The Role of Deliberation in Attitude Change: An Empirical Assessment of Three Theoretical Mechanisms

Kaat Smets

Department of Politics and International Relations

Royal Holloway, University of London

e-mail: kaat.smets@rhul.ac.uk

Pierangelo Isernia

Department of Social, Political and Cognitive Sciences

University of Siena

e-mail: isernia@unisi.it[1]

Abstract

Though the impact of deliberative polling on attitude change has received ample attention in the literature, micro models of attitude change before, during and after deliberation are understudied. The relative strength of three competing views of the way attitudes change – the heuristics, systematic and deliberative models – are assessed, using the quasi-experimental data of the EuroPolis deliberative project and comparing a group of people who participated in the deliberative poll with a control group. The results are: 1) in line with the systematic model, predispositions play a larger role than in the heuristics or deliberative models; 2) predispositions play a different role for participants and non-participants; 3) predispositions shape attitude formation in different ways depending on the issue at hand. On some issues the beliefs of participants change as a consequence of deliberation and become more complex and nuanced than before. This is, however, not the case for immigration issues where deliberation seems to strengthen predispositions.

Keywords: Attitude change, awareness, deliberation, predispositions

Introduction

Ever since its inception, the empirical debate about the underlying conditions of democratic citizenship has been dominated by the views of 'democratic realists'. The realist perspective is inspired by a minimalist vision of the public's ability to govern itself and stems from four empirical assumptions about the nature of the general public: it knows little about politics, it could not care less, it does not understand well what is going on at the political stage, and, as a consequence, is easily manipulated (Berelson et al., 1948; Converse, 1964; Sniderman et al., 2000). Scholars of the realist perspective therefore pessimistically conclude that the public's role in public policy should be drastically curtailed in favor of political elites who are considered the only true torchbearers of democracy (Stouffer, 1955). The sole task trusted to citizens is the limited one of choosing among competing elites. The main purpose of democratic institutions, as far as responsiveness is concerned, is to constrain the public and to channel its potentially dangerous tendencies through political representation.

This realist vision of democracy has been opposed by an alternative perspective: the participatory or revisionist one. It argues in favor of the possibility – indeed the need – to reassess the public's ability to express its political preferences and thoughts (Dahl, 1956; Pateman, 1970). Revisionists turn the problem of citizens' capacities upside down, laying the problem at the door of institutions. They believe it is the task of political theory to devise democratic institutions able to unbridle human capacities through deliberation, so as to allow people to live up to the standard of the *homo politicus*. Given the opportunity, citizens are perfectly capable of managing complex information and contradictory evidence.

A systematic empirical research program has been developed since the turn of the century to explore both elements of the debate on which realists and revisionists battle: the bleak empirical assumptions about the capacities of the public and the role credited to deliberative institutions in shaping, fostering, or otherwise affecting public opinion. The two camps, however, have rarely met but rather talked past one

another. In this paper, we make an effort to combine these two strands of thinking. Exploiting the unique research design of the EuroPolis project we explore whether and how a deliberative environment – which is purposely designed to address some of the shortcomings blamed on citizens, namely their lack of information and interest – affects the way these very attitudes develop. We contrast three alternative theories on how people form, and consequently change, their opinions. One focuses on the role of heuristics in explaining attitude change, the second credits the public with deliberative capacity in forming their attitudes, and the third focuses on changes in the quality and the amount of information available as a result of deliberation.

Our findings are threefold. First, we find that in line with the systematic model predispositions play a larger role than the heuristics or the deliberative models are ready to concede. Second, predispositions play a different role for participants and non-participants. Third, predispositions play a different role in attitude formation depending on the type of issue. When issues are more technical, (e.g. the EU or climate change) the beliefs of participants change as a consequence of deliberation and become more complex and nuanced than before. By contrast, when the debate pertains to more emotive issues, such as immigration, deliberation strengthens pre-existing beliefs.

Opinion formation and attitude change: heuristics, systematic or deliberative model?

Two main lines of development can be distinguished in the study of public attitudes. Both these lines have evolved over time and they have converged to a greater extent than was initially conceivable. A first line of research focuses on the individual and her capacities. The gloomy characterization of the public, as affected by instability, irrationality and emotion (Converse, 1964), has been challenged in a reevaluation of the cognitive ability of the public to compensate for its lack of information by relying on heuristics and other cognitive shortcuts (Popkin, 1991; Sniderman et al., 1991). Two distinguished examples of these alternative views have been presented by Zaller in the 1990s and by Sniderman et al. in the early 2000s.

A second line of research focuses on the role of institutional practices in either facilitating or obstructing the process of discovery, formation, and expression of public preferences. From an institutional mechanism of registration, simplification, and ultimately conversion of demands into political outcomes, democracy has increasingly become an arena for discussion and deliberation. Through a continuous debate between political representatives, experts, and the media, democracy has gained the ability to transform the preferences of each group of actors in such a way that the quality of the democratic process itself is improved.[1]

A logical step in this dialogue has been that of merging the two lines of research (Jackman and Sniderman, 2006a; Sniderman et al., 2001; Zaller, 1992). Our research can finds its place in this interwoven tradition as we assess whether and how institutions designed to create optimal deliberative conditions (such as deliberative polls) interact with citizens' skills in reasoning and ultimately affect the way their very attitudes are formed and subsequently change. We start with a discussion of the so-called RAS (Reception–Acceptance–Sampling) model which offers a clear and theoretically grounded explanation of how people change their attitudes.

The heuristics model

The RAS model of attitude formation and attitude change – also referred to as the heuristics or situational model – can be broken down into three main elements: predispositions, political awareness and the informational context. Predispositions, defined as 'stable individual-level traits that regulate the acceptance or non-acceptance of the political communications that a person receives' (Zaller, 1992: 22), are the critical intervening variable between messages people encounter in the mass media and their expression of their own political preferences.[2]

Political awareness is 'the extent to which an individual pays attention to politics and understands what he or she has encountered' (Zaller, 1992: 21). Awareness is the single most important source of attitude change in the RAS model (Zaller, 1992: 37).

---

[1] For some references to this literature see Bobbio (2002), Checkel (2001) and Elster (1998).
[2] Political predispositions are formed through personal experiences (e.g. early socialization), personal and social location, and so may be considered as 'inherited'.

The third element is the context (of communication). Zaller is a complete externalist in his view of where opinions come from. Citizens depend on political elites (broadly defined to include politicians, high level officials, journalists and policy experts) for most of their information, and the information reaching them is '(...) a highly selective and stereotyped view of what has taken place' (Zaller, 1992: 7). The most important characteristic of the information environment is how information is distributed, i.e. whether the public '(...) is permitted to choose between alternative visions of what the issue is' (Zaller, 1992: 8) or rather whether there is no such choice.

Predispositions and awareness come together in a two-step model of attitude change (Zaller, 1992: 281). The first step, reception, is a function of political awareness. 'The greater a person's level of cognitive engagement with an issue, the more likely he or she is to be exposed to and comprehend – in a word, to receive – political messages concerning that issue' (Zaller, 1992: 42). The second step, acceptance, is a function of both awareness and predispositions: 'People tend to resist arguments that are inconsistent with their political predispositions, but they do so only to the extent that they possess the contextual information necessary to perceive a relationship between the message and their predispositions' (Zaller, 1992: 44).

The informational context is relevant for two reasons. First, at the reception stage, more politically attentive citizens are more likely to understand the political nature of the message. According to Zaller, however, political awareness only helps people to figure out the source of the message. Awareness does not help the listener to understand the content of a message. His model, as Zaller himself puts it, 'makes no allowance for citizens to think, reason, or deliberate about politics: If citizens are well informed, they react mechanically to political ideas on the basis of external cues about their partisan implications, and if they are too poorly informed to be aware of these cues, they tend to uncritically accept whatever ideas they encounter' (Zaller, 1992: 45).

Second, at the acceptance stage, attitude change depends on the distribution of information; on whether messages are one-sided or two-sided. In one-sided information environments messages are overwhelmingly in one direction. In a two-

sided information environment messages – with different levels of intensity – come from opposing sources. In both environments, the more aware are better able to grasp the cues which can be picked up from the media or political elites, but with different effects. In one-sided information environments, people all (i.e. irrespective of their political color) move in the same direction based on their level of political awareness (mainstream effects). In a two-sided environment, we witness polarization. The better aware move more clearly in the direction of their cueing sources. For Zaller, attitude change is, in a way, empty-headed. Attitudes change only because messages change. There is, in sum, not much space for deliberation in the heuristics model.

The systematic and deliberative models

Two lines of criticism have been raised against the heuristics model. The first revaluates the role of predispositions in both the reception and acceptance stage. Sniderman's work is a good example of this approach. The contrast with Zaller hangs on two issues, both related to the role of predispositions. First, while Zaller does not allow for predispositions to play any role at the reception stage, letting political awareness make all the traction, Sniderman et al. (2001) contend that predispositions affect the way people perceive (and react to) stimuli . They argue, first, that if predispositions 'represent a systematic tendency to respond consistently to a social or political object, with individuals reliably differing from one another depending on how positive or negative their attitude happens to be', then social cues will lead to stronger reactions among those who have stronger predispositions (Sniderman et al., 2001: 265).

Second, Sniderman claims that people engage with the information environment in an active way. The content of the message makes as much a difference as (or perhaps even more than) the source. Awareness helps to put the cueing message in line with someone's predispositions, but predispositions in turn not only help people understand who is saying something, but also what is being said. Combining these two pieces of information, Sniderman suggests that predispositions and situations (i.e. contexts) interact in complex, nonlinear, ways, depending also on the level of awareness. In particular, contrary to what Zaller would expect from a deliberative

environment, the Sniderman model suggests that the complexity of the information environment in deliberation should strengthen, rather than depress, the role of predispositions in orienting people's preferences.

The second line of criticism comes from empirical deliberative theory. Change in the quality and amount of information as well as in the variety of arguments produces changes in attitudes. Contrary to previous models, the deliberative one focuses on the 'considered judgments' of citizens, defining these as 'a cognitive process in which individuals form, alter, or reinforce their opinions as they weigh evidence and argument from various points of view' (Lindeman, 2002: 199). Evidence and arguments are the two key components of this model. The increase in the amount and quality of information available is the single most studied effect of deliberation and the most beneficial outcome credited to it (Andersen and Hansen, 2007; Fishkin, 2009; Luskin et al., 2002; Setälä et al., 2010; Sturgus et al., 2005). Arguments and argumentation are seen as a distinct and unique component of deliberative reasoning (Mercier and Landemore, 2012) making it different from other forms of thinking. Both contribute to the transformative power of deliberation, a key assumption of deliberative theory. At the heart of this assumption is the idea that individuals who participate in a deliberative process will be transformed, due to the effect of both evidence and arguments, into more enlightened citizens: i.e., be more informed, more rational, more tolerant towards other perspectives, and better able to find a common ground with others and to reach a public spirited decision.

The task that we set ourselves in this paper is to explore how people perform in the two crucial stages of attitude change: reception and acceptance. We do so in an environment in which the information context is optimal in terms of intensity, familiarity and balance of information. In the next section, we spell out the main contrasting hypotheses emerging from the heuristics, systematic, and deliberative models.

Hypotheses and expectations

There are two key components in our analysis: one is contextual and the other psychological. The contextual component is related to the information environment. To study the environment, as the informational crutch on which citizens lean to shape their political judgments, two main approaches have been used so far. The first takes the natural context for granted and explores how variations in its properties affect the public's performance. As an example, Dobrzynska and Blais (2008) look at the way in which attitudes change in an intense electoral campaign in Canada. The second, experimental, approach exploits the power of randomization in mass surveys' question wording to explore the way different issue frames affect people's opinion and their cognitive performances (e.g. Jackman and Sniderman 2006b; Kuklinski et al. 2001; Sniderman et al. 2001).

In this paper, we draw upon a combination of both approaches, exploiting the strength of the EuroPolis quasi-experimental design and compare it with the natural conditions created by an election – namely the European Parliamentary elections of June 2009 – which is usually considered to be a peak moment in media attention to politics. Both environments are characterized by a high intensity of messages. Admittedly, European Parliamentary elections are second-order elections (see Berhagen and Schmitt 2014 in this special issue), but they are surely rich with opposing messages on several topics, among which the EU and immigration stand out as prominent issues.

The two environments are distinguished by the quality and the nature of the information. The key component of a deliberative poll is to make the informational environment both more balanced and rich in content, depriving people of one of their fundamental informational crutches, namely the cues arising from political sources. It is not that in deliberation messages intentionally lack their cueing component. In fact, both the briefing documents and the moderators of the small group discussions explicitly addressed the positions of the different party families on the issues discussed. It is the nature and quality of the information provided that turns the cueing to content ratio in favor of the latter. In a natural election

environment, on the contrary, we expect cueing sources to be very prominent in political debates. The contrast with EuroPolis allows us to assess the extent to which content rather than cues is important in shaping attitudes.

The second key components in our analyses are the psychological micro-mechanisms of attitude formation. As discussed in the previous section, from the literature we have identified three theoretical models that each focus on different key variables to explain attitude formation and change. The heuristics model focuses on awareness; the systematic model on predispositions, and the deliberative model on knowledge (and the nature of the arguments aired in the debate). These variables have a different impact on participants' attitudes depending on the context (deliberative or not).

The heuristics model suggests that awareness is the single most important variable in explaining attitude change and its effect will be different in an electoral as compared to a deliberative environment. For the heuristics model, the intensity of the messages in the election environment will make the more aware non-participants more likely to become concerned about immigration, climate change and the European Union as time passes. However, the deliberative poll will weaken the impact of awareness over-time, because the information environment becomes so rich that the knowledge gap is quickly filled and the deliberative environment renders the source of the message less salient. For this reason, the heuristics model contends that deliberation will make it harder for people to understand who is saying what and in which direction the messages go. The model predicts that deliberation will make people more ambivalent, if not confused, about the implications of the messages they get. As a result, the typical curvilinear relationship between political awareness and attitude change – measured through awareness and awareness squared – will either be weakened or flattened for participants in the deliberative poll.

The systematic model points to predispositions as the key variable in determining attitude change. According to the systematic model deliberation makes people more aware of where they stand ideologically on a given issue. In this connection, we should expect deliberation to be more effective than elections in making people more aware of the connections between their ideological preferences and the policy

alternatives. In particular, the least politically aware and knowledgeable will change their attitudes because they will, for the first time, explicitly connect their predispositions to policy preferences (through a process that we could call 'revelation' (Isernia and Smets, forthcoming)), and the most politically astute will change because they will have an opportunity to engage their predispositions actively with the new and balanced information they will have received during the event.

The deliberative model predicts that what makes the largest difference are not so much predispositions and awareness, but rather the knowledge gained during the deliberative poll as well as the diversity of arguments to which people are exposed. This model, therefore, predicts that participants in the deliberative poll will change attitudes as a consequence of the informational setting in which they are embedded and the nature of the arguments they are facing. What makes the deliberative setting conducive to such a change – as compared to elections – is the quality of the information and the possibility of exchanging substantive arguments about the merit of issues.

<TABLE 1 ABOUT HERE >

To summarize, we expect that the three models predict that different variables – respectively awareness, predisposition, and knowledge – will play a key role in attitude change and that the effects will be different for participants and non-participants, as illustrated in Table 1. Before presenting the results of our analyses, in the next section we first discuss the main variables used in the model.[3]

---

[3] For sake of clarity we focus our discussion on the main effects. We neglect the time dimension from a theoretical perspective, but because of the nature of our (panel) data we do use it to assess the impact of the different predictors with more precision.

Data and methods

The EuroPolis research design has many characteristics that are useful in the assessment our research question. First, it measures the attitudes of participants in the deliberative poll across four waves of data collection: 1) before the event, 2) on arrival at the site of the deliberative meeting, 3) at the end of the event, and 4) in the weeks after the European Parliamentary election of 2009. Second, the availability of a control group which was not invited and did not partake in the deliberative event is particularly advantageous, as it allows us to determine with a certain level of confidence whether observed changes in attitudes are indeed the result of participation in the deliberative poll. More information on the research design of EuroPolis can be found in the introduction of this special issue (see Isernia and Fishkin 2014). Our analyses are largely based on questions asked during all four waves of the deliberative poll. The dependent variables tap the attitudes of respondents on the three main themes of the EuroPolis project. We use two dependent variables to measure attitudes toward immigrants: a measure of the perception of the cultural threat and one of the economic threat from immigration. Furthermore, we generated an index to measure attitudes towards European integration as well as an index to measure attitudes regarding climate change. This makes a total of four dependent variables.

A first measure of attitudes toward immigrants taps the perception of how culturally close immigrants have to be in order to be admitted to the respondents' countries. The question asked, on a 0 to 10 scale, how important each of the following three criteria is to be 'in deciding what immigrants from non-EU countries should be admitted' to the country: 'being able to speak the national language'; 'commitment to the national way of life' and the fact that the immigrant was 'coming from a similar culture'. A fourth item asked where the respondent would position herself, always on a scale from 0 to 10, where '0 means that Muslim immigrants have a lot to offer to [COUNTRY]'s cultural life, 10 means that Muslim immigrants threaten the [NATIONALITY] culture and 5 is exactly in the middle' (see

online appendix A for the exact wording as well as summary statistics of all questions used for the analyses in this paper).

The second index is based on three questions related to economic issues relevant for immigration. The questions all had the same format, scaled from 0 to 10. The first two asked how important 'each of the following criteria should be in deciding what immigrants from non-EU countries should be admitted': 'having job skills that employers need' and 'being able to support oneself financially'. The third item asked the respondent's position on a scale, where '0 means that immigrants take jobs from native-born [NATIONALITY], 10 means that immigrants take the sorts of jobs that [NATIONALITY] don't want and 5 is exactly in the middle'.

Our measure of attitudes towards European integration is based on two questions tapping the extent to which the respondents felt that EU membership had or had not had a positive impact on their country of origin. The first item asked whether respondents generally 'think that [COUNTRY]'s membership of the European Union is a very good thing, a fairly good thing, neither good nor bad, a fairly bad thing, or a very bad thing'. The second item questioned the respondent on a scale where '0 means that [COUNTRY] has not benefitted at all from being a member of the EU, 10 means it has benefited enormously, and 5 is exactly in the middle' whether in her or his view '[COUNTRY] has benefited or not benefited from being a member of the EU'.

The fourth and last dependent variable taps the extent to which respondents feel that the fight against climate change affects the economy negatively. More precisely, respondents were asked to indicate where they position themselves on a scale from 0 to 10 'where 0 means that we should do everything possible to combat climate change, even if that hurts the economy, 10 means that we should do everything possible to maximize economic growth, even if that hurts efforts to combat climate change and 5 is exactly in the middle'.

As indicated above, in our study of attitude change we focus on three key independent variables: awareness, predispositions and knowledge. Awareness is measured through educational level. More precisely, respondents were asked at what age they completed full-time education. The educational level of respondents naturally does not change during the span of the project (circa 6 months).

Predispositions used to ascertain issues in one way or another are measured through different indices for each of the three topics dealt with in this paper. Following Zaller (1992: 27), we use domain-specific measures of political values when possible and, lacking better measures, ideology as a proxy.

The first index of predispositions measures general prejudice against immigrants and is based on the answers to two sets of questions, both aiming at measuring general orientations toward immigrants. A first set of three questions measures the extent to which the respondent is ready to grant illegal immigrants access to some basic services (national health care and public schooling) and to admit them irrespective of the country of origin. A second set of three questions measures the readiness of respondents to assign responsibility for some social problems to immigrants (for a similar measurement see Sniderman et al., 2000, 32-34). Specifically, this set of questions asked whether immigrants' contributions 'help to maintain the pension system', whether immigration 'increases crime in our society', and whether 'amnesty given to illegal immigrants will increase illegal immigration'.

Our measure of predispositions towards European integration is tapped through two questions about the extent to which respondents think of themselves as 'being European' or alternatively think of themselves as 'as just being from your [COUNTRY]'. Both questions are measured on a scale from 0 to 10, where 0 indicated 'not at all', 10 'completely', and 5 is 'exactly in the middle'. Lacking a more specific measure for climate change, we use the left-right self-placement scale as our measure of predispositions on this issue. Scores go from 0 'left' to 10 'right'.

To gauge the influence of the deliberative model we include an index of political knowledge tapping the number of correct answers to six – admittedly sometimes very specific – questions. The index ranges from 0 'all answers wrong' to 6 'all answers correct'. Following Luskin et al. (2002) we consider 'don't know' an incorrect answer. While the effect of knowledge is likely to become stronger for those participating in the deliberative poll, we do not expect to see the same effect in the control group. For the test group we also include a measure ranging from 0 and 10, where the highest score indicates that participants felt that opposing arguments were considered during the event and that they had learned a lot. Deliberation is measured at t_3.

Taking Dobrzynska and Blais (2008) as a point of departure we estimate our (adapted) RAS model of attitudes and attitude change through OLS regression analyses, estimating separate models for the reception and acceptance stage.[4] According to the reception model (see equation 1) attitudes at time t_i are a function of awareness, which is time-invariant, and predisposition at t_i.

$$attitude_{ti} = \alpha + awareness * b_1 + predisposition_{ti} * b_2 + e \qquad (1)$$

The acceptance model, on the other hand, models attitudes at time t_i as a function of awareness, awareness squared, predisposition at t_i and the interaction between awareness and predisposition (see equation 2). To measure the impact of deliberation we include knowledge at t_i as well as a measure of the balanced nature of the deliberative poll measured at t_3 (included in the models for the participants only).

$$attitude_{ti} = \alpha + awareness * b_1 + awareness^2 * b_2 + predisposition_{ti} * b_3 +$$
$$(awareness * predisposition_{ti}) * b_4 + knowledge_{ti} * b_5 + deliberation_{t3} * b_6 + e \qquad (2)$$

Our models will be estimated in a slightly different fashion than depicted in equations 1 and 2. Our data include a group of participants and a group of non-participants. The participants were interviewed at four points in time, whereas the non-participants were interviewed only in wave 1 and wave 4. In a first step we are interested in the differences between participants and non-participants. More precisely, we want to assess whether there are differences between the test and the control group in the over-time changes in attitudes as well as in the over-time impact of key explanatory factors on the dependent variable. Reshaping the data into a long format allows us to track changes over time. In combination with a difference-in-difference-in-difference approach this allows us to estimate precisely those quantities that we are interested in. Just like Fraile (2014) in this special issue,

---

[4] Note that we have made several changes to the Dobrzynska and Blais model based on our own reading of Zaller and Sniderman's work. Notable differences are the inclusion of a squared term for awareness (see the hypothesis section for more details) and the fact that we use a single dependent variable for the reception and acceptance stage. This is in line with Zaller's own operationalization of the RAS model (see, e.g., Zaller, 1992: 191).

we create two dichotomous variables to track over-time differences between participants and non-participants. The variable 'time' takes a 0 at t_1 and a 1 at t_4. The variable 'test' identifies those respondents that are part of the treatment group (i.e. those that participated in the deliberative poll) and takes a 0 for the non-participants. Equation 3 shows the structure of a basic difference-in-difference-in-difference model, which is estimated through OLS regression analysis.

$$\text{attitude}_{ti} = \alpha + \text{time}_{it} * b_1 + \text{test}_{it} * b_2 + (\text{time}_{it} * \text{test}_{it}) * b_3 + x_{it} * b_4 + (x_{it} * \text{test}_{it}) * b_5 + (x_{it} * \text{time}_{it}) * b_6 + (\text{time}_{it} * \text{test}_{it} * x_{it}) * b_7 + e \qquad (3)$$

where α is the mean outcome for the control group at t_1; $\alpha + b_1$ is the mean outcome for the control group at t_4; b_2 is the difference between the test and the control group at t_1; $\alpha + b_2$ is the mean outcome for the participants at t_1; $\alpha + b_1 + b_2 + b_3$ is the mean outcome for participants at t_4; b_4 is the impact of a key variable (x_{it}) on the outcome of interest; b_5 tracks the differences in the influence of x_{it} between the participants and the non-participants; b_6 tracks the differences in the influence of x_{it} on the outcome variable over time. The difference-in-difference estimator is denoted by b_3 and the difference-in-difference-in-difference by b_7. These are the two quantities of main interest when it comes to explaining over-time differences between the participants and non-participants.[5]

In this study the three key variables of interest (x_{it}) are awareness, predisposition and knowledge. Due to the fact that each variable interacts with the variables 'time', 'test', and 'time * test', we run the risk of multicollinearity. We have, therefore, opted to estimate two reception models (one with the interactions for awareness, and one with the interactions for predisposition) and three acceptance models (one

---

[5] There are two main limitations of difference-in-difference (DID) models: 1) estimation is only appropriate when the intervention takes place (as good as) randomly; 2) because DID estimators are commonly derived from OLS regression analysis using repeated cross-sections or panel data serial correlation is a risk (see Bertrand et al. 2004 and Imbens and Wooldridge 2008). Turning to the first limitation, admittedly, the randomization characteristic of a true experimental design is not met in our research design. To assess whether these pre-treatment differences between participants and non-participants affect the outcomes of our analyses, we estimated our models applying propensity score matching (see online appendix C for more details). The longer the time-series, the higher the risk of serial correlation (Bertrand et al., 2004, 251). In our difference-in-difference models we rely on just two time points which should mitigate the risk of autocorrelation. We have, moreover, clustered the standard errors by respondents under the assumption that the over-time standard errors within a respondent are related to one another.

with the interactions for awareness, one with the interactions for predisposition, and one with the interactions for knowledge). The remaining covariates are included in single terms.

While we have a participant and a non-participant group – allowing us to estimate whether deliberation affects participants significantly – the principal aim of this study is to study the micro-mechanisms of attitude change during deliberation. The comparison between the participants and non-participants is based on data from t_1 and t_4 only, but for the participants we have four waves of data at our disposal. In a second step, we therefore estimate our models of attitude change using all waves and focusing exclusively on participants in the deliberative poll.

Results

In discussing the results we proceed in two steps. First, we compare participants and non-participants to explore whether they differ in the mechanisms through which they form their opinions depending on the context in which they operate. Second, we zoom in on those who actually participated in the deliberative poll to examine in greater detail what micro-mechanisms best explain their attitude formation process.[6]

Three main results stand out from our analyses of participants and non-participants. First, predispositions are by far the most relevant predictor of attitude change across all three issues. Second, predispositions play a different role for participants and non-participants. Third, the role of predispositions in deliberation varies depending on the issue. For some issues, deliberation strengthens previously held beliefs, while for other issues it makes people more nuanced and thoughtful. In

---

[6] As mentioned in the data and methods section, we estimate various models for the reception and acceptance stages to avoid multicollinearity problems. More precisely, we estimate two models for the reception stage. The first includes interactions between time, test group and awareness, the second includes interactions between time, test group and predisposition. The acceptance stage is modelled in three stages. The first model includes interactions between time, test group and awareness, the second model interactions between time, test group and predisposition and the third model interactions between time, test group and knowledge.

this section we discuss these three results in detail, while we raise some of the implications arising from them in the conclusion of this paper.

<TABLE 2 ABOUT HERE >

For the sake of clarity and simplicity, Table 2 summarizes the results for the main independent variables from the models in which we compare participants and non-participants. The full models from which the entries in Table 2 are taken are reported in online appendix B (Tables 5 to 8).[7]

The first result to emerge from our analyses is that of the three theoretical models examined, the systematic one clearly turns out to be the most effective in explaining attitude change in the four dependent variables. Our analyses show that – in line with the systematic model – predispositions play a much larger role in the process of opinion formation than the heuristics and deliberative models are ready to concede. This is true for both participants and non-participants.[8] Awareness is not as important in the reception and acceptance stage as the heuristics model would predict. This does not mean that awareness never plays a role: we find it to be always relevant at the reception stage and sometimes at the acceptance stage, e.g. in relation to immigration as an economic threat. Knowledge, contrary to the expectations of the deliberative model, only has a negligible impact on attitude change.

Thus, we do not find much evidence that the micro-mechanisms of attitude change are different for participants and non-participants. The role of predispositions at both the reception and acceptance stage and for both participants and non-participants clearly points to the greater capacity of the systematic model

---

[7] The full models from which the entries in Table 2 are taken are reported in online appendix B (Tables 5 to 8).

[8] The difference-in-difference-in-difference models that compare the participants and the non-participants allow us to answer several questions: 1) whether participants and non-participants behave differently in cognitive terms; 2) whether we find evidence of differences in over-time change in the dependent variables between participants and non-participants; 3) whether the impact of covariates changes between the two waves; 4) whether the over-time impact of covariates is different for participants and non-participants. For the sake of clarity and simplicity we focus our discussion on those aspects of the analyses that are related to the mechanisms of the three theoretical models.

to account for the process of opinion formation in both conditions: deliberative and electoral. Instead of simply reacting to the informational environment, as suggested by the heuristics and deliberative models, both participants and non-participants engage with their environment. They do so in different ways in the two contexts, however, and this is our second conclusion.

Although participants and non-participants in a deliberative poll do not behave differently in cognitive terms, deliberation does make an important difference on the way in which predispositions shape attitude change. Once people are engaged in a deliberative setting they become much more effective in using their predispositions to form opinions on the issues discussed. In the models for immigration as a cultural or as an economic threat, deliberation strengthens the grip of predispositions on attitudes. Deliberation, again as the systematic model would predict, heightens the capacity of people to calibrate new information and prior beliefs in ways that an election apparently does not. This appears not to be the case for the EU and climate change. The heightened ideological awareness fostered by the deliberative process thus seems to have different consequences based on the nature of the issue. This is the third and final result from our analyses and we will return to this point in more detail below.

Since the most important aim of our paper is to advance our knowledge of the micro-mechanisms of attitude change in a deliberative setting, we also estimated our models of attitude change exclusively for participants of the deliberative poll making use of all four waves of data collected within the framework of the project.[9] The results of these analyses are presented in Table 3 and confirm the crucial role of predispositions at both the reception and acceptance stage.[10] The results indicate that awareness does not have a systematic impact on the reception and acceptance of messages. Similarly, for the acceptance models, we see that knowledge and

---

[9] With the exception of the climate change model, which is still based on the first and the last wave as predisposition (measured through left-right self-placement) is available only for these two points in time.

[10] The models are similar to those estimated for the test and control group simultaneously, but obviously do not include the dichotomous variable identifying participants of the poll. Also, the acceptance models now include a measure of the extent to which participants of the deliberative poll thought that they had learned much from their experience and thought that opposing arguments were considered in the discussions.

deliberation have only a negligible impact on attitude formation and attitude change. Predispositions do, however, clearly influence perceptions of immigration as a cultural threat, immigration as an economic threat, the EU being beneficial to the country and the fight against climate change as an economic threat.

<TABLE 3 ABOUT HERE >

The results in Table 3 once more suggest that the role played by predispositions in deliberation varies with the issue to be discussed. We can discern two different consequences of deliberation. When the issue discussed is the role of the EU or climate change, a genuine change of mind seems to be taking place. In both models the interaction term between predispositions and time is statistically significant in the acceptance models and its sign is opposite to the main coefficient. This suggests to us that the beliefs of participants change and change to more complex and nuanced ideas than before deliberation. In the case of the EU being beneficial to the country, participants become more tempered in their (positive) beliefs about the EU, while in the case of climate change they acquire a clearer idea of where they stand on the issue. A different pattern is observed in relation to attitudes on immigration. Here deliberation consolidates previous predispositions, making people form attitudes that match their policy preferences more closely than before deliberation. We will present an explanation for this finding in the concluding section of this paper.

Conclusion and discussion

In this paper we have attempted to move one step further in the direction of exploring the micro-foundations of attitude change in deliberation, an issue so far neglected by the burgeoning literature on empirical deliberative theory. We have presented and assessed three alternative models of attitude change, based on different degrees of 'deliberation'. The first model, of which Zaller's work is the

clearest and most famous example, argues that what moves public opinion is the tenor of the media discourse, with citizens moving in different directions depending on the nature of the messages and the respondent's level of political awareness. This heuristics model has been challenged by those (like Sniderman) who argue that political thinking has a systematic component – mainly represented by political ideology – that shapes both which messages we receive and how we react to them. This model, in contrast to the heuristics one, argues in favor of a central route to political reasoning but is still not fully deliberative. Although an empirical deliberative theory of attitude change does not yet exist (for some developments along this direction see Mercier and Landemore 2012; Mercier and Sperber 2011), we have introduced two elements that are considered crucial to any cognitive model of deliberation: information and argumentation (see e.g. Lindeman, 2002).

We have assessed the relative strength of these three models using the quasi-experimental data of the EuroPolis project comparing a group of people who participated in the deliberative poll with a control group which was not invited to the event. We used difference-in-difference-in-difference models across two waves of data collection to model possible differences between participants and non-participants. In a second step, we estimated a fixed-effects model across four waves to assess the relative strength of the heuristics, systematic and deliberative models for participants of the deliberative poll. Adopting Zaller's two-step model with its reception and acceptance stage as our point of departure, we built on this model adding those elements deemed crucial by the systematic and deliberative models.

The main conclusions of our analyses are that, first, the results point quite clearly to the importance of predispositions in attitude formation. At the reception stage, our analyses offer a simple and straightforward picture: predispositions are an important predictor of message reception. Contrary to what Zaller argues and in support of the systematic and deliberative views of attitude change, there is a role for predispositions at the reception stage of attitude formation and attitude change. Awareness, which is at the core of the heuristics model, is in fact much less significant than predispositions are. As to the acceptance stage, for which our theoretical expectations were more varied, we notice that deliberation and information – two key elements of a deliberative process – are far less important in

shaping attitude change than predispositions are. While the self-perceived variety of arguments is never significant, knowledge only has a weakly significant role to play in some circumstances. Awareness also plays a less important role than the heuristics model would predict at this stage.

Our second finding is that we do not find much evidence that participants and non- participants of the deliberative poll behave very differently in cognitive terms. Attitude change in both groups seems to be driven by the same mechanisms. Should we interpret the finding that participants and non-participants behave in very similar ways when it comes to opinion formation as a thumbs down for deliberation? We suggest we should not. Since we are comparing a deliberative environment (set up through a quasi-experimental mechanism, i.e. the deliberative poll) with a natural one (an election time), the similarities between participants and non-participants suggest not so much the shortcomings of deliberation but rather the potential of European elections to make people reflect upon public issues. In other words, the results seem to suggest that elections have a potential to approximate some of the balanced and rich information conditions characteristic of a deliberative event. Of the three issues examined in this paper – immigration, climate change, and EU integration – the one showing the least differences between the test and the control group is EU integration. We surmise that this similarity of effects is due to the very peculiar nature of the issue during the European elections. After all, what else should be made salient in such an electoral context if not the European dimension? In conclusion, the results suggest that for the control group the EU parliamentary elections might play the role of deliberation in disguise. This result, as initial and tentative as it is, has a reassuring implication for politics. Elections can, under certain conditions, have the potential to achieve effects similar to those of deliberation in a quasi-experimental setting.

Still, substantial differences do exist between public deliberation in a poll and at election time. Predispositions shape attitude formation in a deliberative environment in different ways depending on the issue at hand. This is our last result. On the one hand, when issues are more technical (e.g., climate change and the EU) a deliberative environment makes people more thoughtful about complexities and sensitive to dissonant information. On the other hand, when issues pertain to

immigration deliberation strengthens pre-existing beliefs. This leaves open the more fundamental question of whether deliberation can make people more thoughtful only in some conditions: those conditions in which technical and not highly politicized issues are debated, or whether, as some proponents suggest, it can also work when the issues are a source of controversy and conflict.

References

Andersen VN and Hansen KM (2007) How deliberation makes better citizens: The Danish deliberative poll on the euro. *European Journal of Political Research* 46(4), 531–556.

Berelson BR, Lazarsfeld, PF and McPhee WN (1948) *Voting: A Study of Opinion Formation in a Presidential Campaign*. Chicago, IL: The University of Chicago Press.

Berhagen P and Schmitt H (2014) Deliberation, political knowledge, and vote choice: Results from an experiment with second-order elections. *European Union Politics* 15(3).

Bertrand M, Duflo E and Mullainathan S (2004) How much should we trust differences-indifferences estimates? *The Quarterly Journal of Economics* 119(1), 249–275.

Blackwell M, Iacus S and King G (2009) CEM: Coarsened exact matching in Stata. *The Stata Journal* 9(4), 524–546.

Bobbio L (2002) Le arene deliberative. *Rivista Italiana di Politiche Pubbliche* 3, 5–29.

Checkel JT (2001) Why comply? Social learning and European identity change. *International Organization* 55(3), 553–588.

Converse PE (1964) The nature of belief systems in mass publics. In: Apter DE (ed.) *Ideology and Discontent*. New York, NJ: Free Press, pp. 206–261.

Dahl RA (1956) *A Preface to Democratic Theory*. Chicago, IL: The University of Chicago Press.

Deheija RH and Wahba S (1998) Propensity score matching methods for non-experimental causal studies. National Bureau of Economic Research Technical Working Paper Series no. 6829.

Deheija RH and Wahba S (1999) Causal effects in non-experimental studies: Reevaluating the evaluation of training programs. *Journal of the American Statistical Association* 94(448), 1053–1062.

Dobrzynska A and Blais A (2008) Testing Zaller's reception and acceptance model in an intense election campaign. *Political Behavior* 30(2), 259–276.

Elster J (ed) (1998) *Deliberative Democracy*. Cambridge: Cambridge University Press.

Fishkin JS (2009) *When the People Speak. Deliberative Democracy and Public Consultation.* Oxford: Oxford University Press.

Fraile M (2014) Does deliberation contribute to a decrease of the gender gap in knowledge? *European Union Politics* 15(3).

Iacus SM, King G and Porro G (2011a) Causal inference without balance checking: Coarsened exact matching. *Political Analysis* 20(1), 1–24.

Comment [KS1]: NOTE TO PRINTERS: PLEASE INSERT PAGE RANGE ONCE KNOWN

Comment [KS2]: NOTE TO PRINTERS: PLEASE INSERT PAGE RANGE ONCE KNOWN

Iacus SM, King G and Porro G (2011b) Multivariate matching methods that are monotonic imbalance bounding. *Journal of the American Statistical Association* 106(493), 345–361.

Imbens GW and Wooldridge JM (2008) Recent developments in the econometrics of program evaluation. National Bureau of Economic Research Working Paper Series no. 14251.

Isernia P and Fishkin JS (2014) Introduction - The EuroPolis deliberative poll. European Union Politics 15(3).

Isernia P and Smets K (forthcoming) Revealing preferences: Does deliberation increase ideological awareness among the less well educated? *European Journal of Political Research*. Early view article, pp. 21.

Jackman S and Sniderman PM (2006a) Genetic and environmental transmission of political attitudes over a life time. *The Journal of Politics* 68(2), 272–283.

Jackman S and Sniderman PM (2006b) The limits of deliberative discussion: A model of everyday political arguments. *The Journal of Politics* 68(2), 272–283.

Kuklinski JH, Quirk PJ, Jerit J and Rich RF (2001) The political environment and citizen competence. *American Journal of Political Science* 45(2), 410–424.

Lindeman M (2002) Opinion quality and policy preferences in deliberative research. In: Delli Carpini MX, Huddy L and Shapiro RY (eds.) *Political Decision-Making, Deliberation and Participation*. Bingley: Emerald Group Publishing, pp. 151–194.

Luskin RC, Fishkin JS and Jowell R (2002) Considered opinions: Deliberative polling in Britain. *British Journal of Political Science* 32(3), 455–487.

Mercier H and Landemore H (2012) Reasoning is for arguing: Understanding the successes and failures of deliberation. *Political Psychology* 33(2), 243–258.

Mercier H and Sperber D (2011) Why do human reason? Arguments for an argumentative theory. *Behavioral and Brain Sciences* 34(2), 57–74.

Pateman C (1970) *Participation and Democratic Theory*. Cambridge, MA: Cambridge University Press.

Popkin SL (1991) *The Reasoning Voter. Communication and Persuasion in Presidential Campaigns*. Chicago, IL: The University of Chicago Press.

Rosenbaum PR and Rubin DB (1983) The central role of the propensity score in observational studies for causal effects. *Biometrika* 70(1), 41–55.

Rubin DB (1987) *Multiple Imputation for Nonresponse in Surveys*. New York, NJ: Wiley & Sons.

Setälä M, Grönlund K and Herne K (2010) Citizen deliberation on nuclear power: A comparison of two decision-making methods. *Political Studies* 58(4), 688–714.

Sniderman PM, Brody RA and Tetlock PE (1991) Reasoning and Choice. Explorations in Political Psychology, Cambridge, MA: Cambridge University Press.

Sniderman PM, Peri P, de Figueiredo jr. RJ and Piazza T (2000) *The Outsider. Prejudice and Politics in Italy*. Princeton, NJ: Princeton University Press.

Comment [KS3]: NOTE TO PRINTERS: PLEASE INSERT PAGE RANGE ONCE KNOWN

Sniderman PM, Tetlock PE and Elms L (2001) Public opinion and democratic politics: The problem of nonattitudes and the social construction of political judgment. In: Kuklinski JH (ed.) *Citizens and Politics. Perspectives from Political Psychology', Cambridge*. MA: Cambridge University Press, pp. 254–288.

Stouffer SA (1955) *Communism, Conformity and Civil Liberties. A Cross-Section of the Nation Speaks Its Mind*. New York, NY: Doubleday.

Sturgus P, Roberts C and Allum N (2005) A different take on the deliberative poll: Information, deliberation and attitude constraint. *Public Opinion Quarterly* 69(1), 30–65.

Zaller, JR (1992) *The Nature and Origins of Mass Opinion*. Cambridge, MA: Cambridge University Press.

Tables

	Heuristics Model	Systematic model	Deliberative model
Awareness	Only non-participants change attitudes		
Predispositions		Both participants and non-participants change	
Knowledge			Only participants change attitudes

Table 1: The expected impact of three key variables on attitude change according to the three theoretical models.

	immigration cultural threat		immigration economic threat		EU beneficial to country		climate change economic threat	
	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)	b/(se)
	reception model	*acceptance model*	*reception model*	*acceptance model*	*reception model*	*acceptance model*	*reception model*	*acceptance model*
awareness	-0.034**	-0.111*	-0.036**	-0.167***	0.015**	0.017	-0.043*	-0.141
	(0.016)	(0.058)	(0.015)	(0.044)	(0.007)	(0.019)	(0.025)	(0.087)
awareness*test	0.005	0.006	-0.020	-0.018	-0.003	-0.004	0.015	0.014
	(0.028)	(0.027)	(0.026)	(0.025)	(0.010)	(0.010)	(0.040)	(0.040)
predisposition	0.765***	0.677**	0.586***	0.120	0.168***	0.193***	0.137**	0.023
	(0.110)	(0.290)	(0.109)	(0.258)	(0.016)	(0.055)	(0.055)	(0.140)
predisposition*test	0.488***	0.489***	0.485***	0.459***	0.010	0.012	0.154*	0.146*
	(0.172)	(0.174)	(0.173)	(0.174)	(0.028)	(0.029)	(0.085)	(0.085)
knowledge		-0.082		-0.078		0.069*		0.133
		(0.088)		(0.086)		(0.036)		(0.135)
knowledge*test		0.071		0.265*		-0.078		0.203
		(0.169)		(0.151)		(0.067)		(0.225)

*Note: b coefficients from OLS regression analyses with standard errors clustered by respondent in parentheses; data entries summarize results from various models presented in online appendix B; * p<0.10, ** p<0.05, *** p<0.01*

Table 2: A summary of the impact of awareness, predispositions and knowledge on attitude change

	immigration cultural threat b/(se)	immigration economic threat b/(se)	EU beneficial to country b/(se)	climate change economic threat b/(se)
reception model				
time	-0.201	-0.158	0.117**	-0.044
	(0.200)	(0.197)	(0.055)	(0.307)
awareness	-0.015	-0.039*	0.015*	-0.018
	(0.027)	(0.023)	(0.009)	(0.038)
awareness*time	0.001	0.001	0.001	-0.007
	(0.007)	(0.007)	(0.002)	(0.012)
predisposition	1.205***	1.038***	0.166***	0.293***
	(0.154)	(0.154)	(0.026)	(0.087)
predisposition*time	0.060	0.053	-0.013*	-0.000
	(0.046)	(0.052)	(0.008)	(0.027)
constant	2.633***	3.920***	2.729***	3.226***
	(0.709)	(0.649)	(0.199)	(0.950)
N	1130	1148	1240	603
t	4	4	4	2
R^2	0.246	0.231	0.188	0.092
SEE	1.88	1.72	.69	2.68
acceptance model				
time	-0.067	-0.113	0.100*	-0.091
	(0.231)	(0.215)	(0.060)	(0.327)
awareness	-0.172	-0.149	-0.049	-0.180
	(0.107)	(0.093)	(0.030)	(0.117)
awareness*time	0.003	0.003	-0.001	0.001
	(0.008)	(0.007)	(0.003)	(0.013)
$awareness^2$	0.004*	0.002	0.001***	0.004
	(0.002)	(0.002)	(0.001)	(0.003)
predisposition	1.239**	0.906**	0.156***	-0.007**
	(0.575)	(0.420)	(0.058)	(0.003)
predisposition*time	0.046	0.058	-0.017**	0.249***
	(0.048)	(0.056)	(0.008)	(0.091)
awareness*predisposition	-0.002	0.004	0.001	0.007
	(0.027)	(0.019)	(0.003)	(0.028)
knowledge	0.005	0.148	-0.059	0.459*
	(0.132)	(0.124)	(0.056)	(0.239)
knowledge*time	-0.054	-0.062	0.036*	-0.118*
	(0.041)	(0.042)	(0.018)	(0.068)
deliberation	0.065	0.050	0.001	-0.030
	(0.050)	(0.038)	(0.016)	(0.058)
constant	3.567*	4.670***	3.418***	5.276***
	(1.836)	(1.543)	(0.464)	(1.501)
N	1089	1106	1187	579
t	4	4	4	2
R^2	0.250	0.224	0.217	0.119
SEE	1.86	1.71	.69	2.64

Note: b coefficients from OLS regression analysis with standard errors clustered by respondent in parentheses; * p<0.10, ** p<0.05, *** p<0.01; dependent variables: cultural threat index, economic threat index (0 = no threat , 10 = great threat), positive impact of EU on country index (1 = negative feeling, 5 = positive feeling), the fight against climate change as an economic threat index (1 = no economic threat, 10 = economic threat); independent variables: 'awareness' age finished full-time education (range: 0-35 years); 'predisposition' hostility index (1 = sympathetic towards immigrants, 5 = hostile towards immigrants), feeling European index (0 = negative feeling, 10 = positive feeling), left-right self-placement (0 = left, 10 = right); knowledge (range: 0-6 = all answers correct); deliberation (0-10 = learned a lot and opposing arguments were considered).

Table 3: Adapted RAS models of attitude change in a deliberative setting – test group

Online Appendix A: Question wording and summary statistics

Dependent variables:

1. Immigration as a cultural threat index

Q10 – On a 0-10 scale, where '0' is 'extremely unimportant', '10' is 'extremely important', and '5' is 'exactly in the middle', how important or not would you say each of the following criteria should be in deciding what immigrants from non-EU countries should be admitted to [COUNTRY]?

    Q10.3 – Being able to speak [NATIONAL LANGUAGE].
    Q10.7 – Commitment to the [NATIONALITY] way of life.
    Q10.8 – Coming from a similar culture.

Q15 – On a scale from 0 to 10 where 0 means that Muslim immigrants have a lot to offer to [COUN- TRY]'s cultural life, 10 means that Muslim immigrants threaten [NATIONALITY] culture, and 5 is exactly in the middle, where would you position yourself on this scale, or haven't you thought much about that?

2. Immigration as an economic threat index

Q10 – On a 0-10 scale, where '0' is 'extremely unimportant', '10' is 'extremely important', and '5' is 'exactly in the middle', how important or not would you say each of the following criteria should be in deciding what immigrants from non-EU countries should be admitted to [COUNTRY]?

    Q10.1 – Having job skills that employers need.
    Q10.6 – Being able to support oneself financially.

Q16 – On a scale from 0 to 10, where 0 means that immigrants take jobs from native-born [NATION- ALITY], 10 means that immigrants take the sorts of jobs that [NATIONALITY] don't want and 5 is exactly in the middle, where would you position yourself on this scale, or haven't you thought much about that?

3. EU beneficial to country index

Q35 – Generally speaking, do you think that [COUNTRY]'s membership of the European Union is a very good thing, a fairly good thing, neither good nor bad, a fairly bad thing, or a very bad thing?

Q36 – On a 0 to 10 scale, where 0 means that [COUNTRY] has not benefitted at all from being a member of the EU, 10 means it has benefited enormously, and 5 is exactly in the middle, using this scale, would you say that on balance [COUNTRY] has benefited or not benefited from being a member of the EU?

4. The fight against climate change as an economic threat index

Q21 – On a scale from 0 to 10, where 0 means that we should do everything possible to combat climate change, even if that hurts the economy, 10 means that we should do everything possible to maximize economic growth, even if that hurts efforts to combat climate change and 5 is exactly

in the middle, where would you position yourself on this scale, or haven't you thought much about that?

Independent variables: awareness

EDUC - At what age did you complete your full-time education?

Independent variables: predisposition

1. Hostility against immigrants index

Q9 – How strongly would you agree or disagree with each of the following statements?

 Q9.1 – Illegal immigrants should be eligible for national health care.
 Q9.2 – The children of illegal immigrants should be eligible to attend public school.
 Q9.3 – Decisions about what immigrants to admit should take no account of what country they are from.

Q13 – How strongly would you agree or disagree with each of the following statements?

 Q13.1 – The contributions from working immigrants will help maintain the pension system.
 Q13.2 – Immigration increases crime in our society.
 Q13.3 – Amnesty given to illegal immigrants will increase illegal immigration.

2. Feeling European index

Q33a – On a scale from 0 to 10, where 0 is 'not at all', 10 is 'completely', and 5 is 'exactly in the middle', how much would you say you think of yourself as being European?

Q33b – And on the same 0 to 10 scale, how much would you say you think of yourself as just being from your [COUNTRY]?

3. Left-right self-placement

 LEFTRIGHT – In political matters people talk of the left and the right. What is your position? Please indicate your views using any number on a scale where 0 means left and 10 means right. Which number best describes your position?

Independent variables: knowledge

Correct answers are denoted with an *

Q43 – Is the main decision-making body of the European Union the...?
1.) European Commission, 2.) Council of Ministers*, 3.) European Parliament, or 4.) European Court of Auditors

Q44 – Only one of the following statements about the European Parliament is false. Which one is it?
1.) It passes all EU laws*, 2.) It can dismiss the European Commission, 3.) It can reject the budget proposed by the Council of Ministers, 4.) It is involved in decisions about the admission of new Member States.

Q46 – Which of the following is true of Blue card workers?
1.) They can work anywhere in the EU, 2.) They must have a university education*, 3.) They cannot bring family members to join them any faster than other immigrants, 4.) They are subject to the Returns Directive.

Q47 – Which of the following is true about the ways in which immigration policy is currently made?
1.) The EU sets the basic rules about entry and residency 1 requirements*, 2.) The EU decides how many immigrants can be admitted to 2 each country, 3.) Work permits for immigrants must be approved by the EU, 4.) The EU plays no role in immigration policy.

Q49 – The percentage of the EU's total energy consumption that comes from fossil fuels (coal, gas or oil) is about...?
1.) 0,5, 2.) 0,6, 3.) 0,7, 4.) 0,8*

Q50 – Which of the following produces the most greenhouse gases?
1.) China*, 2.) The European Union, 3.) The United States, 4.) India.

Independent variables: deliberation

On a 0 to 10 scale, where 0 means 'completely disagree', 10 means 'completely agree', and 5 is 'exactly in the middle', how strongly would you agree or disagree with each of the following statements is?

Q66.3 – My small group moderator tried to make sure that opposing arguments were considered

Q66.4 – I learned a lot about people different from me – about who they are and how they live.

	variable	test group					control group				
		n	mean	sd	min	max	n	mean	sd	min	max
wave 1	cultural threat index	320	5.52	2.19	0	10	671	5.90	2.01	0	10
	economic threat index	318	5.77	2.11	0	10	689	6.01	1.86	0	10
	EU good thing index	328	3.87	0.87	1	5	707	3.60	0.92	1	5
	climate change economic threat index	323	4.15	2.96	0	10	707	4.44	2.97	0	10
	education	321	19.70	4.90	0	35	712	18.99	4.59	0	35
	hostility index	302	2.60	0.82	1	5	656	2.77	0.75	1	5
	feeling European index	332	4.67	2.11	0	10	720	4.27	2.04	0	10
	left-right self-placement	315	5.10	2.66	0	10	682	5.22	2.50	0	10
	knowledge	333	1.18	0.93	0	6	729	1.05	0.91	0	5
	deliberation	317	7.73	2.15	0	10	.	.	.	.	.
wave 2	cultural threat index	305	5.32	2.27	0	10					
	economic threat index	317	5.87	1.88	0	10					
	EU good thing index	319	4.05	0.74	1	5					
	climate change economic threat index	324	3.76	2.94	0	10					
	education	321	19.70	4.90	0	35					
	hostility index	293	2.62	0.80	1	4,83					
	feeling European index	324	5.20	2.27	0	10					
	left-right self-placement	.	.	.	.	.					
	knowledge	333	1.66	1.25	0	5					
	deliberation	317	7.73	2.15	0	10					
wave 3	cultural threat index	315	5.17	2.18	0	10					
	economic threat index	317	5.72	1.96	0	10					
	EU good thing index	322	4.14	0.72	1	5					
	climate change economic threat index	328	3.37	2.88	0	10					
	education	321	19.70	4.90	0	35					
	hostility index	301	2.46	0.72	1	4,33					
	feeling European index	322	5.35	2.16	0	10					
	left-right self-placement	.	.	.	.	.					
	knowledge	333	2.19	1.30	0	6					
	deliberation	317	7.73	2.15	0	10					
wave 4	cultural threat index	321	5.25	2.03	0	10	657	5.82	2.08	0	10
	economic threat index	329	5.62	1.85	0	10	680	6.05	1.66	0	10
	EU good thing index	330	4.15	0.73	1	5	705	3.66	0.88	1	5
	climate change economic threat index	331	3.68	2.70	0	10	703	4.20	2.65	0	10
	education	321	19.70	4.90	0	35	712	18.99	4.59	0	35
	hostility index	318	2.51	0.80	1	5	634	2.73	0.79	1	5
	feeling European index	333	5.25	1.97	0	10	719	4.34	1.89	0	10
	left-right self-placement	321	5.22	2.61	0	10	681	5.24	2.51	0	10
	knowledge	333	2.12	1.25	0	5	729	1.03	0.93	0	4
	deliberation	317	7.73	2.15	0	10	.	.	.	.	.

Table 4: Summary statistics

Online Appendix B: Adapted RAS models of attitude change for test and control group

	reception 1 b/(se)	reception 2 b/(se)	acceptance 1 b/(se)	acceptance 2 b/(se)	acceptance 3 b/(se)
time	0.110	-0.949**	0.097	-0.943**	-0.131
	(0.345)	(0.371)	(0.342)	(0.372)	(0.148)
test group	-0.303	-1.522***	-0.307	-1.518***	-0.280
	(0.554)	(0.484)	(0.550)	(0.488)	(0.235)
time*test group	-0.337	0.468	-0.320	0.607	0.530*
	(0.569)	(0.525)	(0.569)	(0.536)	(0.277)
awareness	-0.034**	-0.034***	-0.111*	-0.101*	-0.109**
	(0.016)	(0.011)	(0.058)	(0.055)	(0.055)
predisposition	1.068***	0.765***	0.876***	0.677**	0.890***
	(0.069)	(0.110)	(0.288)	(0.290)	(0.287)
awareness*time	-0.008		-0.007		
	(0.017)		(0.017)		
awareness*test	0.005		0.006		
	(0.028)		(0.027)		
awareness*time*test	0.011		0.015		
	(0.028)		(0.028)		
predisposition*time		0.327**		0.326**	
		(0.134)		(0.134)	
predisposition*test		0.488***		0.489***	
		(0.172)		(0.174)	
predisposition*time*test		-0.193		-0.215	
		(0.197)		(0.199)	
awareness^2			0.001	0.001	0.001
			(0.001)	(0.001)	(0.001)
awareness*predisposition			0.010	0.005	0.009
			(0.015)	(0.015)	(0.015)
knowledge			-0.099**	-0.090*	-0.082
			(0.050)	(0.050)	(0.088)
knowledge*time					0.082
					(0.111)
knowledge*test					0.071
					(0.169)
knowledge*time*test					-0.340*
					(0.190)
constant	3.604***	4.446***	4.685***	5.263***	4.617***
	(0.382)	(0.386)	(0.892)	(0.855)	(0.852)
N	1768	1768	1768	1768	1768
R^2	0.188	0.195	0.191	0.198	0.193
SEE	1.86	1.85	1.85	1.85	1.85

Note: b coefficients from OLS regression analysis with standard errors clustered by respondent in parentheses;
* p<0.10, ** p<0.05, *** p<0.01; dependent variable: cultural threat index (0 = no threat , 10 = great threat);
independent variables: 'awareness' age finished full-time education (range: 0-35 years); 'predisposition' hostility
index (1 = sympathetic towards immigrants, 5 = hostile towards immigrants); knowledge (range: 0-6 = all answers
correct).

Table 5: Adapted RAS models of attitude change test and control group – immigration
as a cultural threat

	reception 1 b/(se)	reception 2 b/(se)	acceptance 1 b/(se)	acceptance 2 b/(se)	acceptance 3 b/(se)
time	-0.224	-0.140	-0.291	-0.126	0.015
	(0.330)	(0.329)	(0.331)	(0.330)	(0.135)
test group	0.312	-1.392***	0.269	-1.325***	-0.402*
	(0.514)	(0.502)	(0.500)	(0.504)	(0.225)
time*test group	0.105	-0.235	0.090	-0.198	0.353
	(0.540)	(0.546)	(0.543)	(0.553)	(0.286)
awareness	-0.036**	-0.039***	-0.167***	-0.151***	-0.162***
	(0.015)	(0.010)	(0.044)	(0.042)	(0.042)
predisposition	0.794***	0.586***	0.239	0.120	0.234
	(0.065)	(0.109)	(0.259)	(0.258)	(0.255)
awareness*time	0.013		0.017		
	(0.017)		(0.017)		
awareness*test	-0.020		-0.018		
	(0.026)		(0.025)		
awareness*time*test	-0.011		-0.008		
	(0.026)		(0.027)		
predisposition*time		0.059		0.054	
		(0.116)		(0.116)	
predisposition*test		0.485***		0.459***	
		(0.173)		(0.174)	
predisposition*time*test		0.069		0.071	
		(0.200)		(0.201)	
awareness^2			0.001	0.001	0.001
			(0.001)	(0.001)	(0.001)
awareness*predisposition			0.029**	0.025*	0.028**
			(0.013)	(0.013)	(0.013)
knowledge			-0.039	-0.038	-0.078
			(0.044)	(0.044)	(0.086)
knowledge*time					0.015
					(0.104)
knowledge*test					0.265*
					(0.151)
knowledge*time*test					-0.304*
					(0.179)
constant	4.515***	5.140***	6.568***	6.857***	6.585***
	(0.340)	(0.361)	(0.739)	(0.710)	(0.699)
N	1803	1803	1803	1803	1803
R^2	0.137	0.147	0.141	0.151	0.143
SEE	1.70	1.69	1.69	1.69	1.69

Note: b coefficients from OLS regression analysis with standard errors clustered by respondent in parentheses; * $p<0.10$, ** $p<0.05$, *** $p<0.01$; dependent variable: economic threat index (0 = no threat , 10 = great threat); independent variables: 'awareness' age finished full-time education (range: 0-35 years); 'predisposition' hostility index (1 = sympathetic towards immigrants, 5 = hostile towards immigrants); knowledge (range: 0-6 = all answers correct).

Table 6: Adapted RAS models of attitude change test and control group – immigration as an economic threat

	reception 1 b/(se)	reception 2 b/(se)	acceptance 1 b/(se)	acceptance 2 b/(se)	acceptance 3 b/(se)
time	0.108	0.076	0.114	0.076	0.041
	(0.131)	(0.096)	(0.130)	(0.096)	(0.056)
test group	0.265	0.164	0.279	0.150	0.299***
	(0.215)	(0.148)	(0.214)	(0.151)	(0.087)
time*test group	0.065	0.373**	0.007	0.314**	-0.063
	(0.206)	(0.159)	(0.206)	(0.157)	(0.120)
awareness	0.015**	0.014***	0.017	0.015	0.015
	(0.007)	(0.005)	(0.019)	(0.018)	(0.019)
predisposition	0.162***	0.168***	0.189***	0.193***	0.192***
	(0.012)	(0.016)	(0.055)	(0.055)	(0.054)
awareness*time	-0.002		-0.003		
	(0.006)		(0.006)		
awareness*test	-0.003		-0.004		
	(0.010)		(0.010)		
awareness*time*test	0.003		0.003		
	(0.010)		(0.010)		
predisposition*time		-0.003		-0.003	
		(0.020)		(0.020)	
predisposition*test		0.010		0.012	
		(0.028)		(0.029)	
predisposition*time*test		-0.047		-0.049	
		(0.031)		(0.031)	
awareness^2			0.000	0.000	0.000
			(0.000)	(0.000)	(0.000)
awareness*predisposition			-0.002	-0.001	-0.002
			(0.003)	(0.003)	(0.003)
knowledge			0.072***	0.072***	0.069*
			(0.019)	(0.019)	(0.036)
knowledge*time					0.020
					(0.045)
knowledge*test					-0.078
					(0.067)
knowledge*time*test					0.087
					(0.079)
constant	2.599***	2.602***	2.450***	2.475***	2.481***
	(0.140)	(0.113)	(0.280)	(0.274)	(0.272)
N	2001	2001	2001	2001	2001
R^2	0.195	0.196	0.202	0.203	0.203
SEE	.80	.80	.80	.79	.79

Note: b coefficients from OLS regression analysis with standard errors clustered by respondent in parentheses; * $p<0.10$, ** $p<0.05$, *** $p<0.01$; dependent variable: positive impact of EU on country index (1 = negative feeling, 5 = positive feeling); independent variables: 'awareness' age finished full-time education (range: 0-35 years); 'predisposition' feeling European index (0 = negative feeling, 10 = positive feeling); knowledge (range: 0-6 = all answers correct).

Table 7: Adapted RAS models of attitude change test and control group – EU beneficial to country

	reception 1 b/(se)	reception 2 b/(se)	acceptance 1 b/(se)	acceptance 2 b/(se)	acceptance 3 b/(se)
time	-0.449	0.278	-0.461	0.272	-0.037
	(0.561)	(0.351)	(0.563)	(0.351)	(0.215)
test group	-0.506	-0.996**	-0.488	-0.961**	-0.468
	(0.815)	(0.473)	(0.816)	(0.474)	(0.328)
time*test group	0.424	-0.837	0.534	-0.893	-0.012
	(0.942)	(0.547)	(0.959)	(0.552)	(0.428)
awareness	-0.043*	-0.037**	-0.141	-0.108	-0.130
	(0.025)	(0.015)	(0.087)	(0.081)	(0.084)
predisposition	0.159***	0.137**	-0.006	0.023	-0.004
	(0.031)	(0.055)	(0.139)	(0.140)	(0.139)
awareness*time	0.011		0.012		
	(0.028)		(0.028)		
awareness*test	0.015		0.014		
	(0.040)		(0.040)		
awareness*time*test	-0.037		-0.045		
	(0.046)		(0.047)		
predisposition*time		-0.097		-0.096	
		(0.063)		(0.063)	
predisposition*test		0.154*		0.146*	
		(0.085)		(0.085)	
predisposition*time*test		0.099		0.100	
		(0.103)		(0.102)	
awareness^2			0.001	0.001	0.001
			(0.002)	(0.002)	(0.002)
awareness*predisposition			0.008	0.006	0.008
			(0.007)	(0.006)	(0.007)
knowledge			0.064	0.057	0.133
			(0.068)	(0.068)	(0.135)
knowledge*time					-0.179
					(0.169)
knowledge*test					0.203
					(0.225)
knowledge*time*test					-0.192
					(0.262)
constant	4.430***	4.431***	5.703***	5.339***	5.505***
	(0.526)	(0.413)	(1.117)	(1.026)	(1.060)
N	1900	1900	1900	1900	1900
R^2	0.034	0.043	0.036	0.044	0.038
SEE	2.76	2.75	2.76	2.75	2.76

Note: b coefficients from OLS regression analysis with standard errors clustered by respondent in parentheses; * $p<0.10$, ** $p<0.05$, *** $p<0.01$; dependent variable: the fight against climate change as an economic threat index (1 = no economic threat, 10 = economic threat); independent variables: 'awareness' age finished full-time education (range: 0-35 years); 'predisposition' left-right self-placement (0 = left, 10 = right); knowledge (range: 0-6 = all answers correct).

Table 8: Adapted RAS models of attitude change test and control group – the fight against climate change as an economic threat

Online Appendix C: Models with propensity score matching

In quasi-experimental research designs like the one for EuroPolis, one characteristic of a true experiment is missing. In our case, the respondents of the questionnaire administered in the first wave were randomly assigned to a test or a control group. Respondents assigned to the test group were subsequently invited to the deliberative poll. The latter step violates the randomization characteristic of true experimental designs as it is not a far stretch to assume that respondents with higher levels of political interest, better educated respondents, or those with more time on their hands were favorably inclined to participate in a three-day polling event.

The pre-treatment differences between participants and non-participants make it impossible to conclude that observed differences in attitude changes for participants and non-participants exist because some respondents participated in the deliberative poll and others did not (Rosenbaum and Rubin, 1983). The observed difference could, after all, also be the result of the two groups having slightly different characteristics to start with. In our models including both participants and non- participants (Tables 5 to 8) we have observed differences between the impact of certain covariates between the two groups. Propensity score matching helps us understand whether these differences are due to pre-existing differences between participants and non-participants.

In essence, matching is a method that allows one to pre-process data by finding matching cases in terms of a number of confounding pre-treatment control covariates in the test group and the control group. Unmatched cases are not used for analysis. The ultimate aim of matching is to arrive at a better balance between the test group and the control group in as much that the distribution of covariates in the two groups is more in tune. Matching leads to results being less model dependent and reduces statistical bias (Deheija and Wahba, 1998,1999; Rosenbaum and Rubin, 1983; Rubin, 1987). By obtaining more balance more meaningful comparisons can be made between the test group and the control group.

In this appendix we apply coarsened exact matching (cem). The first step of cem is to categorize respondents in substantially meaningful groups. In a next step, for each participant a matching non- participant is found that matches exactly on the (coarsened) covariates (Blackwell et al., 2009; Iacus et al., 2011a,b). Cases that do not have an exact match are not considered. The coarsened values are abandoned for the estimation of the models and original values of the matched data are used for the estimation of the causal effects.

Coarsened exact matching begins with the calculation of the multivariate imbalance of the un- matched data. In a next step, a matching algorithm is applied to try to improve balance. Once the best matching algorithm is established, matching essentially becomes a weighting scheme. Taking into account age, gender, education, religion and social class the multivariate imbalance in our data set equals .728 on a scale from 0 (no multivariate imbalance) to 1 (complete separation). After applying the cem algorithm based on age, gender and education the multivariate imbalance drops to .147 while retaining 99,2% of our cases to work with. While various combinations of pretreatment variables were tried, none of these resulted such a stark improvement of the balance *and* such a high number of remaining observations.

Tables 9 to 12 show the results of the same models as estimated in Tables 5 to 8, this time with the cem weights applied. The differences between the two sets of models are very small. The impact of awareness seems to have weakened somewhat in most of the models, but this is expected as awareness is measured through educational levels and this is one of the variables on which the matching algorithm is based. Statistically significant differences between participants and non-participants in the unweighted models are still apparent in the models where propensity score matching was applied. This indicates that the observed differences are not caused by pre-treatment differences between both groups. In other words, we can now conclude with more confidence that the observed differences are indeed the result of participating in the deliberative poll. The only exception are the models with perceptions of the fight against climate change as an economic threat, where the differences between participants and non-participants disappear after applying cem weights. The models for climate change were, however, already observed to perform more poorly than the others.

	reception 1 b/(se)	reception 2 b/(se)	acceptance 1 b/(se)	acceptance 2 b/(se)	acceptance 3 b/(se)
time	0.221	-1.450***	0.274	-1.402***	-0.148
	(0.462)	(0.539)	(0.447)	(0.543)	(0.190)
test group	-0.503	-1.859***	-0.515	-1.872***	-0.254
	(0.730)	(0.626)	(0.711)	(0.628)	(0.250)
time*test group	-0.262	0.978	-0.257	1.119*	0.578*
	(0.648)	(0.657)	(0.644)	(0.664)	(0.296)
awareness	-0.052*	-0.049***	0.043	0.043	0.044
	(0.027)	(0.015)	(0.115)	(0.112)	(0.116)
predisposition	1.073***	0.646***	1.076***	0.705**	1.089***
	(0.089)	(0.197)	(0.389)	(0.346)	(0.391)
awareness*time	-0.011		-0.013		
	(0.025)		(0.024)		
awareness*test	0.021		0.022		
	(0.037)		(0.036)		
awareness*time*test	0.002		0.006		
	(0.034)		(0.033)		
predisposition*time		0.529**		0.513**	
		(0.210)		(0.212)	
predisposition*test		0.652***		0.662***	
		(0.237)		(0.237)	
predisposition*time*test		-0.419		-0.441*	
		(0.256)		(0.257)	
awareness^2			-0.002	-0.002	-0.002
			(0.002)	(0.002)	(0.002)
awareness*predisposition			-0.000	-0.003	-0.001
			(0.021)	(0.020)	(0.021)
knowledge			-0.111**	-0.103*	-0.133
			(0.053)	(0.053)	(0.112)
knowledge*time					0.143
					(0.130)
knowledge*test					0.150
					(0.181)
knowledge*time*test					-0.457**
					(0.198)
constant	3.842***	4.959***	3.046**	4.100***	3.021**
	(0.645)	(0.646)	(1.523)	(1.397)	(1.488)
N	1701	1701	1701	1701	1701
R^2	0.192	0.204	0.196	0.208	0.199
SEE	1.85	1.84	1.85	1.84	1.85

Note: b coefficients from OLS regression analysis with standard errors clustered by respondent in parentheses; * $p<0.10$, ** $p<0.05$, *** $p<0.01$; dependent variable: cultural threat index (0 = no threat , 10 = great threat); independent variables: 'awareness' age finished full-time education (range: 0-35 years); 'predisposition' hostility index (1 = sympathetic towards immigrants, 5 = hostile towards immigrants); knowledge (range: 0-6 = all answers correct).

Table 9: Adapted RAS models of attitude change test and control group with cem weights applied – immigration as a cultural threat

	reception 1 b/(se)	reception 2 b/(se)	acceptance 1 b/(se)	acceptance 2 b/(se)	acceptance 3 b/(se)
time	-0.081	-0.366	-0.153	-0.342	0.046
	(0.438)	(0.379)	(0.436)	(0.380)	(0.147)
test group	0.205	-1.394***	0.126	-1.393***	-0.402*
	(0.634)	(0.531)	(0.628)	(0.531)	(0.234)
time*test group	0.019	-0.043	0.028	-0.005	0.312
	(0.663)	(0.582)	(0.660)	(0.591)	(0.296)
awareness	-0.056***	-0.057***	-0.179***	-0.176***	-0.177***
	(0.021)	(0.012)	(0.058)	(0.053)	(0.053)
predisposition	0.825***	0.581***	0.255	0.010	0.238
	(0.072)	(0.123)	(0.316)	(0.318)	(0.312)
awareness*time	0.008		0.012		
	(0.021)		(0.021)		
awareness*test	-0.014		-0.010		
	(0.031)		(0.031)		
awareness*time*test	-0.009		-0.008		
	(0.032)		(0.032)		
predisposition*time		0.155		0.147	
		(0.133)		(0.133)	
predisposition*test		0.489***		0.491***	
		(0.185)		(0.185)	
predisposition*time*test		-0.019		-0.021	
		(0.213)		(0.214)	
awareness^2			0.001	0.001	0.001
			(0.001)	(0.001)	(0.001)
awareness*predisposition			0.029*	0.029*	0.029*
			(0.016)	(0.015)	(0.016)
knowledge			-0.036	-0.035	-0.080
			(0.048)	(0.048)	(0.102)
knowledge*time					0.026
					(0.121)
knowledge*test					0.283*
					(0.164)
knowledge*time*test					-0.325*
					(0.194)
constant	4.771***	5.483***	6.792***	7.417***	6.852***
	(0.470)	(0.428)	(0.956)	(0.874)	(0.843)
N	1736	1736	1736	1736	1736
R^2	0.152	0.162	0.156	0.166	0.159
SEE	1.70	1.69	1.69	1.68	1.69

Note: b coefficients from OLS regression analysis with standard errors clustered by respondent in parentheses; * $p<0.10$, ** $p<0.05$, *** $p<0.01$; dependent variable: economic threat index (0 = no threat , 10 = great threat); independent variables: 'awareness' age finished full-time education (range: 0-35 years); 'predisposition' hostility index (1 = sympathetic towards immigrants, 5 = hostile towards immigrants); knowledge (range: 0-6 = all answers correct).

Table 10: Adapted RAS models of attitude change test and control group with cem weights applied – immigration as an economic threat

	reception 1 b/(se)	reception 2 b/(se)	acceptance 1 b/(se)	acceptance 2 b/(se)	acceptance 3 b/(se)
time	0.158	0.184	0.154	0.183	-0.016
	(0.163)	(0.123)	(0.165)	(0.121)	(0.066)
test group	0.073	0.181	0.076	0.173	0.232**
	(0.266)	(0.153)	(0.269)	(0.155)	(0.093)
time*test group	0.115	0.274	0.091	0.224	-0.025
	(0.240)	(0.175)	(0.246)	(0.175)	(0.127)
awareness	0.009	0.009	0.023	0.020	0.022
	(0.010)	(0.007)	(0.041)	(0.040)	(0.040)
predisposition	0.165***	0.181***	0.163**	0.174**	0.163**
	(0.014)	(0.018)	(0.071)	(0.072)	(0.071)
awareness*time	-0.005		-0.005		
	(0.008)		(0.008)		
awareness*test	0.006		0.006		
	(0.013)		(0.013)		
awareness*time*test	0.000		-0.001		
	(0.012)		(0.012)		
predisposition*time		-0.028		-0.028	
		(0.025)		(0.025)	
predisposition*test		0.003		0.004	
		(0.029)		(0.030)	
predisposition*time*test		-0.027		-0.028	
		(0.035)		(0.034)	
awareness^2			-0.000	-0.000	-0.000
			(0.001)	(0.001)	(0.001)
awareness*predisposition			0.000	0.000	0.000
			(0.004)	(0.004)	(0.004)
knowledge			0.061***	0.062***	0.022
			(0.020)	(0.020)	(0.040)
knowledge*time					0.071
					(0.053)
knowledge*test					-0.030
					(0.072)
knowledge*time*test					0.039
					(0.087)
constant	2.717***	2.647***	2.538***	2.514***	2.597***
	(0.195)	(0.139)	(0.478)	(0.457)	(0.450)
N	1927	1927	1927	1927	1927
R^2	0.193	0.195	0.198	0.200	0.200
SEE	.79	.79	.79	.79	.79

Note: b coefficients from OLS regression analysis with standard errors clustered by respondent in parentheses; * p<0.10, ** p<0.05, *** p<0.01; dependent variable: positive impact of EU on country index (1 = negative feeling, 5 = positive feeling); independent variables: 'awareness' age finished full-time education (range: 0-35 years); 'predisposition' feeling European index (0 = negative feeling, 10 = positive feeling); knowledge (range: 0-6 = all answers correct).

Table 11: Adapted RAS models of attitude change test and control group with cem weights applied – EU beneficial to country

	reception 1 b/(se)	reception 2 b/(se)	acceptance 1 b/(se)	acceptance 2 b/(se)	acceptance 3 b/(se)
time	-0.976	0.050	-0.977	0.041	-0.287
	(0.644)	(0.388)	(0.640)	(0.390)	(0.239)
test group	0.086	-0.794	0.065	-0.767	-0.471
	(0.897)	(0.505)	(0.873)	(0.503)	(0.335)
time*test group	1.116	-0.598	1.023	-0.704	0.088
	(1.041)	(0.576)	(1.034)	(0.578)	(0.445)
awareness	-0.012	-0.010	0.074	0.091	0.083
	(0.029)	(0.016)	(0.079)	(0.078)	(0.079)
predisposition	0.187***	0.177***	0.080	0.081	0.076
	(0.034)	(0.062)	(0.161)	(0.171)	(0.163)
awareness*time	0.034		0.034		
	(0.033)		(0.033)		
awareness*test	-0.017		-0.016		
	(0.043)		(0.042)		
awareness*time*test	-0.071		-0.071		
	(0.052)		(0.052)		
predisposition*time		-0.069		-0.068	
		(0.070)		(0.070)	
predisposition*test		0.107		0.101	
		(0.091)		(0.091)	
predisposition*time*test		0.058		0.063	
		(0.107)		(0.106)	
awareness^2			-0.003*	-0.003*	-0.003*
			(0.002)	(0.002)	(0.002)
awareness*predisposition			0.005	0.005	0.005
			(0.008)	(0.008)	(0.008)
knowledge			0.092	0.083	0.102
			(0.076)	(0.076)	(0.138)
knowledge*time					-0.020
					(0.194)
knowledge*test					0.183
					(0.228)
knowledge*time*test					-0.292
					(0.283)
constant	3.699***	3.716***	3.074***	2.922***	2.988***
	(0.607)	(0.497)	(1.115)	(1.085)	(1.067)
N	1830	1830	1830	1830	1830
R^2	0.044	0.045	0.046	0.048	0.045
SEE	2.70	2.70	2.70	2.70	2.70

Note: b coefficients from OLS regression analysis with standard errors clustered by respondent in parentheses; * $p<0.10$, ** $p<0.05$, *** $p<0.01$; dependent variable: the fight against climate change as an economic threat index (1 = no economic threat, 10 = economic threat); independent variables: 'awareness' age finished full-time education (range: 0-35 years); 'predisposition' left-right self-placement (0 = left, 10 = right); knowledge (range: 0-6 = all answers correct).

Table 12: Adapted RAS models of attitude change test and control group with cem weights applied – the fight against climate change as an economic threat