

The Impact of Media and Party Systems on the Making of Informed Election Outcomes

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It is often claimed that highly informed actors are usually more effective than know-nothings in obtaining the outcomes that best conform to their preferences (see Mansbridge 1983; Dahl 1989: 180-1; and with reference specifically to voting behaviour and public opinion Delli Carpini and Keeter, 1996, 56; Downs, 1957, 258; Hutchings, 2003). A possible implication of the same argument is that elections only enhance collective welfare to the extent that citizens are knowledgeable about politics (cf. Adserá et al. 2003; Gastil, 2000). If so, then mass media, as the main source of political information for citizens, should also play a role in helping good government to emerge. Elsewhere it was shown that better informed voting behaviour among citizens does indeed contribute to improvements in the quality of governance (see Tóka 2007). In this paper we aim to explore differences between media systems in making citizens' voting behaviour better informed. In the first section we discuss our expectations about how mass media characteristics may influence citizens' political knowledge level. Section two describes the criteria that we use to assess citizens' information level. Sections three and four explain our measures and the design of the statistical analysis. Section five presents the empirical analysis, and section six concludes.

1. Theoretical considerations: the role of media system characteristics

By informed citizens we do not mean odds-on favourites to win the political edition of *Who Wants To Be A Millionaire*, but people who can develop informed political preferences and make political choices accordingly. The probability of such informed political behaviour – as long as we assume reasonably rational citizens – must by definition increase with one's actual knowledge level. In this respect the small number of people who, in any given society, attentively follow politics and solicit information from hard to access sources out of passion, amusement, profession, or any number of more obscure reasons may be in a privileged position.

Yet, we suspect that it is neither the supply of such individuals nor their opportunities to spot every little change in the political realm that create the bulk of the cross-national differences in how well informed the average citizen is about politics. Rather, such differences must have something to do with the way mass media cover politics in the given country. Such coverage can vary along an infinite variety of dimensions starting from relatively trivial ones like media access and penetration (Norris 2004) or citizens' exposure to political coverage in the media to more subtle distinctions in the prevalent role orientation of media professionals (Semetko *et al.* 1991), the contextualization of political information (Jerit *et al.* 2006, Schmitt-Beck 1998), episodic versus thematic coverage (Iyengar 1991), the overlap between media choice and partisanship among citizens (Kempen 2006), the dominance of balanced versus one-sided political coverage (Zaller 1992), the incidence of misleading information (Jerit and Barabas 2006), and a potentially endless list of variables affecting the breadth, depth, accessibility and reflexivity of what media audiences can get out of the message.

Naturally, the present study can only consider a few factors tapping into the characteristics of media systems most likely to affect the knowledge gains of citizens and their capacity to express an informed vote. Their selection is derived from two separate strings of literature because the existing literature on media systems and media policy runs in parallel with the media effects literature. Although both rely implicitly or explicitly on the existence of a relationship between the nature of media influence and the diversity of media messages as shaped by the press and broadcasting systems, there is little cross-referencing. The media effects

literature looks at a range of characteristics of the message, as enumerated above, but not systematically at the media environment. In turn, the literature on the roles of the media discusses the criteria through which democratic media performance can be assessed and the systemic constraints affecting media capacity to fully perform its multiple roles (Gurevitch and Blumler 1994). There is a rich literature on diversity - a central, yet complex and often vaguely defined concept in media systems and media policy - that aims to assess the means through which the democratic ideal of pluralism can be or is achieved. It tries to separate different dimensions looking for instance at structural diversity (or the presence of alternative sources of information, also referred to as quantitative diversity or source diversity), content diversity (diversity of view points presented in the media) or exposure diversity (Napoli 1999, Schultz 2005, Voltmer 2000). The likelihood of audience exposure to a distinct range of sources and content led to the development of the concept of exposure diversity (Napoli 1999) and to attempts to link it with source and content diversity (Napoli 1999, Schultz 2005). Similarly, concepts such as internal vs. external diversity (Hoffmann-Riem 1996, Voltmer 2000) or horizontal vs. vertical diversity (Napoli 1999), differentiate between the presence of distinct viewpoints within individual media channels (internal or horizontal) or across media channels, in the media system at large, such as for instance in the British press. A related set of five criteria is used by Hallin and Mancini (2004) to analyse and compare media systems in the Western world, leading to a typology of media systems, explicitly meant to link the media system with the characteristics of the political system. The study aims to provide a variable or criteria driven analysis of media systems, similar to that of political systems; thus it should potentially be quantifiable and applicable in research on media influence (both at the macro and at the micro levels).

However the link has not yet been made and the media effects literature does not build on these dimensions; it does not even systematically use these insights, neither in a detailed manner over time in a single-context nor in cross-context comparisons. At most, there are interesting post-hoc speculations that differences in media effects cross-contexts or cross-time being may be related or due to differences in media systems (Aarts and Semetko 2003, Newton 1999, Schmitt-Beck 1998, 2004, Schmitt-Beck and Voltmer 2002, Semetko 1996). Or, most recently, there are studies of media effects which systematically include measures of the media environment, yet very general ones, related mostly to media freedom and one-sidedness (Leeson 2007, Norris 2007, Popescu 2007).

Press-party parallelism is the only media system characteristic that has been so far more systematically linked with media influence on citizens' opinions, attitudes and behaviour at the individual level. Press-party parallelism was first defined by Seymour-Ure (1974) in relationship to the British press as the degree to which the newspaper system parallels the party system; in other words, it refers to the extent the political views of newspapers follow or are similar to the positions of the political parties. In a four countries/five contexts study of media effects, Schmitt-Beck (2004) interprets his findings as related to contextual characteristics, more specifically that "conditions for the influence of the mass media [on public opinion] are particularly favourable in media systems that are characterised by a significant, though moderate "press-party parallelism", where reporting by a particular media organisation tends to advantage specific parties, but not in such a blatant way that it becomes strikingly obvious for each and every recipient" (Schmitt-Beck 2004: 318). Recent research found that strong press-party parallelism is likely to have a

positive impact on political mobilisation over time (in Sweden) and cross-nationally (Van Kempen 2006, 2007). Press-party parallelism also increased the effect of the mass media over and above selective exposure (Van Kempen 2006).

In the absence of clear theoretical guides and prior findings that would link media effects with the main dimensions of media systems, this paper proposes and then tests a first set of hypotheses systematically linking characteristics of the media environment and knowledge related media effects. It builds on Blumler and Gurevitch (1995) and Hallin and Mancini (2004) but does not attempt either a comprehensive assessment of the role of media systems nor a typology. First, each variable is seen as a criterion that takes the form of a continuum rather than a way of categorizing media systems and although there are some interrelations between the criteria, they neither overlap nor define a type in conjunction. This is an important distinction from the Hallin and Mancini (2004) method and it allows cases (i.e. countries/media systems) to be more precisely evaluated on the basis of the criteria and not placed in strict boxes, especially since no link with political systems is sought in this paper. The fact that the empirical reality falls with difficulty in their four models, which can be seen as ideal types, is noted by the authors but once the media system is not the dependent but the independent variable and especially in an empirical analysis, this has increased relevance.¹ Second, the paper acknowledges that no characteristic of the media system represents a sufficient and possibly not even a necessary condition for the occurrence of (stronger or weaker) information effects or media effects on knowledge. This is a particularly important point, which makes understanding pre-conditions of media effects difficult; the paper makes only a small step in dealing with this aspect. Third, we prioritize media system characteristics that often feature prominently in debates among policy makers and academics about the merits of different media systems, and are also relatively open to direct or indirect government regulation in the name of the public interest. Fourth, for practical reasons related to the empirical testing, we prefer dimensions for which relatively uncontroversial comparative cross-national measures can be developed, and the data necessary for the analysis are readily available in existing sources.

The basic idea is that media systems that provide better information to citizens are more likely to be associated with knowledge gains. It is considered generally desirable that the media provide high quality information (defined as volume, depth and complexity of political information that the media convey).² Nevertheless, here we take a broader view and look at how the nature of the media information flow can fulfil better its information role in the constrained situation of citizens' diverse desire and capacity to engage with political news/information. Thus we do not attempt in this paper to assess the information quality of media outlets in terms of detail and accuracy of information, unlike Schmitt-Beck and Voltmer (2006, 2007). We operate at an even higher level of abstraction, at the systemic level, as noted above, at the level at which debates in media policy take place, and look at what could be called access, ownership, targeting and fragmentation. Better information means access to more information (a) and to more diverse information (b, c, d). The discussion on diversity is not at a very detailed or complex level here

¹ The fact that one country can fall in two cells of the Hallin and Mancini typology leads Norris and Inglehart (2007) to reject its use in their paper.

² In other words the amount and the degree of 'intellectuality' in their style of presentation (Schmitt-Beck 1998: 235).

but is refers to source diversity viewed in relation with distinct ownership (possibly associated to alternative journalistic cultures) and the differential impact of commercial and publicly owned television (b) and as numeric diversity (c, d). The latter is seen either purely as fragmentation of the media markets (c) or fragmentation associated with external diversity or based on political parallelism, political targeting or audience selection/homogeneity.

(a) Access to mass media, or similarly with Hallin and Mancini (2004) the “development of media markets” in its dimension strictly related to politics refers to the (average) extent to which citizens expose themselves to political coverage on mass media, both during election campaigns and in general. Although interpersonal communication can be a valuable, flexible and conveniently customized source of information, we would nevertheless expect that people attending to news media are, *ceteris paribus*, a bit more informed than their peers. The reason for this may be genuine learning from the media, or just selective exposure by the people who are already more interested, more knowledgeable and better equipped to learn new things about politics from just about any source. If the first is the case, then one would expect that the information level of the population rises as exposure increases. If, however, selective exposure drives the individual-level relationship between knowledge and exposure, then one would probably not expect it to replicate at the aggregate level.³

(b) If the first dimension emphasizes the value of access and mere exposure, the second looks at the relevance of diversity, here as derived from different ownership seen as associated with different “legitimizing creed of media institutions” (Blumler and Gurevitch 1995) or in other words distinct type of journalistic culture between the commercial versus public broadcasting orientation of media. It has been argued time and again that commercial media are less conducive than public broadcasting to the creation of an informed citizenry (Aarts and Semetko 2003, Dimock and Popkin 1997, Patterson 2003, Prior 2003, Robinson and Levy 1986, Schmitt-Beck 1998). This argument usually refers to commercial media’s focus on low-brow entertainment, and can cite some supportive empirical evidence to buttress claims about the bigger positive impact of public broadcasting on citizen knowledge (Aarts and Semetko 2003). However, the rise of reality television demonstrates that ‘real things’ – and thus maybe even politics – can be presented in an entertaining way too. It is not impossible to imagine that citizens are better able to learn from infotainment than from an anti-sensationalist public broadcasting (cf. Baum 2003, Zaller 2003, Baum and Jamison 2006) although that claim is disputed (Bennet 2003, Graber 2003; Patterson 2003). At a less extreme level, it is simply possible that commercial television provides the type and packaging of political programming that low-information citizens are more likely to be interested in and likely to learn from as a study of the introduction of commercial television in Sweden has shown (Prat and Stromberg 2006).⁴ Yet, if

³ Our argument about the relationship between the individual and aggregate-level relationships between media exposure and knowledge is similar to Nie *et al.*’s (1996) discussion of the impact of education.

⁴ It may simply be the case that commercial television encourages a different type of professionalism but most probably neither the partisan/propagandist nor the “publicist” due to the commercial interests of the channel, the same logic that make them less likely to be open to state capture as long as there is competition in the private sector (Besley and Prat 2006).

that is the case, for any of the reasons, then the edge of public broadcasting in effectively providing political information may be a matter of a vanishing past.

(c) The effectiveness as information provided of private television may nevertheless be largely due to pluralism and multiplicity of channels. A highly fragmented media scene may undermine the very existence of a genuine public sphere for political deliberation (Prior 2005; Turow 1997), leaving citizens be part of somewhat different worlds of references, facts, and interpretations (Gandy, 2001; Gitlin, 1998; Mutz and Martin 2001). Some argue that such a situation is detrimental for an informed citizenry (Prior 2005). Others, from the economics and political economy side, suggest that quantitative diversity (Votmer 2000) or source diversity (Napoli 1999), *i.e.* simply pluralism of outlets is associated with better governmental accountability (Besley and Prat 2006). Others further suggest, following the same logic as in the case of the private vs. public television, that the niche media of a highly fragmented media scene may be more effective in selecting, organizing and presenting information in ways that make the same information the most readily intelligible, accessible and digestible to people of different taste, interest, attention span and cognitive capability (e.g. Kleijnnijenhuis 1991). Yet, others, especially coming from the fields of economics and communication studies, argue that fragmentation is a market phenomenon largely driven by the link between audience demands and audience targeting by the media (Hamilton 2004) and the patterns of exposure to niche, regional and generalist programming are fairly complex, most people being still exposed to a variety of sources rather than just one even if each is possibly using a different set of sources (Webster 2005). Clearly, the persuasive impact of infotainment media on how their audiences vote is consistent with any interpretation (cf. Della Vigna and Kaplan 2006).⁵

(d) If pluralism has a positive role in knowledge acquisition and informed voting, there are different explanations how it may work. It may well be the case that not any type of source diversity has the same impact on knowledge and informed voting. It may rather be the case that the nature of content diversity is a major factor, that internal diversity (pluralism of opinions within each media outlet) is more valuable than mere outlet diversity possibly associated with external diversity (pluralism at the level of the media system). In this case, fragmentation may follow partisan lines, which is a particular aspect of niche media, namely an overlap between partisan camps and the audience of particular media, what has been previously referred to as press-party parallelism. Such an overlap exists in nearly any democratic systems, but its degree varies quite widely across countries, type of media (electronic versus print), and within the same country over time (cf. Kempen 2006, Schmitt-Beck 2004). Whatever is the cause of such overlaps – press partisanship and the coincidence between regional media markets and geographically defined partisan strongholds are probably the most obvious candidates –, it raises the spectre that more information may not mean better information, but merely the encapsulation of citizens in a particular political camp and the provision of biased information. If political parallelism of this type was found to have some positive impact on mobilization, the bias of the

⁵ Aware of the complex definitional issues regarding the definition of infotainment, for the purposes of this paper the word infotainment is used as a generic term for any kind of programming that might have a more low-brow or entertaining nature as opposed to high-brow, detailed information about social and political matters.

information provided was found to be much higher in case of such externally diverse but internally partisan niche media, with heterogeneous audiences being more important for accuracy than competition (Mullainathan and Shleifer 2005). This may mean that the presence of such a type of niche media may be associated with distinct effects on knowledge and informed voting than on mobilization and participation.

The distinction between more information and better information already takes us to the next section, where we discuss possible indicators of an informed electorate.

2. Practical citizen knowledge

Many previous studies demonstrated that greater political knowledge have a variety of important consequences on political attitudes and behaviour (cf. Luskin 2003). Taken together, they suggest that citizens with a greater stock of whatever political information are more likely than information underdogs to make choices that probably better reflect their underlying preferences. For instance, better informed citizens are more likely to anchor their vote choices in their own issue preferences, ideological orientation and performance evaluations (Andersen *et al.*, 2005; Bartle, 2004; Delli Carpini and Keeter, 1996, 256-8; Gomez and Wilson, 2001; Goren, 1997; Hobolt, 2004; Jacoby, 2006; Lau and Redlawsk, 2001; Lupia, 1994; Luskin, 2003; Sniderman *et al.*, 1990; Sturgis and Tilley, 2004; but cf. Zaller, 2004). In addition, evidence from deliberative polls demonstrates that cycles in collective preferences become less frequent as citizens become more knowledgeable (see Farrar *et al.*, 2006; List *et al.*, 2006). All this provides indirect evidence that as citizens' political knowledge increases, vote choices and political attitudes often – though probably not always – become increasingly more accurate expressions of the policy preferences that people would hold if they were fully informed, and that informed preferences may be more likely to reflect the 'true views' of citizens than their uninformed preferences. The same points are borne out by some formal models and experimental results (McKelvey and Ordeshook, 1985, 1986; Lupia, 1992; Lau and Redlawsk, 2001).

The ability to answer simple factual questions about political life would thus seem to be an adequate dependent variable for our investigation, and we will indeed use below such a variable to examine the impact of mass media exposure on citizen information at the individual level. However, there is a key problem that the literature on the measurement of political knowledge barely addressed and, in our view, did not solve satisfactorily. This is to make the cross-national comparisons regarding citizens' information level possible. What citizens need to know to make informed choices naturally varies from one choice context to another. There is probably no single piece of information that may have identical functional importance across two democratic political systems. Knowing the name of the General Secretary of the UN has a presumably lesser salience in Switzerland than in Palestine, while probably the opposite applies for party placements on the left-right scale. Thus, albeit we see merit in treating party placements on ideological scales as a centrally important indicator of individual-level variance in political knowledge, we do not think, for instance, that the comparison of levels across countries, even if just within the European Union boundaries, is as straightforward as Gordon and Segura (1997) suggest, who used the distance between individual citizens' placement of various political parties

on a left-right scale and a supposed true location of the same parties on the same scale as their indicator.⁶

In fact, we cannot even see a possible common metric that would allow us making comparisons across countries with respect to the degree that citizens answer equally difficult – or equally fundamental – political information questions. One way out of this predicament could be to use multiple knowledge items to compare information levels across countries and to make confident inferences only to the extent that many items of different salience at one place and another consistently return much the same ranking of the populations in questions (cf. Milner 2002; Torney-Purta *et al.* 2001). But, quite apart from the fact that no such cross-national data are available about citizen populations for a big enough number of countries, any measure based on knowledge quizzes remains open to a very important criticism. Research on both information shortcuts (cf. e.g. Lupia 1994) and on the on-line processing of political information (Lodge *et al.* 1989, 1995) suggest that citizens' voting behaviour may be very highly informed even if they cannot answer even the most basic questions about political facts. Indeed, rational ignorance among citizens need not necessarily stop collective outcomes reflect what Downs (1957, 246) called the voter's 'true views' – i.e. 'the views he would have if he thought that his vote decided the outcome'. As Condorcet's jury theorem shows, errors of judgments committed by individual voters may cancel out each other in the aggregate (see e.g. Miller, 1986; Page and Shapiro, 1992; Austen-Smith and Banks, 1996). Moreover, political entrepreneurs, interest groups and news media readily underwrite the costs of political information gathering and dispersion among citizens, and the cues that they provide may suffice to produce seemingly informed voting behaviour even among cognitive misers (Becker, 1985; Lupia, 1994; Popkin, 1991; Wittman, 1989). We expect that mass media characteristics may impact the degree to which citizens face an abundant supply of widely available, easily accessible, and efficient information shortcuts that can help them emulate fully informed voting behaviour.

Hence we propose the match between the way people vote and how they would vote if they were fully informed as one key criterion in judging voters' information level in a cross-national comparison. This criterion has a number of advantages. Votes in national elections are probably as close as possible to being functionally equivalent across democratic systems when it comes to political behaviour and institutions. They are certainly the most basic political choice regularly made by citizens, and establish a straightforward percentage based metric (running from zero to 100 percent at the limits) to assist comparative judgements about how close observed outcomes are to fully informed outcomes. A number of recent works employing a wide range of methods and data suggest that the information shortcuts provided by election campaigns and the aggregation mechanisms of vote counting may fail in helping to emerge the outcome that an informed citizenry would produce, and thus there is space for variation across contexts in the degree to which fully informed citizen behaviour occurs (Althaus, 1998, 2001, 2003; Bartels, 1996; Delli Carpini and Keeter 1996; Fishkin and Luskin 1999; Lau and Redlawsk, 1997, 2001, 2006; Sekhon, 2004). Therefore our analysis relies on a measure of informed voting alongside a direct measure of political information level.

⁶ It is not relevant for our present argument that Gordon and Segura used the mean placement in the sample to identify true party locations. While this is not the best possible solution, our argument also applies against any similar measure irrespectively of how they identify true party locations.

3. Data and measures for the dependent variables

It follows from the above that the kind of analysis that we wish to undertake requires a multilevel analysis in which both individual and aggregate-level relationships between mass media and information level can be examined. In particular, we are interested in how selected characteristics of mass media systems – aggregate levels of citizen exposure to news coverage, the presence of public broadcasting, the fragmentation of the media scene and press-party parallelism – impact either aggregate levels of informed voting behaviour or individual-level relationships between media exposure and citizen information. The data set that we use for the analysis is the 2004 European Election Study, which provides – for 21 member states of the European Union – all the individual-level variables that we need for such an analysis.⁷ Non-voters were excluded from the entire analysis because of the way we created *Informed Voting*, the most important dependent variable in the analysis. We complement these data with a single variable – about the audience share of public television among all television viewers – provided by another source (Djankov *et al.* 2001).

Our dependent variables are *Knowledge* – a relatively conventional individual-level measure of the ability to place parties on issue scales in a knowledgeable way – and *Informed Voting*, which is a measure of whether a given individual voter in the EES sample would have voted in the June 2004 European election much the way at his/her observed information level and if s/he had been fully informed. The simulation of fully informed votes follows Bartels' (1996) model but allows for multiparty contexts and non-linear information effects on the vote. The units of analysis are individual respondents i , weighted by the sample design or demographic weights provided with the EES data set. The simulation models estimate the multinomial dependent variable *Vote* (vote choice in the European election of June 2004)⁸ as a function of a constant a , the *Knowledge* variable that runs from 0 to 1 and is described below, and the interactions of the latter with various exogenous determinants of political preferences – i.e. sex, age, income and so forth (see the full list in the Appendix) indicated as the matrix of X_j independent variables in Equation (1) below:

$$Vote = fn \left(\begin{array}{l} a + b_1 X_1 Knowledge + b_2 X_2 Knowledge + \dots + b_k X_k Knowledge + \\ + b_{k+1} X_1 (1 - Knowledge) + b_{k+2} X_2 (1 - Knowledge) + \dots + b_{2k} X_k (1 - Knowledge) + \\ + b_{2k+1} X_1 Knowledge^2 + b_{2k+2} X_2 Knowledge^2 + \dots + b_{3k} X_k Knowledge^2 + \\ + b_{3k+1} X_1 (1 - Knowledge)^2 + b_{3k+2} X_2 (1 - Knowledge)^2 + \dots + b_{4k} X_k (1 - Knowledge)^2 + \\ + b_{4k+1} Knowledge + b_{4k+2} Knowledge^2 \end{array} \right) \quad (1)$$

The fn linking function is provided by discriminant analysis, and Equation (1) generates estimates of how particular individuals vote at their actual knowledge level and how they would

⁷ Malta did not participate in the 2004 EES study at all, and the Belgian, Lithuanian, and Swedish surveys dropped some of the questions that we rely in the analysis.

⁸ Parties with less than 20 (unweighted) voters in the data set were collapsed into a single 'other candidates' category.

vote if their knowledge level increased to the possible maximum of $Knowledge=1$, but all the b parameters and the X_j variables remained the same.⁹ The total information effect on an individual's vote can then be calculated as

$$InformedVoting = 1 - \frac{1}{2} \sum_{l=1}^m |\hat{\Pr}(V_l | Knowledge) - \hat{\Pr}(V_l | Knowledge^*)| \quad (2)$$

where $\hat{\Pr}(V_l | Knowledge)$ is the expected probability of a vote for the l -th of m parties given the observed value of $Knowledge$, and $\hat{\Pr}(V_l | Knowledge^*)$ is the same expected probability under full information in the sample. Equation (1), omitting as it does any attitudinal determinant of the vote, provides an admittedly noisy estimate of how an individual may vote at any given information level. This measurement problem is inevitable, however, given that any attitude may change as one's information level rises, and thus attitudes cannot enter among the X variables. Importantly, Sturgis (2003) demonstrated that the estimates of possible knowledge-induced opinion derived with Equation (1) fairly consistently correspond to the actual changes that occur in the political opinions of the respondents when they attend a deliberative poll after an initial survey. This gives us a confidence that our *Informed Voting* variable remains a reasonable estimate of citizens' practical political information level in spite of the noisy nature of the estimates. Moreover, Sturgis' finding about the reasonably strong correlation between the aggregate changes of public opinion in a deliberative poll with the aggregate changes predicted with the help of this type of simulation models also gives us confidence in making the sample means of this individual-level *Informed Voting* variable our estimate of the cross-national differences in how informed citizens of different countries are.

The *Knowledge* variable sums up the 'truth values' of the respondents' placement of major political parties on eleven-point left-right and pro- versus anti-European integration issue scales.¹⁰ The estimation of truth values reckons that different respondents of equally high knowledge may place the same parties differently on the scales depending, for instance, on their own partisanship, or their idiosyncratic interpretation of the scale and its endpoints. Therefore, those aspects of the responses that may reveal more about idiosyncratic political views than knowledge were disregarded in two ways. First, the absolute placements of individual parties were replaced with relative placements involving pairs of parties. All responses regarding each pair were recoded into just four categories: (1) party A is to the left (or the more Euro-skeptic side) of party B; (2) party A is to the right (or more pro-integration side) of party B; (3) party A and party B have the same position; or (4) the respondent did not answer the question, or responded with a 'do not know'.

Second, since party placements on issue scales are eminently disputable questions in everyday political discourse, the truth-value of each answer was conceptualized here as a matter of degree, revealed by the extent to which a maximally informed respondent was more likely to

⁹ Note that Sturgis (2003) demonstrated that these Bartels-style estimates of possible knowledge-induced opinion change broadly correspond to the actual changes that occur in the political opinions of the respondents when they attend a deliberative poll after an initial survey.

¹⁰ The placements of small regional parties that were only available for small subsets of the British and Spanish samples were ignored.

give that response than a maximally uninformed respondent. This difference can be estimated by regressing relative party placements on other available indicators of cognitive involvement in the EES surveys, which were: “Thinking back to just before the elections to the European Parliament were held, how interested were you in the campaign for those elections: (1) very, (2) somewhat, (3) a little or (4) not at all?” “How often did you do any of the following things during the three or four weeks before the European election? How often did you ...talk to friends or family about the election: (1) often, (2) sometimes, (3) never?” “To what extent would you say you are interested in politics: (1) very, (2) somewhat, (3) a little or (4) not at all?” The multinomial logit analyses that were carried out for each pairwise comparison of parties on the two scales also included as control variables some socio-demographic characteristics listed in the Appendix as well as dummy variable indicating if, prior to mean-substitution, the respondent had a missing value on one or another of these socio-demographic variables. These controls assure that the estimated truth values are not affected by the fact that the socio-demographic groups that are likely to score high on lexical knowledge variables may share a particular political taste that impacts the parties’ perceived left-right stances.

The results of these multinomial regressions are of no substantive interest here. The relevant yield of these analyses were the predicted probabilities of each of the four response categories for two fictitious respondents: both exactly matching the national sample mean on the socio-demographic variables, but one showing the highest, and the other the lowest possible degree of cognitive involvement (i.e. frequency of political discussion, interest in politics in general and in the EP election campaign in particular). Then, the truth-value of each response category was determined as the difference between its predicted probability for the maximally involved and the maximally uninvolved respondent.

This method of determining the relative truth-value of the responses allows for the possibility that ‘do not know’ or missing answers may not always represent less knowledge than some other responses do (cf. Mondak and Davis, 2001; Mondak and Canache, 2004; but see Luskin and Bullock, 2005; Sturgis *et al.* 2005), and that sometimes there are several equally good answers to the same party placement question. The method also gives a natural weighting of party pairs and scales for the building of the knowledge scale, and uses the same metric across the whole universe of between-party comparisons and response categories. Summing up the respective ‘truth-value’ of the individual responses across all pairwise comparisons available yields a very nearly normal distribution of scores across respondents within most national samples in the EES data set (data not shown). To fully standardize the distribution across the voting populations in the 21 elections – which was necessary given that the sample mean and variance was dependent on the number of parties placed on the issue scales in each survey –, these scores were converted into normal scores constrained to fall in the 0 to 1 range, with a within-sample mean of .5 and standard deviation of approximately .16. This rescaling completed the construction of the individual level *Knowledge* variable that was then used in the simulation of aggregate-level information effects on election outcomes as described above.

4. Independent variables and modelling choices

The independent variables of interest are expected to impact both the cross-national and the individual-level variation in *Informed Voting*, and the individual-level variation of *Knowledge* in interaction with media exposure. Since *Knowledge* is set to have the same mean and variance

within each national sample, we do not model its cross-country variance. Media exposure is measured with two factor score variables referring to television news exposure and newspaper reading, respectively: *Watching Television News* and *Reading Newspapers* (for technical information see the Appendix). Note that these media exposure variables – as all other individual-level data - were centred at their country means when they entered the multilevel models.

The country means of the exposure variables, in their turn, provide our first set of macro-level media system characteristics and describe levels of news exposure in the electorate. They are called *Mean of Watching* and *Mean of Reading*.

Since we cannot make a distinction between commercial and public service media among the newspapers, our second set of macro-variables consists of a single measure. The data for *Public TV* is provided by Djankov *et al.* (2001) and shows the fractional share of public television in the combined audience of all television channels in the given country. Simplistic as it is to equate public service broadcasting with the programs aired by publicly owned channels, the measure nevertheless captures an important dimension of differentiation among European media systems that is – certainly from a normative but to some observers also from an empirical perspective – supposed to be related to the presence of non-commercial, public benefit programming in the air.

Our third set of macro-variables refers to the fragmentation of the mediated political information environments of the voters. It consists of two identically constructed measures: one each for television news and newspapers. These measures are based on EES 2004 survey data and inspired by the Laakso-Taagepera index for the effective number of political parties:

$$EffectiveNP = \frac{1}{\sum_{i=1}^n v_i^2} \quad (3)$$

In the Laakso-Taagepera index v_i , of course, refers to the fraction of the vote received by the i -th party. In the construction of *Effective N of Papers* it turns into the fraction of a national sample who named the i -th individual newspaper as one that they read “regularly” (see VAR070 to VAR104 and VAR259 to VAR280 of the EES data file), and in the construction of *Effective N of TV News* the fraction of a national sample who named the i -th individual news television news program as one that they watch “regularly” (see VAR035 to VAR068 and VAR239 to VAR258 of the EES data file).¹¹ A noteworthy feature of our media fragmentation indices is that the combined audience share of all individual media may – and in the case of television news programs often does – exceed 1 (i.e. 100 percent of the population), or – as is common in the case of newspaper – stay far below 1, especially when a large part of the population do not attend to any of the media in question. It is disputable whether our index should be adjusted somehow to deal with this fact, but in the present version of the paper we decided not to. The reason is that

¹¹ Note that we ignored those responses that were collapsed together into categories like ‘other newspapers’, ‘local newspapers’, ‘foreign television’ and similar aggregate categories. We did so under the assumption that the readership/audience of all individual media lumped together this way must be insignificant when taken separately, and thus they would not make a difference in our indices of media fragmentation.

we see citizens who do not read any newspaper as major contributors to the lack of a shared (printed) information environment in the population. Hence the value of our *Effective N of Papers* index rises above the staggering value of 100 for two countries, namely Greece and Spain. Similarly, we think that the fact that an individual television news program is seen by, say, half of a national electorate may well make a double contribution to creating a shared information environment: first by the fact that so many people see the same program, and second if this large audience is not isolated from, but overlaps with the audience of other news programs in the same country. Our index appropriately acknowledges such double contributions, so much so that the value of the *Effective N of TV News* index falls below one – the theoretical minimum for the Laakso-Taagepera index – in one of the countries included in this analysis, namely Finland.

Our fourth set of macro-variables measures media-party parallelism, i.e. the overlap between the audience/readership of individual media and the electorate of an individual party, and is inspired by the ideas of Kempen (2002a, 2002b, 2006). Our index is again calculated separately for television news programs and newspapers, and sums up the sample standard deviance of the predicted probability of voting for each party *i* in the 2004 European election under a hypothetical scenario of full turnout. The higher the value, the more predictable party preferences in the given context are simply on the basis of which news program (or newspapers) one attends to. The predicted vote probabilities were derived with a multinomial logistic regression in which the only independent variables were a series of dummies showing which newspapers (or which television news programs) the respondent attends to ‘regularly’. The dependent variable in these two analyses – one for the newspapers and one for news programs – was vote choice in the EP election (VAR112). Missing values on the EP vote choice variable (e.g. for non-voters) were substituted with predicted values derived from regressing EP vote choice on the ‘probability of vote’ variables of the EES data set (see VAR115 to VAR128), the squared values of the same variables, and a series of dummy variables showing if the original response to each probability of vote question was not a valid answer.¹²

The final macro variable in our analysis is *Effective N of Parties*, calculated from the survey data at hand and referring to the distribution of respondents on the dependent variable of Equation (1). It enters merely as a control in the analysis of *Informed Voting*, which it necessarily influences because Equation (2) gives an equal weight to any movement between parties, whether those are ideologically similar to each other or not.

All macro-variables entering the analysis were centred at their grand mean in the pooled cross-national sample, and all national samples were given equal weight in the analysis. The statistical analyses were carried out with HLM6 using a hierarchical linear regression model. Except in a single instance noted below, all individual-level variables appeared to have a statistically significant variance in their effects across the 21 countries in the analysis.

The models for *Knowledge* include a few socio-demographic variables as controls, since otherwise the impact of media exposure on knowledge may not be correctly estimated. For the same reason the models for *Informed Voting* control for *Knowledge*. The latter models also control for the *Effective N of Parties*, which we thought may help us keeping under control some

¹² Missing values on VAR115 to VAR128 were substituted with one.

possible spurious relationships between the dependent variable and measures of media fragmentation and media-party parallelism.

Given the close correlation between age and age-squared, we could not estimate random coefficients for both variables at the same time. Instead, we set the impact of age-squared fixed across countries.

5. Empirical analysis

The present results are preliminary explorations waiting for the necessary fine tuning of missing value treatments and robustness checks, to be carried out in future versions (after the plausibility of our measures and research design were tested at a few presentations). Tables 1 and 2 present our models for *Knowledge* and *Informed Voting*, respectively. Most table entries are unstandardized regression coefficients accompanied by the associated robust standard errors and significance levels, but for the random coefficients we also display the (residual) cross-country variance of the coefficient. This cross-country variance is of course not measured directly but estimated under the assumption that it is normally distributed. Thus, for instance, the estimated individual-level effect of *Watching Television News* on *Knowledge* is $0.015 + 0.018*Party-TV - 0.006*Effective\ N\ of\ TV\ News - 0.005*Public\ TV + 0.012*Mean\ of\ Watching$, plus some residual random variance (with an estimated standard deviation of 0.00316) across the 21 contexts. As the significance level associated with the coefficient shows, the residual cross-country variance in the impact of *Watching Television News* on *Knowledge* is not statistically significant, i.e. our model variables give a satisfactory description of why the effect may be slightly different in one country than another. The significant macro-effects on the micro-level coefficient in this case are that of a level-2 constant, *Party-TV*, *EffectiveTVNews* and *Mean of Watching*. The robust positive impact of the level-2 constant suggests that *Watching Television News* always or almost always boosts *Knowledge*. The signs of the other significant coefficients add to this the insight that this positive effect is even bigger than usual where there is a strong overlap between party electorates and the audiences of the different news programs, where the audiences of the different news programs are not very fragmented (i.e. where *Effective N of TV News* is low), and where the electorate is more exposed to television news than the average of the 21 countries in the analysis. In contrast, the estimates about *Public TV* suggest that the impact of *Watching Television News* on *Knowledge* is somewhat reduced, though to a statistically insignificant degree, in the countries where public television has a relatively great audience share.

Reading newspapers appears to have a similarly robust positive effect on the knowledge level of individual citizens, and this effect is not significantly mediated by any one of our macro variables. Just as the above noted impact of watching the news, the newspaper effect too may well be explained in terms of selective exposure, i.e. that knowledgeable people are more likely to attend to news than others. In the case of television, however, at least some hints at a possibly reciprocal relationship are provided by the macro-micro interactions. Indeed it would be hard to tell why the selective exposure of the more knowledgeable would be stronger when the audiences of the different television news programs are rather large and yet above-average segmented along partisan lines. Instead of selective exposure, these findings probably suggest that television programs have a stronger educational impact when they speak to large audiences,

in countries where there is above-average exposure to television, and the programs themselves are watched by a relatively partisan audience.

Table 2 presents our results regarding the determinants of informed voting. Since this dependent variable has valid cross-national variance, here we can also allow media system characteristics directly to impact the dependent variable. These direct effects appear towards the top of the table, as the impact of the macro-variables on the level-1 constant of the equation. That all of these effects are statistically insignificant can be caused by the relatively large number of macro-variables for the modest number of aggregate level units (i.e. countries) in the analysis. However, when we reduce the number of macro-variables in the model, these effects still remain insignificant – except for the theoretically trivial and expected negative effect of the control variable for party system fragmentation (data not shown). Thus, the substantive interpretation that no such direct media system effects exist on informed voting appears sufficiently justified.

What this implies in theoretical terms is that informed voting is only influenced, if at all, by media system characteristics through either of two ways. One is an indirect effect through *Knowledge*, which, as Table 1 showed, might be influenced differently by exposure to television news programs depending on the characteristics of the market of these programs. The other possibility is that media system characteristics influence the probability of informed voting independently of the information level of citizens, but only to the extent that they are exposed to mass media. If that is the case, then we should be able to observe that some media system characteristics mediate the impact of *Watching Television News* and *Reading Newspapers* on *Informed Voting*.

This indeed turns out to be the case. Although the main effect of *Watching Television News* is insignificant, the coefficient does have a significant variance across contexts (data not shown). This variance remains fairly high and statistically significant even after we allow media system characteristics to explain it – see the 0.011 residual standard deviation ($p < .001$) shown in the respective row of Table 2. The fact that this standard deviation is about three times bigger than the standard error of the main effect of *Watching Television News* implies that there may well be some countries where the impact of *Watching Television News* on *Informed Voting* is positive and significant, and there might even be a few where the effect is significant but negative.

The macro-variables in the equation cannot fully explain this variance in the impact of television news exposure on correct voting, but – quite reassuringly about the robustness of our findings – appear to have the same indirect impact here as in Table 1. Namely, although the fragmentation of the television news market appear to reduce the capacity of news exposure to provide useful shortcuts for voters, partisan segmentation of audiences again seems to make a positive contribution to informed citizen behaviour. Similarly to Table 1, the return on television exposure in terms of correct voting is higher in the countries where levels of exposure are above average. At the same time, the impact of public broadcasting is again negative albeit insignificant.

Tentative as they are, what these findings appear to suggest is that television news are better providers of information shortcuts to citizens when they have to address large, but politically relatively heterogeneous audiences, possibly in a context of intense competition with other news programs. The presence of public broadcasting, in its turn, certainly does not advance this aspect of media performance – it might even undermine it. These findings are intriguing and,

if proved robust, may suggest the rethinking of some conventional views about what media systems can contribute best to the quality of democracy.

That such a rethinking may be appropriate is also suggested by the findings regarding the impact of newspapers on correct voting. As will be recalled from Table 1, newspaper readers are more likely to be knowledgeable than other citizens, and to that extent they are also more likely to vote as if they were fully informed (cf. the large positive effect of *Knowledge* in Table 2). However, it seems that newspaper reading also makes a more direct contribution to correct voting than that – at least in some countries. The main effect of *Reading Newspapers* on *Informed Voting* is insignificant – and, a bit counterintuitively, negative –, but has a significant cross-country variance that is partly explained by our media system variables. Again, a strong media-party parallelism and higher levels of exposure appear to make the successful provision of information shortcuts by the media more likely. With respect to newspapers, the fragmentation of the media scene also seems to have such a beneficial effect. This is of course the opposite of what we found about television news programs, but the rather different penetration of the two media in society may probably explain this difference. Increased fragmentation – while the mean level of exposure stays put – may indeed mean different things in the case of television news than newspapers. For the first, the implication is just a more even distribution of market share across a usually small number of competing programs. For the newspapers, however, greater fragmentation at a constant level of mean exposure must mean that more niche products can carve out viable market niches for themselves. If this, as it seems to be the case, has a positive impact on the media's provision of beneficial information shortcuts to the voters, then that, like the findings about the virtues of media-party parallelism before, may also underline that audience-customized coverage may have a competitive edge over a balanced coverage aimed at a heterogeneous following.

6. Conclusions

Our analysis experimented with a novel research design in an attempt at exploring how media system characteristics may influence citizen knowledge. We relied on two separate measures of citizen knowledge, with the first – information level – having a large causal effect on the second – the probability that the person votes as if s/he would vote under full information. Our findings suggest that there is indeed a significant cross-national variance in the impact of television exposure and newspaper reading on both aspects of political knowledge across European countries, and media system characteristics help explaining this variance. Against expectations, public broadcasting appears to have no significant effect on information level. At the same time, it has a significant negative effect – through exposure – on informed behaviour among citizens of equal information level, suggesting that public television is less effective in providing useful information shortcuts than private television channels are.

Levels of exposure do not mediate the impact of exposure on information level – in other words, the returns on media exposure do not decline when more people attend to television news and newspapers. However, the dissemination of information shortcuts is apparently assisted by greater overlap between the audiences of rival television news programs and an increase in newspaper readership. At the same time, we see signs that the fragmentation of newspaper audiences – i.e. a relatively large effective number of outlets vis-à-vis the total number of readers – has a positive direct influence on informed voting, i.e. on the dissemination of effective

shortcuts. This suggests to us that – assuming equal total readership – niche newspapers are better in providing shortcuts than less tailor-made products.

It is in keeping with this last finding but probably against most expectations that the partisan segmentation of television audiences increases the positive effect of television exposure on information level, and it probably increases the chances of informed voting too. The partisan segmentation of newspaper readers has no significant effect on information level but improves the chances of informed voting.

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Table 1: Multilevel model with *Knowledge* as the dependent variable

Effect	Coefficient	Robust s.e.	p-value
Level-1 constant is a function of:			
level-2 constant	0.501	0.001	0.000
Level-1 effect of Discussed EP Election is a function of:			
level-2 constant	0.012	0.002	0.000
+ random variance	(st. dev.=0.00681)		0.347
Level-1 effect of Interest in EP Election is a function of:			
level-2 constant	0.002	0.003	0.516
+ random variance	(st. dev.=0.00987)		0.001
Level-1 effect of Interest in Politics is a function of:			
level-2 constant	-0.045	0.005	0.000
+ random variance	(st. dev.=0.01024)		0.000
Level-1 effect of Sex is a function of:			
level-2 constant	-0.037	0.005	0.000
+ random variance	(st. dev.=0.01702)		0.000
Level-1 effect of Age is a function of:			
level-2 constant	0.002	0.001	0.014
+ random variance	(st. dev.=0.00075)		0.000
Level-1 effect of Age Squared is a function of:			
level-2 constant	0.000	0.000	0.000
Level-1 effect of Education is a function of:			
level-2 constant	0.005	0.001	0.000
+ random variance	(st. dev.=0.00240)		0.000
Level-1 effect of Income is a function of:			
level-2 constant	0.014	0.004	0.004
+ random variance	(st. dev.=0.01393)		0.000

(continued on next page)

Table 1 (continued from previous page)

Effect	Coefficient	Robust s.e.	p-value
Level-1 effect of Watching Television News is a function of:			
level-2 constant	0.005	0.002	0.014
+ Party-TV	0.019	0.007	0.020
+ Effective N of TV News	-0.005	0.002	0.051
+ Public TV	-0.005	0.005	0.354
+ Mean of Watching	0.012	0.005	0.340
+ random variance	(st. dev.=0.00473)		0.360
Level-1 effect of Reading Newspapers is a function of:			
level-2 constant	0.014	0.002	0.000
+ Party-Press	-0.012	0.008	0.166
+ Effective N of Papers	0.000	0.000	0.574
+ Mean of Reading	-0.007	0.005	0.239
+ random variance	(st. dev.=0.00713)		0.000

Notes:

- (1) N=12954 unweighted level-1 cases in 21 countries.
- (2) The data are weighted so that each country has a cumulative weight of 752
- (3) For a description of the variables see Appendix 3.

Table 2: Multilevel model with *Informed Voting* as the dependent variable

Effect	Coefficient	Robust s.e.	p-value
Level-1 constant is a function of:			
level-2 constant	0.387	0.015	0.000
+ Effective N of Parties	-0.012	0.010	0.240
+ Party-Press	-0.079	0.077	0.319
+ Party-TV	0.045	0.144	0.760
+ Effective N of TV News	0.038	0.035	0.291
+ Effective N of Papers	0.000	0.000	0.664
+ Mean of Watching	-0.054	0.073	0.470
+ Mean of Reading	0.008	0.035	0.819
+ random variance	(st. dev.=0.06243)		0.000
Level-1 effect of Knowledge is a function of:			
level-2 constant	0.481	0.046	0.000
+ random variance	(st. dev.=0.17328)		0.000
Level-1 effect of Watching Television News is a function of:			
level-2 constant	0.000	0.004	0.893
+ Party-TV	0.031	0.019	0.112
+ Effective N of TV News	-0.015	0.005	0.012
+ Public TV	-0.020	0.009	0.043
+ Mean of Watching	0.011	0.010	0.314
+ random variance	(st. dev.=0.01117)		0.001
Level-1 effect of Reading Newspapers is a function of:			
level-2 constant	-0.006	0.004	0.170
+ Party-Press	0.035	0.013	0.015
+ Effective N of Papers	0.000	0.000	0.000
+ Mean of Reading	0.021	0.006	0.003
+ random variance	(st. dev.=0.01367)		0.000

Notes:

- (1) N=12954 unweighted level-1 cases in 21 countries.
- (2) The data are weighted so that each country has a cumulative weight of 752
- (3) For a description of the variables see Appendix 3.

Table 3: Descriptive statistics for the variables (weighted data)

Variables	N	Mean	Std. dev.	Min.	Max.
Informed Voting	12954	0.41	0.26	0	1
Knowledge	12954	0.5	0.16	0.01	1
Sex	12954	1.51	0.5	1	2
Age	12954	50.76	16.96	13	101
Age squared	12954	2864.07	1752.92	169	10201
Education	12954	19.39	4.07	6	26
Income	12954	6.31	3.51	-2.08	14.91
Watching TV news	12954	-0.02	1	-2.86	1.35
Reading Newspapers	12954	0.04	0.98	-1.66	1.45

Table 4: Pairwise correlations between the macro variables (N=21)

Variables:		1	2	3	4	5	6	7	8
1. Mean of Watching	R	1.00	0.05	0.06	0.15	-0.02	0.25	-0.13	0.08
	sig.		0.81	0.79	0.51	0.94	0.28	0.58	0.74
2. Mean of Reading	R	0.05	1.00	0.47	-0.29	-0.12	-0.18	0.05	0.20
	sig.	0.81		0.03	0.20	0.60	0.45	0.84	0.39
3. Public TV	R	0.06	0.47	1.00	-0.09	0.12	0.01	0.15	0.17
	sig.	0.79	0.03		0.69	0.59	0.97	0.51	0.47
4. Eff. N of News	R	0.15	-0.29	-0.09	1.00	0.50	0.18	-0.31	-0.45
	sig.	0.51	0.20	0.69		0.02	0.42	0.18	0.04
5. Eff. N of Papers	R	-0.02	-0.12	0.12	0.50	1.00	0.14	-0.29	-0.35
	sig.	0.94	0.60	0.59	0.02		0.55	0.20	0.12
6. Party-TV	R	0.25	-0.18	0.01	0.18	0.14	1.00	0.37	0.43
	sig.	0.28	0.45	0.97	0.42	0.55		0.10	0.05
7. Party-Press	R	-0.13	0.05	0.15	-0.31	-0.29	0.37	1.00	0.28
	sig.	0.58	0.84	0.51	0.18	0.20	0.10		0.21
8. Eff. N of Parties	R	0.08	0.20	0.17	-0.45	-0.35	0.43	0.28	1.00
	sig.	0.74	0.39	0.47	0.04	0.12	0.05	0.21	

Appendix 1: Independent variables in the multinomial regression analyses that determined the “truth-value” of each relative party placement on the left-right and anti- vs. pro-European integration scales:

Indicators of cognitive involvement:

INTEREST IN POLITICS (variable VAR154): responses to “To what extent would you say you are interested in politics?”

INTEREST IN THE EP ELECTION CAMPAIGN (VAR110): responses to “Thinking back to just before the elections for the European Parliament were held, how interested were you in the campaign for those elections?”

FREQUENCY OF TALKING TO FRIENDS AND FAMILY ABOUT THE EP ELECTION (VAR107): responses to “How often did you do any of the following during the three or four weeks before the European election? How often did you ... talk to friends or family about the election?”

Socio-demographic background variables:

SEX: coded 2 for women and 1 for men.

AGE: for most national samples this equals 2004 minus the year when the respondent was born.

Note that the variable was coded slightly differently for France, and completely missing for Luxembourg – a problem that we are yet to solve. Two obviously mistaken values (1856 and 1863) on the year of birth variable in the integrated file were recoded into 1956 and 1963, respectively.

AGE-SQUARED: squared value of the AGE variable.

IMMIGRANT: coded 1 for respondents born outside of their current country of citizenship and zero otherwise.

MINORITY STATUS 1: a dummy variable coded 1 for protestants in Austria, the Czech Republic, Hungary, Ireland, the Netherlands and Slovakia; residents of Scotland in the UK; respondents interviewed in Russian in Estonia; Muslims in France; Catholics in Germany, Latvia; residents of Catalonia in Spain; and zero for all else.

MINORITY STATUS 2: a dummy variable coded 1 for Muslims, Buddhists and Hindu in the UK; residents of the Eastern states in Germany; respondents interviewed in Russian in Latvia; residents of the Basque Country in Spain; and zero for all else.

CHURCH ATTENDANCE: frequency of church attendance measured on a five-point scale.

CHURCH ATTENDANCE SQUARED: squared value of the CHURCH ATTENDANCE variable.

EDUCATION: school leaving age, with the „still in education” recoded into three plus the respondent’s age; and all valid values above 26 recoded to 26.

EDUCATION SQUARED: squared value of the EDUCATION variable.

RURAL: a dummy variable coded 1 for residents of „*rural areas and villages*” and zero for all else.

SELF-EMPLOYED: a dummy variable coded 1 for self-employed respondents and zero for all else.

EMPLOYED: a dummy variable coded 1 for economically active respondents and zero for all else.

WORKS IN AGRICULTURE: a dummy variable coded 1 for respondents employed or self-employed in agriculture and zero for all else.

WORKS IN PUBLIC SECTOR: a dummy variable coded 1 for public sector workers and zero for all else.

INCOME: natural logarithm of household income per capita.

INCOME SQUARED: squared value of the INCOME variable.

TRADE UNION MEMBERSHIP: a dummy variable coded 1 for trade union members and zero for all else.

Note that missing values on the three cognitive involvement variables as well as SEX, AGE, CHURCH ATTENDANCE, EDUCATION, INCOME and the squared versions of these variables were replaced with the sample mean, and eleven separate dummy variables were created to show if the respondent originally had a missing value on each of these variables. These dummy variables entered multinomial regressions alongside with the respective variables that they referred to.¹³

When a variable was completely missing or a constant for a country – as it was the case regarding age and age-squared for Luxembourg, self-employment for Germany, and one or both minority status variables in several countries -, then a random variable was generated to replace it. The random variable was taken from a Bernoulli distribution with a mean of .06, .15, and .15 for the self-employment and the two minority status variables, respectively. In the case of age, the random variable was taken from a uniform distribution with a minimum value of 18 and a maximum value of 88.

¹³ Multiple imputation of missing values could be a more appropriate procedure here but it is not practical in the given situation because of the relatively small number of missing values on the independent variables and the very large number of multinomial regression equations estimated with the variables in questions – 364 equations for the Italian sample alone.

Appendix 2: Independent variables in the discriminant analyses simulating information effects on election outcomes

KNOWLEDGE: a summary measure of how the respondents placed the main political parties in their country on 10-point left-right and pro- vs. anti-European integration scales. For details see the main text and Appendix 2 below.

SEX: see Appendix 1.

AGE: see Appendix 1.

AGE-SQUARED: see Appendix 1.

MINORITY STATUS 1: see Appendix 1.

MINORITY STATUS 2: see Appendix 1.

CHURCH ATTENDANCE: see Appendix 1.

CHURCH ATTENDANCE SQUARED: see Appendix 1.

EDUCATION: see Appendix 1.

EDUCATION SQUARED: see Appendix 1.

RURAL: see Appendix 1.

EMPLOYED: see Appendix 1.

WORKS IN AGRICULTURE: see Appendix 1.

WORKS IN PUBLIC SECTOR: see Appendix 1.

INCOME: see Appendix 1.

Note that for the preliminary analyses reported here the missing values on these variables were replaced with the weighted sample mean among voters, because a listwise deletion of missing values would have undermined our ability to provide valid national-level estimates. Since the missing at random assumption seems appropriate here, we plan to replace mean-substitution with multiple imputation in later versions.

Appendix 3: Independent variables in the multilevel models with *Knowledge* and *Informed Voting* as dependent variables

Measures of individual level media exposure (all centred on sample mean):

Watching Television News: a factor score variable constructed in the pooled-cross-national data set on voters in the EP election, and based on two of the original variables in the EES.

These were VAR034, recording responses to “*Normally, how many days of the week do you watch the news on television?*” and VAR104, recording responses to “*How often did you do any of the following things during the three or four weeks before the European election? ... How often did you watch a program about the election on television: (3) often, (2) sometimes, or (1) never?*” Missing values on the two original variables were substituted with the national mean before the factor analysis.

Reading Newspapers: another factor score variable constructed in the pooled-cross-national data set on voters in the EP election, and based on two of the original variables in the EES.

These were VAR069, recording responses to “*And how many days of the week do you read a newspaper?*” and VAR105, recording responses to “*How often did you do any of the following things during the three or four weeks before the European election? ... how often did you read about the election in a newspaper: (3) often, (2) sometimes, or (1) never?*” Missing values on the two original variables were substituted with the national mean before the factor analysis.

Socio-demographic controls in the models for *Knowledge* (all centred at sample mean):

SEX: see Appendix 1.

AGE: see Appendix 1.

AGE-SQUARED: see Appendix 1.

EDUCATION: see Appendix 1.

INCOME: see Appendix 1.

Note that for the preliminary analyses reported here the missing values on these variables were replaced with the weighted sample mean among voters, because a listwise deletion of missing values would have undermined our ability to provide valid national-level estimates. Since the missing at random assumption seems appropriate here, we plan to replace mean-substitution with multiple imputation in later versions.

Macro-variables:

Mean of Watching: the country mean of the *Watching Television News* variable.

Mean of Reading: the country mean of the *Reading Newspapers* variable.

Public TV: the fractional share of public television in the combined audience of all television channels in the given country in 2005 (which is the most proximate year to 2004 for which the data are available from ADD REFERENCE). Missing data for Luxembourg and Latvia were, for the time being, substituted with our own guesses (zero for Luxembourg and the average of neighbouring Estonia and Lithuania for Latvia).

Effective N of Papers: the fragmentation of newspaper audiences, calculated as

$$EffectiveNofPapers = \frac{1}{\sum_{i=1}^n p_i^2} \quad \text{where } p_i \text{ is the fraction of a national sample who}$$

named the i -th individual newspaper as one that they read “regularly” (see VAR070 to VAR104 and VAR259 to VAR280 of the EES data file). Responses that the EES coding scheme collapsed together into aggregate categories like ‘other newspapers’ or ‘local newspapers’ were ignored in calculating the index.

Effective N of TV News: the fragmentation of television news audiences, calculated as

$$EffectiveNofTVNews = \frac{1}{\sum_{i=1}^n n_i^2} \quad \text{where } n_i \text{ is the fraction of a national sample who}$$

named the i -th individual news television news program as one that they watch “regularly” (see VAR035 to VAR068 and VAR239 to VAR258 of the EES data file). Responses that the EES coding scheme collapsed together into aggregate categories like ‘local channels’ as well as all foreign television channels were ignored in calculating the index.

Party-TV: a measure of the overlap between the audience of individual television news programs and the electorate of an individual party. It sums up the sample standard deviances of the predicted probabilities of voting for each party i in the 2004 European election under a hypothetical scenario of full turnout. The predicted vote probabilities were derived with a multinomial logistic regression in which the only independent variables were a series of dummies showing which television news programs the respondent attends to ‘regularly’. The dependent variable in this regression was vote choice in the EP election (VAR112). Missing values on the EP vote choice variable (e.g. for non-voters) were substituted with predicted values derived from regression EP vote choice on the ‘probability of vote’ variables of the EES data set (see VAR115 to VAR128), their squared values, and series of dummy variables showing if the original response to each probability of vote question was not a valid answer and was therefore substituted in the analysis with one.

Party-Press: the same as *Party-TV* but for newspapers, rather than television news programs.

Effective N of Parties, calculated from the survey data at hand this variable refers to the distribution of respondents on the dependent variable of Equation (1) and is calculated

$$EffectiveNofParties = \frac{1}{\sum_{i=1}^n v_i^2}, \quad \text{where } v_i \text{ is the fraction of the self-reported voters who}$$

recalled voting for the i -th party in the 2004 European elections.