates the source of the article. Moreover, we interacted this variable with the other treatment variables. Note that in this part of the analysis the sample is limited only to the respondents who actually read a piece of news, hence those either in the assignment condition, or the steered condition or in the self-selection condition who decided to seek more information. The dependent variables are the same used for the first part of the analysis as well as the controls. We expect the effects to be stronger when information was actively searched for.

Analysis and results

Our analysis is done in two steps. Before studying the impact of the two treatments, we need to explore what are the covariates that explain the choice of actively pursuing more information. The results of this first part of the analysis will then be used for the other models in order to account for the composition effects inherent to our self-selection condition.

Selection model: Who looks for more information?

In order to identify the potential composition effects within the self-selection condition, we proceed as follows. Firstly, we estimated a probit model of the decision to pursue more information or refusing it. More in detail, we only used the 2531 respondents assigned to the self-selection condition. We gave value 1 to those who agreed to read more information and 0 to those who declined the opportunity. We selected a set covariates that are traditionally associated with people's predisposition to pursue information and some socio-demographic controls. Specifically we included:

- Gender;
- Age;
- University education (takes value 1 when participants have an university (or higher) degree);
- Income;

[14] We included in this sub-group participants assigned to the self-selection (only those who agreed to read more) and steered conditions.

[15] Corresponding to participants in the assignment condition.

- Left-right self positioning;
- Political interest (categorical variable ranging from 1 (no interest) to 4 (very interested));
- Closeness to a party (takes value 1 when respondents declared to feel close/somewhat close to a given party and 0 otherwise);
- Saliency of inequality and climate change;
- Topic (dummy variable controlling for the topic the respondent was assigned to).

The results of the probit estimation are presented in Table 2 and they indicate that the most important predictors for selecting more information are the following two: 1) political interest: individuals who are somewhat or very interested in politics are significantly more likely to have actively looked for more information. The effect is furthermore linear across the different levels of political interest. 2) considering climate change as a salient issue also have a positive influence on the likelihood of selecting more information. Respondents assigned to inequality, instead, were less likely to pursue more information. It is also noteworthy that none of socio-demographic variables do reach statistical significance in predicting the pursuit of information nor do we find any indication of a potential left-right divide in the pursuit of more information.

The results of the probit model indicate what is the probability (P) that an individual with the covariates listed above would pursue more information. We use these probabilities to calculate the propensity-score weights (PSW) for each respondent. The PSW equal 1/P for respondents accepting more information and 1/(1-P) for those who refused it. We assigned by default value 1 to all the other conditions. These PSW are then used in the analysis testing the impact of information seeking behaviour in order to control for the composition effects.

The role of different information seeking behaviours

The first goal of our study is to verify whether the mode of information acquisition has an impact on people's knowledge, interest, attitudes and intended behaviour. To test our hypotheses, we compare the control group to individuals who were actively involved in the choice of reading a piece of news and those who were passively exposed to information. Results are presented in and are in general in line with our theoretical expectations. As reported in Figure 4 and Table3, in general, exposure to information produces individuals who are more knowledgeable about the topic of the article, with no large differences between active and passive search. But these two information behaviours have a different impact on attitudes and willingness to act. Specifically, individuals actively looking for information care more about the topic, are more likely to be persuaded by it and they are more likely to sign a petition while those passively encountering it the effect is limited to a knowledge increase.

In substantive terms, the probability of correctly answering the knowledge question improves from 0.45 for those who read no article to 0.65 for those who did (regardless of the modality of information acquisition). The impact on saliency is more limited: the importance of the topic jumps from 3.65 for the control group to 3.71 for the active seekers and lowers again to 3.63 for passive exposure. For evaluation, we find that it decreases from 3.78 of the no information subgroup to 3.72 and 3.76 of the active and passive subgroups respectively. Finally, the probability of signing a petition is at its maximum for active information acquisition (3.46), followed by the control group and those who got

Table 2: Probit model of selecting more information

VARIABLES	(1) Selection model
Female	-0.048
	(0.06)
Age	-0.000
	(0.00)
University education	0.108
	(0.08)
Income	0.010
	(0.01)
Left-Right	0.013
	(0.01)
Interest in politics (r.c. *Not interested*)	
not much interested	0.244*
	(0.12)
somewhat interested	0.352**
	(0.11)
very interested	0.582***
	(0.12)
Party close	0.115
	(0.07)
Saliency (inequality)	0.022
	(0.03)
Saliency (climate change)	0.092***
	(0.03)
Topic = Inequality	-0.164**
	(0.06)
Constant	-0.871***
	(0.25)
Country FE	YES
Observations	2,108

Standard errors in parentheses
** p<0.001, ** p<0.01, * p<0.05

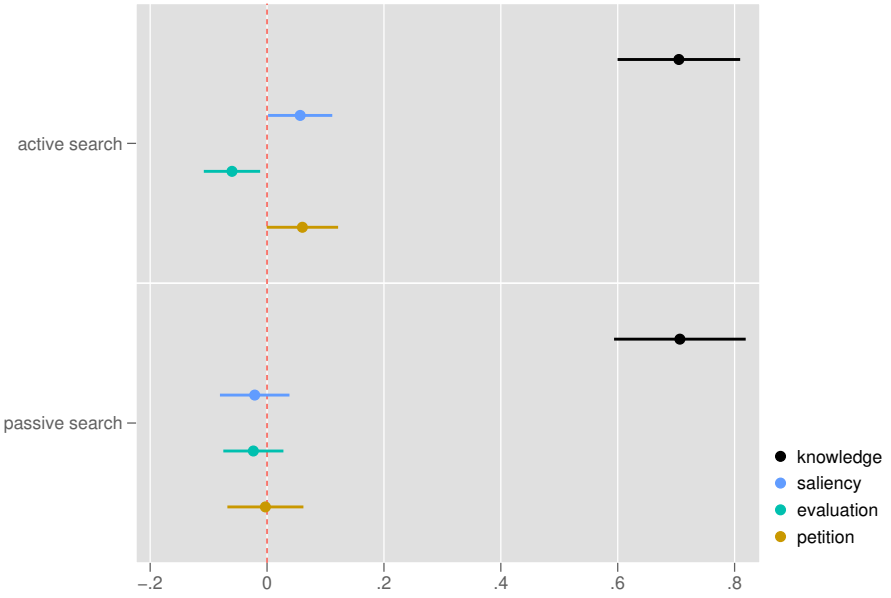

Figure 4: Estimated coefficient the info-seeking treatment on the four outcomes of interest (95% confidence intervals)

the article passively (both 3.40). While the effects might appear small, we should bear in mind that saliency, evaluation and petition are measured on a scale from 1 to 5.

Turning to control variables, we can see that there are significant differences across three out of four the outcomes for the topic respondents had to deal with. The fact that the coefficient is usually significant across different models, indicates that the effect of the treatment was not equal across the two topics. In general we can say that the news article on economic inequality increased the knowledge about the topic, but it decreased its saliency and the likelihood to do something about it. Still, the perceived importance of economic inequality is generally lower compared to climate change, as we already found descriptively.

For what concerns the other individual-level predictors, the saliency of the topic is greater for women, who are also more likely to see inequality as unfair or climate change as worrisome and to take action on these issues. Ideology has also an impact: right-leaning individuals are less knowledgeable, show a lower degree of saliency and concern and they are also less likely to sign a petition. Finally, older people find the two topics more salient and they fear more their consequences, but they are less likely to sponsor a petition.

Table 3: Regression models of the effect of actively searching more information and of different sources on the outcome variables of interest

VARIABLES	(1) Info treat. Knowledge	(2) Info treat. Saliency	(3) Info treat. Evaluation	(4) Info treat. Petition	(5) Source treat. Knowledge	(6) Source treat. Saliency	(7) Source treat. Evaluation	(8) Source treat. Petition
Info treatment								
active search	0.705***	0.057*	-0.060*	0.060+				
	(0.05)	(0.03)	(0.02)	(0.03)				
passive search	0.706***	-0.021	-0.023	-0.003	0.084	-0.114**	0.048	-0.070
	(0.06)	(0.03)	(0.03)	(0.03)	(0.08)	(0.04)	(0.04)	(0.05)
Source = voters					-0.290***	0.013	0.050	0.074+
					(0.08)	(0.04)	(0.03)	(0.04)
passive search*voters					-0.155	0.071	-0.024	0.011
					(0.11)	(0.06)	(0.05)	(0.07)
Female	0.042	0.125***	0.177***	0.112***	0.068	0.130***	0.186***	0.096**
	(0.05)	(0.02)	(0.02)	(0.03)	(0.06)	(0.03)	(0.03)	(0.03)
Left-right	-0.028**	-0.075***	-0.105***	-0.079***	-0.030*	-0.073***	-0.104***	-0.078***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age	0.001	0.001*	0.008***	-0.007***	0.001	0.002*	0.009***	-0.007***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Topic = Inequality	0.647***	-0.242***	-0.028	-0.270***	0.447***	-0.213***	-0.045+	-0.228***
	(0.05)	(0.02)	(0.02)	(0.03)	(0.06)	(0.03)	(0.03)	(0.03)
Constant	-0.407***	3.950***	3.939***	4.253***	0.495***	3.913***	3.764***	4.266***
	(0.11)	(0.06)	(0.05)	(0.06)	(0.14)	(0.07)	(0.06)	(0.08)
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	9,386	9,388	9,397	9,395	5,957	5,957	5,959	5,961
R-squared		0.052	0.092	0.053		0.047	0.099	0.049

Standard errors in parentheses
** p<0.001, ** p<0.01, * p<0.05

The role of different information sources

The second aim of this study was to evaluate if the source from which information comes from affects citizens' attitudes and intended behaviour about a certain subject. We expect that the effect of actively looking for information will be stronger if the piece of news comes from other citizens, more than experts.

To test this argument, we re-run the same models presented in the previous section adding a variable recording whether the article read by our participants highlighted the position of another citizen or some experts. By introducing this variable, we automatically restrict our sample to those respondents who actually read one of the articles (whether actively or passively). We estimated an interaction effect between the active-information treatment and the source treatment, results are presented in Table 3.

The interaction is never significant, suggesting the effect of the second treatment is not mediated by the other intervention. The source treatment has a significant impact on knowledge acquisition that seems to be worse for those who read the article featuring other citizens. In other words, contrary to our theoretical expectations, knowledge acquisition is definitely better among people who were exposed on a message from experts, irrespective of their information behaviour (active or passive acquisition).

At the same time, the source of the article has a significant impact on the likelihood of supporting a petition. In this case the result supports our hypothesis, as the effect is more pronounced for those who read the citizen article.

We calculated the marginal effect of the interaction to make sure that there is no joint impact of the two treatments on our outcomes. As shown in Figure 5, the results are in line with what found in the regression analysis, so there are no significant differences on the four outcomes for the two treatments considered together. It is still noteworthy noticing that saliency seems to be higher when the article features other citizens. Additionally, the relevance of the topic is also greater for individuals who actively looked for information and received the news from experts.

To summarise, the results of this second treatment suggest that we can influence people's willingness to act on a certain subject, in particular if this piece of information comes from other citizens. On the contrary, news pieces from experts are more effective at delivering knowledge about a given topic, irrespective of whether the information was acquired by will or imposed on the reader.

Robustness tests

To make sure that our results are robust, we run a series of additional analysis whose findings can be found in the Appendix.

Firstly, we explore whether information – regardless of the way it was acquired – had any impact on our outcomes of interest. We therefore compared those who read nothing to those who were exposed to information. As reported in Figure A7, reading a short article about a certain topic has an impact on people's knowledge and on the evaluations, we do not find a significant difference effect for saliency or petition signing. This indicates according to us that especially for salience and intended behavior the mode of information acquisition has an effect while the small persuasion effect is visibe for both modes of information exposition.

In a next robustness test, we kept out from the analysis those who read no article, hence, we just focused on the comparison between active-information seekers and those who received it passively. We

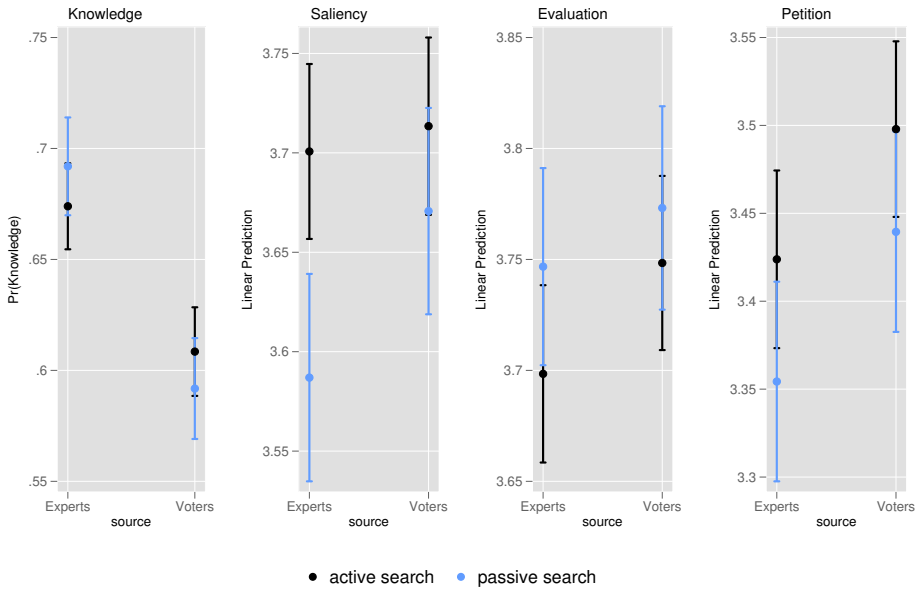

Figure 5: Marginal effects of the interaction between the info-seeking treatment and the source treatment (95% confidence intervals)

can observe in Figure **??** that the main difference between passive and active exposure to information concerns saliency and petition support. Gaining information passively reduces the importance of the issue discussed and lowers the probability of being in favour of a petition. This again points in the direction that the mode of exposure to the information impacts especially the relevance citizens attach to the issue and their willingness to get active on it.

For the source treatment, one could be worried that the reported results could be related to the fact that the difficulty of the text made it accessible for higher sophisticated individuals only. We thus tested whether our findings were conditional on individuals' education and sophistication levels. Specifically, we first split the sample between those who have university degree and those who do not and added an interaction term between the first two treatments. We find that education has a considerable impact on knowledge acquisition only: the maximum probability of correctly answering the knowledge question is found for those who received an expert article and went to university, followed by those with the same educational level, but who read the article featuring other citizens (see Figure A8 for details). There are less clear and no significant patterns for the other three variables instead. A similar pattern is found for sophistication, yet of smaller entity, like for educational attainment. Again no significant difference for the other outcomes (results in Figure A10). In some, to us these findings make clear that political sophistication cannot be the main reason for the findings we report in this study. Instead, the mode of information acquisition as well as the source seem to matter more.

Conclusion

Informed citizens are crucial for the working of democracy. However, we know surprisingly little on how and especially under which conditions new information is taken up and incorporated into citizens belief systems. This study aims to shed light on exactly these processes and focuses on how information

is sought for (active or passive) and where the information comes from.

Theoretically, we expected that individuals who are actively seeking information will be more likely to retain it, be persuaded by it and more willing to act upon it. We also hypothesised that active information behaviour would interact with the credibility of the source from which the message comes from. We posited a positive effect of active information search when the source is credible and trustworthy, i.e. comes from other citizens.

We tested our expectations in an multi-country, multi-issue experimental setting that let some respondents select whether they wanted to get exposed to a news article or not. Another sub-group of participants was forced to read the same article and finally, a third sub-set was given a choice between different types of articles (but they in fact received the same message to read). Additionally, to anyone who read the article, we randomly gave a piece either emphasising an expert or the view of a citizens.

The result of our experiment indicate that both the kind of information-seeking behaviour and the source of information matter for retaining and accepting information. While both passive and active encounters with information makes individuals more knowledgeable about the topic, an active information search makes them attributing a greater importance, making them more likely to adapt their attitudes and also become more willing to take action around it. Additional robustness tests indicate that especially the relevance and intended behavior effects are stronger for active vs passive information exposure.

This finding has important implications for survey research and vignette experiments in particular: They suggest that simply forcing respondents to read a statement is not the most efficient way of making them retain and accept this new piece of information. By making respondents more actively look for information, improves not only the effects of information but also resembles more closely the nowadays information environment that citizens in Western democracies face.

The credibility of the source reinforces active information search especially for intended behaviour: our respondents were more likely to sign a petition about inequality/climate change if the piece of news came from other citizens. On the contrary, knowledge acquisition is enhanced when the article reported the position of experts. This is a very important finding because it suggests that while other citizens might be better at mobilizing other people, we also need experts if we want more knowledgeable individuals. This result, therefore, indicates that political parties or other actors in their communication should try to include both types of actors if they want to achieve various goals.

One limitation of our work is that we cannot completely disentangle the complexity of the intervention from their source even though our results seem very stable across education groups and according to political sophistication. The fact that our results vary according to the whether we look at knowledge or intended behavior for example makes us less worry that the effect we find is solely due to the slightly easier readability of the citizens' text. However, future research should try to disentangle these effects more - without giving in on their realism of course.

In general, we call for more work on what motivates citizens to inform themselves as this seems very crucial nowadays given that plenty of political information is available but not many citizens decide to engage in looking for it, reading and incorporating it. Our study at the very minimum is a stepping stone in this direction.

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Appendix

Question wording:

1. Knowledge:
    - Economic inequality: *Are economic differences larger in Europe or in the USA?*
      Answer options: *1) In Europe economic differences are larger than in the USA; 2)In Europe economic differences are smaller than in the USA* (the correct answer); *3) Economic differences in Europe and in the USA are equal.*
    - Climate change: *When has the Earth experienced the greatest increase in temperature?*
      Answer options: *1) In the last 100 years; 2) In the last 30 years* (correct answer); *3) In the last 10 years..*
2. Salience: *How important do you think issue 1 is?*
   Answers: 5-point scale from "Not important at all" to "Extremely important".
3. Evaluation/position:
    - Economic inequality: *How would you rate the income differences in your country as fair or unfair?*
      Answers: *Fair, Rather fair, Neither/nor, Rather unfair, Unfair.*
    - Climate change: *How do you evaluate the consequences of climate change in your country?*
      Answers: *Completely unworrisome, Somewhat unworrisome, Neither unworrisome nor worrisome, Somewhat worrisome, Extremely worrisome.*
4. Willingness to act: *How likely it is that you will sign a petition against/in favour of issue 1?*
   Answers: 5-point scale from "Extremely unlikely" to "Extremely likely".

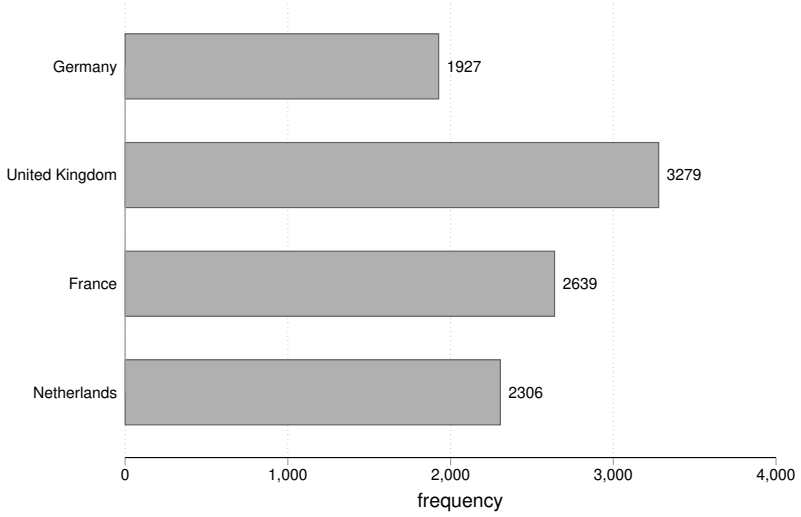

Figure A1: Number of respondents per country

According to the vast majority of climate scientists, the planet is heating up. Scientists have concluded that this appears to be the result of increased human emissions of greenhouse gases, especially carbon dioxide, which trap heat near the surface of Earth. However, some information sources – blogs, websites, media articles and other voices – challenge this view saying that the recent temperature increase is just a normal fluctuation. In order to contribute to this debate, Antti Lipponen, a researcher at the Finnish Meteorological Institute, has compiled weather statistics between 1900 and 2016 and he has shown show how spikes in high temperatures have really gathered pace in the last 30 years. “By 2016, the majority of countries across the planet were experiencing average annual temperatures at least 2°C warmer than the data’s baseline average temperatures, recorded between 1951 and 1980” explained Lipponen. Lipponen’s data is in line with the latest report from the Intergovernmental Panel on Climate Change, according to which, the warmest 30 year period in recent history has been between 1983 to 2012.

Figure A2: Text of the article on climate change emphasising the position of experts

According to the vast majority of climate scientists, the planet is heating up. However, some information sources – blogs, websites, media articles and other voices – challenge this view saying that the recent temperature increase is just a normal fluctuation. In order to contribute to this debate, we asked people from Finland whether they had the impression that the climate has become more extreme in recent years. “It is very easy to make a comparison” said for instance to our newspaper Mrs Olivia Mäkinen, a teacher from Salo, in Southern Finland, “I live in a city where it used to snow every winter and in the last two years my kids were never able to use their sledges”. Many other citizens share the view of Mrs Mäkinen: it seems that citizens’ view of climate change is getting closer to scientist that have for long stressed the increase in the average temperature of the last 30 years.

Figure A3: Text of the article on climate change emphasising the position of voters

Has economic inequality raised in Europe like in the US? The remarkable growth of inequalities in the USA since the late 1970s has led both scholars and regular citizens to believe that this trend is common to other rich countries. Scholars have stressed the fact that overall in Europe inequality levels are much lower than those in the US. For instance, research by Petri Roikonen and colleagues from the University of Helsinki, suggests that despite rising income disparities since the 1980s, Europe still remains the least unequal region of the world. According to the Finnish researchers, this result is due to a more equal distribution of income before taxes and transfers. European social models, by providing relatively equal access to public education, healthcare and fair jobs, have been more successful than the US in addressing the challenges posed by technological change and trade globalization. Yet, there still room for improvement as we have seen a rise in top income inequality in Europe as well.

Figure A4: Text of the article on economic inequality emphasising the position of experts

Are richer people becoming richer in Europe? The experience of the United States, where the distance between rich and poor has become larger and larger since 1970s, deeply affects the way people think about this development. Indeed, the impression is that the situation in Europe is the same as in the United States. For instance, Mrs Olivia Mäkinen, a teacher from Salo in Southern Finland, told us that she had the impression that “rich people are always better off, and they are little affected by economic crisis, like the current one”. Yet, relative poverty is not as marked in Europe as in the US. Europe is still the area of the world with the lowest distance between rich and poor and thus lower levels of inequality. This is thanks to welfare policies that are still so common in Europe. Higher taxes on income, retirement benefits, free access to education and health contribute to reduce relative poverty. “Still, there is room for improvement”, told us Lukas Hämäläinen, a small business owner from Tampere (Finland). “For example, why does not the government increase taxes for multinational corporations, instead of focusing just on people like me who own a small shop?”. That is for sure that many other would like to see answered.

Figure A5: Text of the article on economic inequality emphasising the position of voters

Table A1: Balance Table for Info-Seeking Treatment

Factor	Level	Control	Assignment	Self-selected	Steered Condition	p-value	Test
N		2533	2514	2512	2532		
income, median (IQR)		33 (23, 52)	33 (23, 53)	33 (23, 52)	33 (23, 53)	0.77	Kruskal-Wallis
sex	Male	1215 (48.2%)	1194 (47.7%)	1192 (47.5%)	1207 (47.9%)	0.97	Pearson's chi-squared
	Female	1307 (51.8%)	1311 (52.3%)	1316 (52.5%)	1313 (52.1%)		
age, median (IQR)		49 (34, 62)	48 (35, 62)	48 (35, 62)	49 (35, 63)	0.90	Kruskal-Wallis
education	0	2029 (80.2%)	1989 (79.2%)	2010 (80.2%)	2009 (79.4%)	0.75	Pearson's chi-squared
	1	501 (19.8%)	522 (20.8%)	497 (19.8%)	521 (20.6%)		
left-right, median (IQR)		5 (4, 7)	5 (4, 7)	5 (4, 7)	5 (4, 7)	0.40	Kruskal-Wallis

Table A2: Balance Table for Source Treatment

Factor	Level	Experts	Voters	p-value	Test
N		3132	3161		
income, median (IQR)		33 (23, 53)	33 (23, 53)	0.39	Wilcoxon rank-sum
sex	Male	1470 (47.1%)	1556 (49.4%)	0.071	Pearson's chi-squared
	Female	1650 (52.9%)	1594 (50.6%)		
age, median (IQR)		49 (35, 63)	48 (35, 62)	0.86	Wilcoxon rank-sum
education	0	2483 (79.4%)	2476 (78.4%)	0.36	Pearson's chi-squared
	1	646 (20.6%)	682 (21.6%)		
left-right, median (IQR)		5 (4, 7)	5 (4, 7)	0.41	Wilcoxon rank-sum

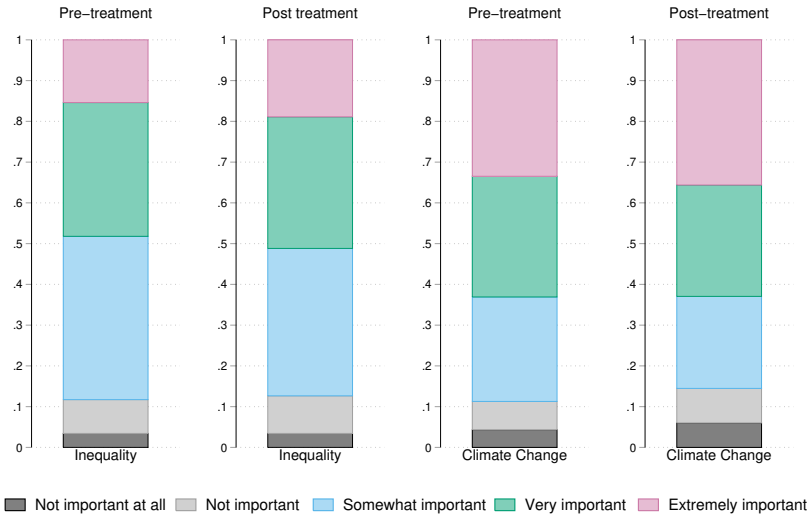

Figure A6: The saliency of inequality and climate change before and after the treatment

Robustness tests

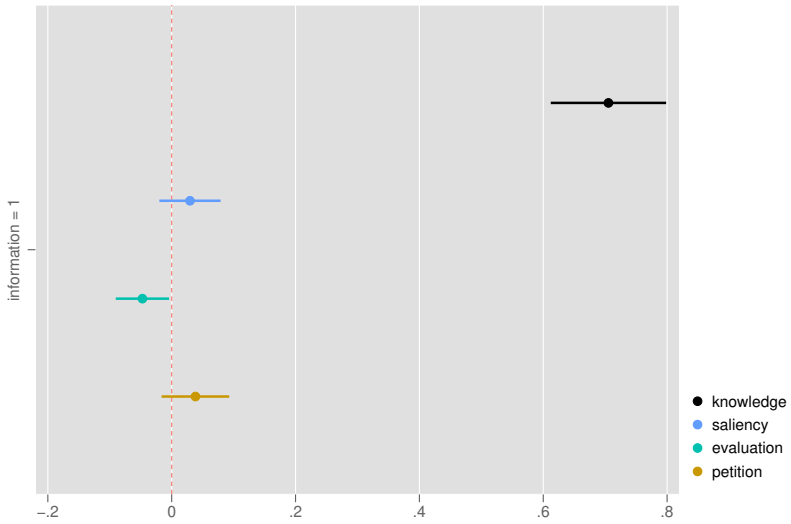

Figure A7: Estimated coefficient of receiving information on the four outcomes of interest

Source treatment

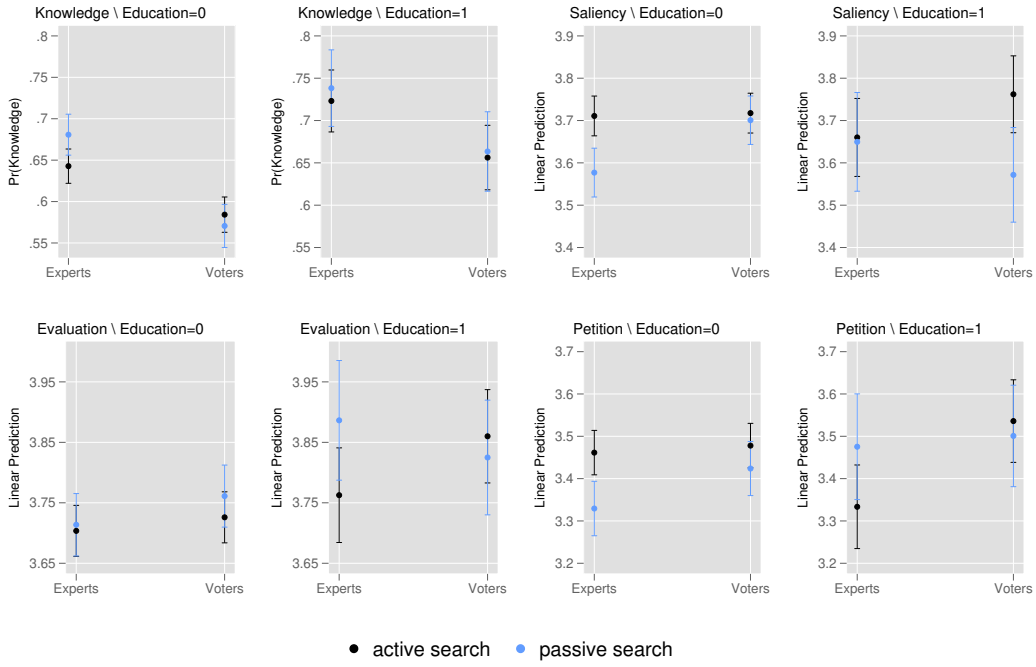

Figure A8: Estimated coefficient the joint impact of the two treatments on the four outcomes of interest by different levels of education

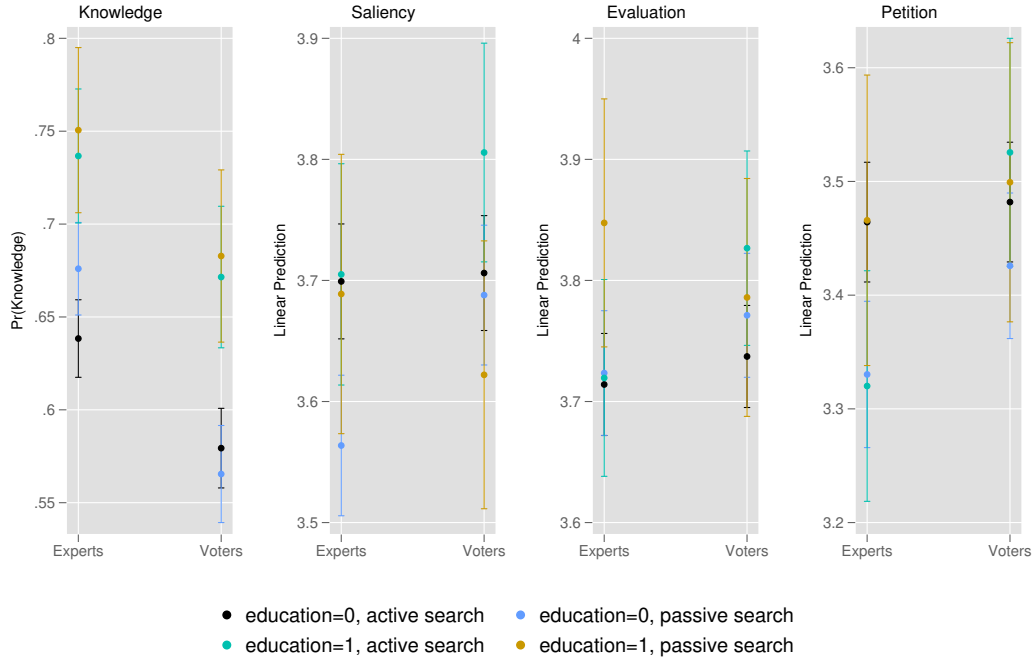

Figure A9: Estimated coefficient the joint impact of the two treatments on the four outcomes of interest by different levels of education

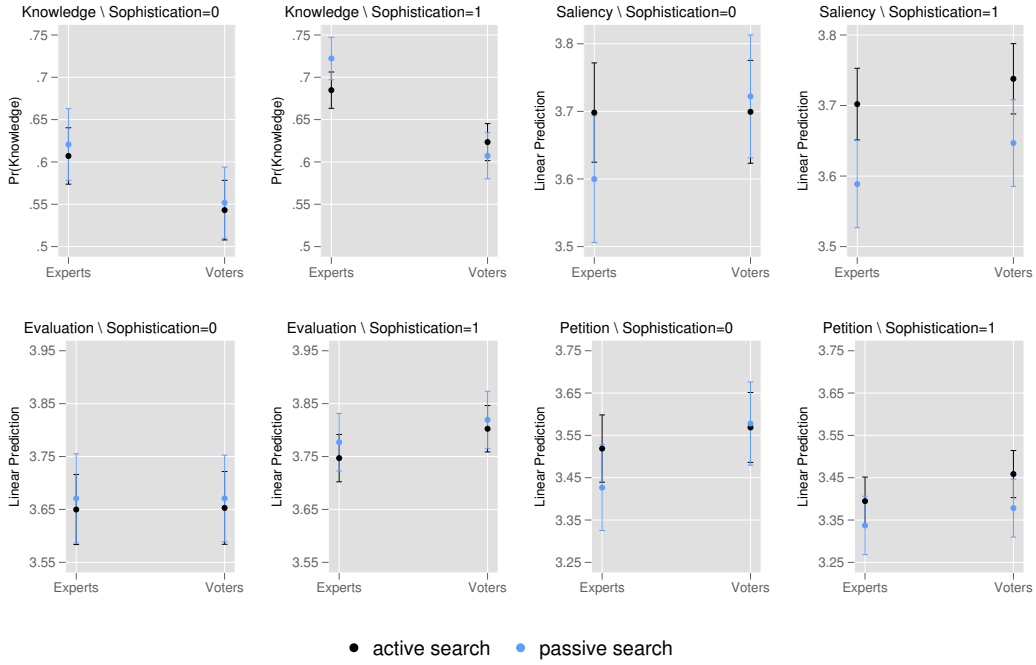

Figure A10: Estimated coefficient the joint impact of the two treatments on the four outcomes of interest by different levels of sophistication

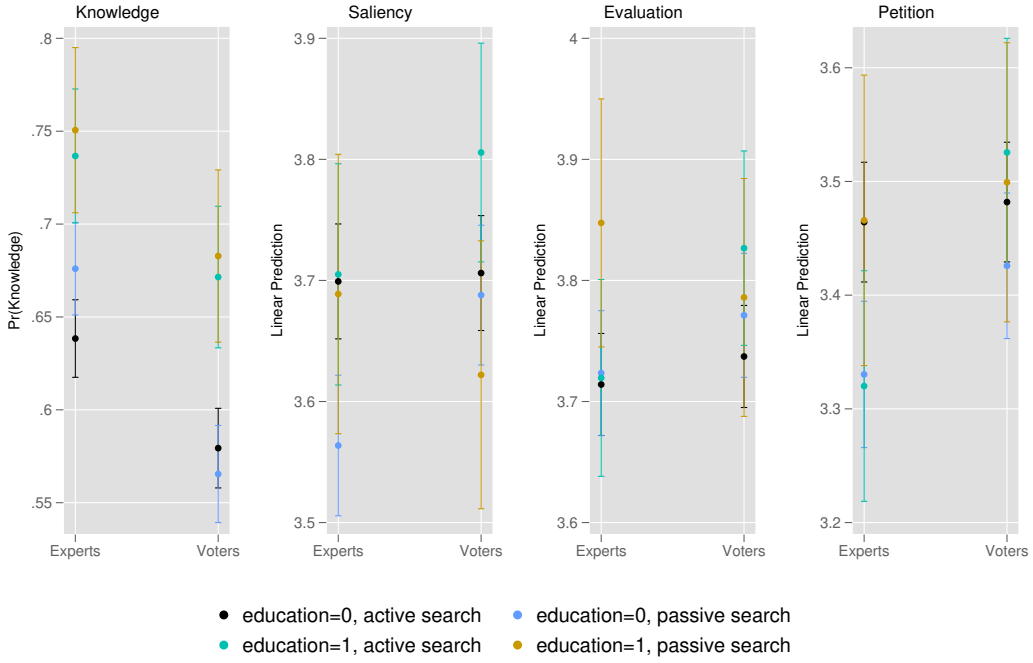

Figure A11: Estimated coefficient the joint impact of the two treatments on the four outcomes of interest by different levels of sophistication