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Is it all about education? A study of the impact of media exposure on political knowledge in Italy

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Abstract

This article investigates the individual predictors of political knowledge by means of a test that takes into account both 'traditional' factors (i.e. education and interest) and media exposure. We argue that, as media level out the knowledge gap between more and less educated and motivated voters, education and interest might be deprived of their role in explaining political knowledge. Empirically, we assess this by looking at whether the impact of education and political interest on political knowledge vanishes when media exposure variables are included in the estimates. Analyses rely on the 2014 European Election Study, selecting Italy as case study and correcting for measurement errors. Results after the correction for measurement errors show that exposure to news about the 2014 European elections on television does have a significant positive effect on knowledge about European affairs, while this is not the case for exposure to newspapers and the internet. Moreover, we find that the impact of education and interest persists also in the model containing indicators of media exposure. This finding confirms that, regardless of the role of media, education and interest are significant predictors of voters' political knowledge about European affairs.

1. Introduction

Scholars investigating the individual determinants of political knowledge have often found that education is the strongest predictor of political knowledge (Bennett 1988, Delli Carpini and Keeter 1996). More recently, there have been a few attempts to revise the relationship between educational attainment and political knowledge (Highton 2009) and to stress the importance of pre-adult causes (Abendschön and Tausendpfund 2017), as well as of personality traits (Rasmussen 2016). Yet, the idea that education is of paramount importance in explaining what people know about politics is still well established in the literature (Grönlund and Milner 2006).

At the same time, political communication research has produced abundant evidence that exposure to news media can affect voters' political knowledge. The key mechanism behind this is that TV viewers, newspapers readers and internet users are more likely to encounter political news than other voters and thus be more knowledgeable about public affairs. In particular, scholars have investigated whether the increasing

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availability of media choice affects citizens' knowledge gap. Two main interpretations have been formulated. On the one hand, the *active learning argument* (Prior 2005) claims that people select their most preferred contents and avoid information they do not find interesting, which suggests a widening effect of media choice on knowledge gap. On the other hand, the *passive learning argument* (Aalberg and Curran 2012) stresses that media consumption is shaped more by situational factors than by personal preferences, indicating that media might instead narrow differences in knowledge among the public. As Shehata (2013, 201) explains, it seems that "due to a lack of strong interest in politics [among the population], information acquisition is primarily based on passive forms of learning". Indeed, there is strong evidence that television works as *knowledge-leveller*, favouring a growth in learning especially among the least politically interested voters (Shehata 2013, Fraile and Iyengar 2014, Shehata et al. 2015). Moreover, along with the interest-based gap, traditional media seem also to reduce the education-based knowledge gap. Indeed, Wei and Hindman (2011) showed that the education-based knowledge gap is significantly large among internet users, and to some extent among newspaper readers, while this is not found for TV viewers. In other words, more highly educated citizens learn more than the less educated from the use of digital media, while this does not apply to broadcast news media.

The recent findings about the narrowing education- and interest-based knowledge gap lead us to question the role of education and interest as predictors of political knowledge. Indeed, as long as less educated and less interested people are able to surmount the knowledge gap by assimilating information – even inadvertently – from the news media, education and interest might be deprived of their role in explaining levels of political knowledge. Against this background, this paper aims to enquire into the individual predictors of political knowledge by means of a test that takes into account both 'traditional' factors (i.e. education and interest) and media exposure (to different media). The insight behind this is that, because of the narrowing knowledge gap, the effect of education and interest on knowledge might be eroded by the impact of other factors, i.e. exposure to television, newspaper and the internet. To test this, in the paper we first run models containing only traditional predictors and then we replicate the analyses introducing three variables of media exposure. The intention is to check whether the effects of education and interest survive (or, on the contrary, vanish) when the variables of news consumption are introduced.

Moreover, since past research has emphasized that getting rid of measurement errors can change the substantive conclusions of the analyses (Bartle 2000, Pirralha and Weber 2014), in this paper we correct the analyses for measurement errors (DeCastellarnau and Saris 2014, Saris and Gallhofer 2014, Revilla and Saris 2013) by means of the Survey Quality Predictor (SQP) software,[1] version 2.1 (Saris 2015). This online platform allows us to easily obtain a prediction of measurement quality of the variables employed in the analyses, enabling us to implement regression analysis with structural equation modelling (SEM) corrected for measurement errors.

[1] SQP is free software available online that enables scholars to obtain a prediction of the measurement quality of survey questions. Saris and colleagues (Saris et al. 2011) have developed it, using data from more than 250 Multitrait-Multimethod experiments carried out in the first 3 rounds of the European Social Survey and 87 experiments carried out by other research agencies and combined with up to 60 characteristics of survey questions (Saris and Gallhofer 2014).

In terms of data sources, we rely on the 2014 European Election Study (EES), regressing political knowledge on a set of individual characteristics. In particular, alongside the impact of education, we seek to test whether exposure to campaign-related information in the four weeks before the 2014 European elections increased voters' political knowledge about European affairs. We select Italy as case study because of its media system characteristics. As Mosca and Quaranta (2016, 4) describe it, "Italy epitomizes the polarized pluralist model where media markets are elite-oriented, newspaper circulation is limited and television represents by far the most important channel for political information; a strong state intervention in the media is in play, while journalists tend to be politically regimented and engage in forms of political parallelism" and also "Italian public broadcasting is highly commercialized to the detriment of information capacity and quality" (7). In the light of this, focusing on the Italian case permits us to put our hypothesis to the test, since the low quality/capacity of the provided information might reduce the effect of media exposure on voters' learning.Alongside the peculiarities of media system characteristics, Italy is an interesting case study also from a political behaviour perspective. In particular, previous research focusing on the study of voters' political cognition in Italy has already questioned the role of education and interest in explaining the formation of sophisticated thinking. Baldassarri and Schadee (2006) have indeed found that, although scholars often operationalize political sophistication as education or interest, "political sophistication - at least in Italy - can be better measured by voter's capability in organizing political information rather than by education or interest in politics" (Baldassarri and Schadee 2006, 464). This suggests that the Italian context represents a relevant case in which to explore and possibly revise the relationship between education/interest and political knowledge.

Results after the correction for measurement errors show that exposure to news about the 2014 European elections on television does have a significant positive effect on knowledge about European affairs, while this is not the case for exposure to newspapers and the internet. Moreover, we find that the impact of education and interest persists also in the model containing indicators of media exposure. This finding confirms that, regardless of the role of the media, education and interest are significant predictors of voters' political knowledge about European affairs.

2. Political knowledge and education

The literature studying political behaviour and public opinion has often linked political knowledge to educational attainment. Most scholars presume the existence of a close connection between what people know and, in particular, university education (Delli Carpini and Keeter 1996). Higher education indeed helps citizens to develop the skills to both retrieve and understand political information. Not only that, as Highton (2009) points out, "the effects of education are theorized to influence sophistication through its effects on social and career paths that subsequently leave people in environments that facilitate the development and maintenance of political sophistication" (1566). In this sense, the mechanism that relates knowledge to education involves both cognitive resources and social opportunities and has influenced the literature since the early sixties (Campbell et al. 1960, Converse 1964). In his seminal work, Converse (1964, 207) defined a belief system "as a configuration of ideas and

attitudes in which the elements are bound together by some form of constraint or functional dependence" and he argued that its level of sophistication is largely a function of the level of political information that a voter has. He also showed that only a minority of the population, the elite, were able to develop an ideological belief system and to understand common political labels such as Conservative and Liberal.

Besides several studies that tried to endorse or confute Converse's minimalistic view of the electorate's capacity (Achen 1975, Nie, Verba and Petrocik 1976, Smith 1989), Luskin (1987; 1990) revised the concept of sophistication, overlapping it with the notion of political expertise. He built a 'sophistication equation', a number of variables that worked as triggers of the individual level of political expertise. He focused specifically on three aspects, arguing that "the conditions that promote any particular behaviour can be grouped under the headings of opportunity, ability, and motivation" (1990, 334). In his equation, interest in politics represented the internal motivation, since interested citizens notice more the political information they encounter and think more about it (Chaiken 1980).

Education was partly motivation, since "in educated society, the blankest ignorance of politics may be a solecism" (1990, 335); partly opportunity, since students are more exposed to political information; partly ability, since education "can sharpen ability" (1990, 341), even though intelligence is better able to grasp this aspect. Moreover, exposure to political information in the mass media (in Luskin's words, both printed and general media) constituted the source of political information; thus, degree of exposure represented the opportunity to be politically knowledgeable. Lastly, intelligence corresponded to cognitive ability, occupation was a source of mobilization (e.g. workers directly affected by the legislation are more motivated to seek information) and gender/age/parental interest in politics were used as control variables. Luskin found that interest and intelligence had major effects on political sophistication, while education and media exposure did not.

A few years later, in their seminal book *What Americans know about politics and why it matters*, Delli Carpini and Keeter (1996) referred again to the idea that political knowledge is driven by abilities, opportunities and motivations. In particular, they argued that "the primacy of formal education as a facilitator of political knowledge lies in its relevance to all the components of the opportunity-motivation-ability triad" (1996, 190). They indeed showed, as many others before them (Neuman 1986, Bennet 1989, Smith 1989, etc.), that education is (one of) the primary causes of political knowledge.

More recently, the literature studying the determinants of political knowledge has investigated both contextual factors (Gordon and Segura 1997, Berggren 2001, Fraile 2013) and individual predictors other than the traditional socio-demographic variables (Rasmussen 2016, Abendschön and Tausendpfund 2017). On the one hand, it has been shown that voters' political knowledge is "a factor of the socio-economic, political and communicational contexts in which citizens develop their daily lives" (Fraile 2013, 123). In this debate, findings are consistent in showing that the complexity of the information environment counts in determining what people can learn about politics (Jerit, Barabas, and Bolsen 2006, Marinova 2016). Moreover, Grönlund and Milner (2006) found that political knowledge depends less on education in egalitarian countries (according to the Gini index) and proportional systems.

On the other hand, research has investigated whether individual predictors such as personality traits (the so-called Big Five) and intelligence could lower the effect of education on political knowledge (Rasmussen 2016). Data showed that this is not the case and that education retains the strongest effect on knowledge even when other predictors are taken into consideration (*ibidem*). Other studies have also tried to revise the relationship between education and knowledge. Highton (2009), for instance, found that attending college has no significant effect on political knowledge and that, in order to explain the existing political knowledge gap, scholars should pay attention to pre-adult causes. Similarly, it has also been illustrated that gender together with socio-economic factors can explain levels of political knowledge and that these differences do not disappear during the first year in school (Abendschön and Tausendpfund 2017).

Yet the debate is still open between those who claim that education is one of the most powerful predictors of knowledge (Grönlund and Milner 2006, Rasmussen 2016) and those who indicate that other variables exhibit a stronger influence (Highton 2009, Abendschön and Tausendpfund 2017). In addition to this, the political communication literature has also contributed to the study of the determinants of political knowledge by inquiring into the effects of media exposure. The following paragraph briefly summarizes the main findings.

3. Political knowledge and media

The political communication literature has looked at how exposure to news media can affect voters' political knowledge, but it has not always produced consistent results. Although in the 1970s and 1980s scholars doubted the role of television as a source of political knowledge (Patterson and McClure 1976), more recent studies have stressed the importance of broadcast (and print) news in informing citizens. In this regard, Chaffe and Frank (1996) have shown that television is indeed a powerful tool, especially for those who are not politically active, and it provides information about the candidates, while the print media tell more about differences in policies between parties.

Subsequent research has generally confirmed these findings (Aalberg and Curran 2012, Fraile and Iyengar 2014, Strömbäck 2016), even though some studies have delivered more pessimistic results (Jensson 2009, Fraile 2011). Yet scholars agree in saying that the growth of political knowledge is associated with watching public service TV, while there is no (or a lower) effect of exposure to commercial TV (Fraile and Iyengar 2014, Strömbäck 2016). Moreover, Drew and Weaver (2006, 38), studying voter learning in US presidential campaigns since 1992, found that "television news, televised debates, and now Internet information are important predictors, or at least correlates, of voter learning of the issue positions of the leading candidates and interest in a presidential election campaign" and that paying attention to newspapers is associated with a higher intention to vote.

Alongside all this, academics have investigated the effect of digital media, but also in this case, research has delivered contradictory results. Some have argued that the use of social media has weak effects on knowledge (Kenski and Stroud 2006, Kaufhold et al. 2010, Groshek and Dimitrova 2011), while others have been more optimistic about the effects on participation and knowledge (Hendricks and Denton 2010, Norris 2001, Papacharissi 2002). By means of panel data, Dimitrova et al. (2011) have shown that different types of digital media clearly differ in how they affect political knowledge and participation. In

particular, only the use of some news websites was found to favour voters' learning (their effect was significant but weak), while party websites and social media did not have any impact.

Besides this, scholars have also investigated the impact of the use of social media on political mobilization. In this regard, Theocharis et al. (2014) argued that Twitter is used for political discussions, but it does not have the effect of mobilizing protest. Gil de Zúñiga and Chen (2019) discussed the importance of social media as a source of discussion and coordination, but also as a possible cause of dissemination of misinformation and fake news. Moreover, Mosca and Quaranta (2016) demonstrated that some forms of non-institutional political action are associated with new diets and social media use (with clear differences between Twitter and Facebook).

Another branch of literature has explored how media widen or narrow the knowledge gap between more and less educated and motivated voters. In this regard, Prior (2005), following the active learning argument, claimed that, because of the wide range of media choice, people who are interested in getting more information become more knowledgeable, while those who prefer entertainment can avoid the news and reduce the possibility of learning about politics. Conversely, Shehata (2013) provided evidence of passive forms of learning, proving the knowledge-levelling role of television.

Analysing the individual growth in knowledge over time, Shehata et al. 2015 confirmed the argument of inadvertent learning by showing that public service channels have positive effects on the knowledge of voters, regardless of their political motivation and news attention. Fraile and Iyengar (2014) demonstrated that exposure to broadsheet newspapers narrows the knowledge gap, whereas public broadcasting does not have the same effect. Moreover, according to Wei and Hindman's (2011, 229) analyses, "the differential use of the Internet is associated with a greater knowledge gap than that of the traditional media". This illustrates that the use of the internet widens the knowledge gap between the more and less educated, while this is not the case for television, and it applies only partially to newspapers.

All together, these findings suggest that exposure to media should have – at least to some degree – an effect on voters' learning about politics. Moreover, it seems that the education- and interest-based knowledge gap is narrowed by the use of television (so far, there is no agreement about the effect of newspapers and the internet), according to a process of inadvertent learning. In the light of all this, we can hypothesize that the effect of education and interest on knowledge is eroded by the impact of media exposure when variables are considered all together in a comprehensive model correcting for measurement errors. This being the case, *we expect to see that the impact of education and political interest on political knowledge about European affairs vanishes when media exposure variables are included in the estimates.* Moreover*, we expect also to see a positive and significant effect of the exposure to information about the 2014 European elections on different media outlets (television, newspapers and internet) on political knowledge about European affairs*.

4. Data

For the analysis, we utilize data from the 2014 EES Voter Study. This dataset is based on probabilistic samples of roughly 1100 people in each country (with the exception of Malta, Cyprus and Luxembourg). In Italy, the sample size is 1091 interviews.

To measure political knowledge, we rely on a battery of three items (Cronbach's alpha=0.45) of political information (see Table 1 for the formulation). Since we want to test how exposure to news media during the 2014 European elections campaign affected political knowledge about European affairs, we select questions of factual knowledge about the EU. In particular, we rely on two strictly EU-related questions and a third item concerning internal politics, which is still linked to the EU campaign.[2] Based on these three items, we compute an additive index, distinguishing between 'Correct' and 'Incorrect' answers and recoding 'Don't know' answers as 'Incorrect' answers.[3] In this way, knowledge maintains all the observations. The variable that results from this computation varies from 0, which refers that a minimum level of political sophistication (respondents answered incorrectly or refused to answer to all the three questions on factual knowledge) to 3, which indicates the maximum level of political sophistication (respondents answered correctly to all three questions on factual knowledge).

As regards the independent variables (see Table 1 for the wording of variables), we include three indicators of campaign-related media exposure before the 2014 European elections, regarding the use of TV, newspapers and the internet. Although we could expect to see that richer media diets positively affect knowledge (the more voters combine the three sources of information, the more they are likely to be knowledgeable), we opt not to sum the three items in an additive index in order to take into account how different media can affect knowledge in various ways. We recode these three variables as 0 if respondents indicate that they have watched or read campaign-related news sometimes or never, and 1 if they indicate that have often been exposed to political news. In this way, we can test the effect of frequent exposure to media *versus* the effect of more sporadic exposure.

The two other main independent variables are education and interest. Interest has simply been reversed to have higher interest at higher values. As regards education, EES does not provide a measure of educational attainment, but instead asks age upon leaving education. For this reason, we have recoded this variable, redistributing the still-studying category to other groups by age. In this sense, we include respondents that are still studying and are less than 19 years old among the 16-19 group (i.e. middle education) and those who are more than 20 years old are included in group 20+ (i.e. high education). No full-time education and those who left schools before 15 are recoded together, while 'Don't know' answers are considered as missing values.

In addition to this, we consider as control variables (according to Luskin's equation, 1990): gender, age and perceived economic situation. For all the dependent and independent variables, we calculate measurement quality in order to correct the analyses for measurement errors. The method of calculating the measurement quality and the procedure of correction are described exhaustively in the Appendix.

[2] Matteo Renzi was indeed particularly active during the 2014 European campaign and we can assume that his name came up frequently in the campaign-related news before the elections.
[3] The reason for this is that we care whether or not a person gave a correct answer, regardless of whether (s)he failed because (s)he did not know or because (s)he was incorrect.

Table 1. English formulation of the questions used in this paper from the EES 2014 survey.

Variable	Question	Answer options
Variables of Political Knowledge (Dependent variable)[4]		
1st item of knowledge	Switzerland is a member of the EU	True False I don't know
2nd item of knowledge	Each Member State elects the same number of representatives to the European Parliament	True False I don't know
3rd item of knowledge	Matteo Renzi belongs to PD	True False I don't know
Explanatory variables		
Gender	Gender of respondent	Female Male
Age	How old are you?	Open-ended
Education	How old were you when you stopped full-time education?	I don't know 15- 16-19 20+ Still studying No full-time education
Perceived economic situation	Could you please tell me where you would place yourself on the following scale? Where '1' corresponds to 'the lowest level in society' and '10' corresponds to 'the highest level in society'.	From 0 to 10
Political interest	You are very interested in politics	Yes, definitely Yes, to some extent No, not really No, not at all I don't know
Exposure to television	In the four weeks before the recent European elections, how often did you watch a programme about the European elections on television?	Often Sometimes Never I don't know
Exposure to newspapers	In the four weeks before the recent European elections, how often did you read about the European elections in a newspaper?	Often Sometimes Never I don't know
Exposure to the internet	In the four weeks before the recent European elections, how often did you read about the European elections on the Internet (websites, social media, etc.)?	Often Sometimes Never I don't know

5. Results

As mentioned above, we run two structural equation models. The first one includes only traditional predictors at the individual level of knowledge, namely interest and education, together with the control variables. We expect to see a positive and significant

[4] Introduction text of the question: "For each of the following statements about the EU, could you please tell me whether you think it is true or false. If you don't know, just say so and we will skip to the next".

effect of education and interest on knowledge. The second model adds also the effect of media exposure to the variables already included in the first model. In this case, we expect to see that the impact of education and interest vanishes since the variables of media exposure (which work as knowledge-leveller) are included. We also expect to see a positive and significant effect of all the three variables of news consumption. Both these models are run twice, before and after correction. The correction for measurement error significantly changes the substantive conclusion of the analyses.

Table 2 shows the results before and after correction for measurement error of the model including only traditional predictors. Even before correcting for measurement errors, education and interest show a positive and significant effect on knowledge. This is in line with the previous findings about individual predictors of political knowledge, as well as with our expectations. After correction, the model gains explanatory power (R^2 increases from 0.10 to 0.20) and we witness also some changes in terms of statistical significance. Indeed, perceived economic situation becomes significant in the model after correction, while it is the opposite for age. More importantly, the positive effect of education and interest is confirmed, and it resists the correction, supporting the idea that these two variables are indeed important predictors at the individual level of political knowledge. By introducing the indicators of media exposure, we seek to test whether education and interest are still able to exert an effect vis-à-vis the levelling action of media.

Table 2. Regression model containing only 'traditional' predictors of knowledge (before and after correction for measurement errors).

Variables	Before correction	After correction
Education	0.16***	0.18***
	(0.033)	(0.034)
Political interest	0.24***	0.40***
	(0.029)	(0.027)
Gender	-0.015	0.010
	(0.029)	(0.027)
Age	0.06**	0.04
	(0.031)	(0.029)
Perceived economic situation	-0.04	-0.111***
	(0.031)	(0.031)
Observations	1091	1091
R^2	0.103	0.208

Note: standard error in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 3 illustrates the results before and after correction for measurement error for the model adding exposure to different media. Before applying the correction for measurement errors, three variables have a significant effect on political knowledge, i.e. education, political interest and exposure to television. The control variables gender, age and perceived economic situation have no significant impact and the same applies to

exposure to newspapers and the internet. As regards the direction of the effects, education, political interest and exposure to TV news are confirmed to be facilitators of voters' political knowledge, being a positive predictor of it. This is in line with the findings of the extant literature. The R^2 for this model is 0.11.

Table 3. Regression model (before and after correction for measurement errors).

Variables	Before correction	After correction
Education	0.152***	0.173***
	(0.029)	(0.034)
Political interest	0.213***	0.37***
	(0.032)	(0.037)
Television	0.099***	0.096***
	(0.033)	(0.036)
Newspaper	0.033	0.031
	(0.034)	(0.036)
Internet	-0.026	-0.055
	(0.031)	(0.033)
Gender	-0.008	0.014
	(0.029)	(0.027)
Age	0.048	0.027
	(0.031)	(0.030)
Perceived economic situation	-0.05	-0.119***
	(0.031)	(0.031)
Observations	1091	1091
R^2	0.114	0.221

Note: standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

After correcting for measurement errors, we mainly want to check whether the effect of education and interest has vanished in the corrected model considering the influence of the media. Contrary to what was expected, education and interest conserve a positive and significant effect also in the corrected model, showing that their role in determining levels of knowledge is not eroded by the impact of different types of media. In addition to this, the analysis shows that TV viewers are more likely to be knowledgeable about politics: exposure to political news about the European election on television does have a positive impact on knowledge about the EU. Yet, this is not true for exposure to newspapers and the internet, whose coefficients remain not significant after correction. This finding is in line with previous research, which has often found a connection between exposure to news on (mostly public service) TV and political learning (Fraile and Iyengar 2014), while the effect of internet usage turns out to be significant only for certain types of websites (Dimitrova et al. 2011). Unfortunately, in our analysis, we cannot distinguish between different sources of internet exposure. Moreover, in the

literature, it has been shown that newspapers provide more complex information than TV channels and therefore do not promote fast learning in the less educated segments of the population (Kleinnijenhuis 1991). This could stand as a partial explanation of the not significant effect of exposure to newspapers.

In terms of control variables, only the perceived economic situation presents a significant but negative effect on knowledge. To understand this finding better, we can rely on previous studies about economic conditions and political learning. Recently, Marinova and Anduiza (2018) dealt with the contradictory effect of the economy on what people know about politics. On the one hand, an objective deterioration of economic conditions should lead citizens to be more prompt to acquire political information. On the other hand, a perceived decline in economic opportunities does instead depress the tendency to retrieve and retain information. This being the case, we should expect self-positioning at a high level of the social staircase (i.e. our indicator of perceived economic situation) to positively affect political knowledge. However, data suggest that this is not the case. An explanation of this unexpected finding can be found in the fact that, if on the one hand people who experience a bad economic situation have more important concerns (Marinova and Anduiza 2018) than learning political facts, on the other hand people who feel they are in a good economic situation simply do not have enough motivation to care about politics. As Luskin (1990) argued, a citizen needs to be in the situation where learning about politics makes the difference to his/her economic condition in order to make the effort to retrieve political information.

Taken all together, in the model after correction these variables are able to explain roughly 22% of the variance of political knowledge. Undoubtedly, we should expand the range of the individual variables and also account for contextual factors in order to better understand what the determinants of political knowledge are in a comprehensive way. Yet the aim of this analysis was to check whether the impact of education and interest persists when media exposure is introduced in the model, or it vanishes as a consequence of the knowledge-levelling effect of media. Our findings suggest that the role of education and interest in positively affecting political knowledge does exist even when media exposure is taken into account. Moreover, following the news on TV favours learning about politics. Yet this does not apply to exposure to newspapers and the internet.

6. Discussion

In this paper, we aimed to revise the relationship between education and political knowledge, focusing on the role of media exposure. The main purpose was to study the impact of education and interest on political knowledge, while information about news consumption is also included in the model. The expectation was that, according to the knowledge-levelling role of the media, the effect of education and interest vanishes when other facilitators of knowledge, i.e. exposure to different types of media, are considered. Methodologically speaking, the correction of the analysis was suggested by previous works that have demonstrated how measurement errors can lead to a mistaken conclusion about voters' political awareness (Achen 1975, Bartle 2000). Theoretically speaking, mechanisms were built on two strands of literature: the first focusing on political behaviour and public opinion and the second related to political communication studies. In

particular, the narrowing knowledge gap hypothesis and evidence about TV consumption as knowledge-leveller have been discussed.

To test this, we focused on the Italian case (characterized by a particular media system where information quality and capacity is questioned) and we ran models with and without indicators of media exposure correcting for measurement errors. Analyses have confirmed that being exposed to TV news about the 2014 European elections increases the likelihood of knowing about European affairs. However, reading the news in the newspapers or on the internet does not positively affect political knowledge. Moreover, contrary to our expectations, the impact of education and interest does persist also in the model containing indicators of media exposure. This confirms that, regardless of the role of the media, education and interest are significant predictors of voters' political knowledge about European affairs. Nonetheless, the positive and significant effect of exposure to television news indicates that, besides the determinants that have already been proposed in the literature (i.e. pre-adult causes, personality traits, information environment, and contextual factors), it is also worth considering media exposure, together with education and other individual factors, as efficient predictors of political knowledge.

It goes without saying that this analysis presents some limits. First, it considers just one point in time and only one country. Furthermore, the set of independent variables used here was limited to individual predictors. This study overlooks any possible contextual effect, although we know that context can affect political knowledge in many different ways (Gordon and Segura 1997, Berggren 2001, Fraile 2013) and other variables at the individual level that could play a role in explaining why people become politically knowledgeable. Further investigations could thus add more independent variables, as well as expand the scope of analysis across country and over time. For example, it would definitely be relevant to study how the relationship between education and political knowledge has mutated over time in Europe, net of a consistent number of contextual and individual variables.

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Appendix: correction for measurement error

The reason why we correct for measurement error is simple: we know that survey questions always bring about measurement errors and correcting for them means being able to trust our results more (DeCastellarnau and Saris 2014). It is no coincidence that other works focusing on political knowledge have already relied on correction for measurement error (Achen 1975, Bartle 2000). In survey research, measurement errors can derive from different sources: the interviewer, the respondents, the mode of data collection, the interview setting, the information system, and the questionnaire. Not accounting for errors implied by these sources means that we might expose our estimates to a series of important distortions. There are two types of measurement error: random and systematic, and both are able to affect the analyses. This is why we should take both into account when we aim to extract conclusions from society based on data provided by surveys (Saris and Gallhofer 2014).

Knowing the size of measurement quality of survey questions is necessary to correct for measurement errors. Obtaining such information is usually an expensive and time-consuming task. However, the software SQP can provide predictions of the size of measurement quality by means of the characteristics of survey questions. SQP allows users to specify (stated more correctly, to code) between 29 to 60 characteristics of survey questions. Based on these codes, SQP is able to provide a prediction of measurement quality using an internal algorithm and thousands of data about Multitrait-Multimethod (MTMM) experiments (Saris and Gallhofer 2014).

Measurement quality is defined in SQP as "the strength between the latent concept of interest and the observed response to the measure or survey question". It is composed of reliability (strength between the true score and the observed variable) and validity (strength between the simple concept of interest and the true score). It varies between 0 and 1. The higher the quality, the better the measurement (Saris and Gallhofer 2014).

A list of the variables' measurement reliability, validity and quality and their descriptive statistics is displayed in Table A. The quality of background variables, such as gender, age and education, was not calculated using SQP since it can only be used for attitudinal questions.[5] For such variables, we employed the reliability provided in Alwin's book (2007). Alwin's reliability measure is comparable to the measurement quality in SQP. It goes without saying that quality of socio-demographic variables is generally very high, even 1 in the case of gender. This means that they are less or not affected by measurement error.

As regards media exposure, political interest, social class and the four factual knowledge items, instead, quality varies between 0.5 and 0.7. In this case, measurement quality was obtained using SQP. Since questions from the EES 2014 were not yet included in the SQP database, we introduced them in the study called 'EES 2014' and the calculation is based on own coding[6] for the Italian formulation of the questions.[7]

[5] That is further explained in Limitation 3: http://sqp.upf.edu/loadui/#L3.

[6] This is publicly available (after registration) at: http://sqp.upf.edu/loadui/#questionList/page:1 by filtering for the study 'EES 2014'.

[7] Since Italy was not involved in MTMM experiments on which the current version of SQP is based, it is not able to provide quality predictions for the Italian case. In this respect, it is important to point out that SQP requires choosing a country for which the prediction is available in order to get an approximation of

Table A. Variables' descriptive statistics and their measurement quality.

Variables	N° of obs.	Min.	Max.	Mean	Std. Dev.	Measurement			Source of Measurement Quality
						Rel.	Val.	Quality	
Gender	1091	0	1	0.52	0.499	-	-	1	Alwin (2007)
Age	1091	18	86	48.038	15.950	-	-	0.994	Alwin (2007)
Education	1057	1	3	2.019	0.765	-	-	0.972	Alwin (2007)
Perceived economic situation	1020	0	10	5.698	1.372	0.747	0.791	0.591	SQP own coding
Television	1086	0	1	0.182	0.386	0.673	0.965	0.650	SQP own coding
Newspapers	1082	0	1	0.113	0.317	0.663	0.954	0.632	SQP own coding
Internet	1077	0	1	0.081	0.274	0.935	0.678	0.634	SQP own coding
Political interest	1079	1	4	2.240	0.836	0.733	0.944	0.692	SQP own coding
1st item of knowledge	1091	0	1	.748	.433	0.651	0.906	0.59	SQP own coding
2nd item of knowledge	1091	0	1	.401	.490	0.653	0.922	0.602	SQP own coding
3rd item of knowledge	1091	0	1	.883	.320	0.657	0.923	0.606	SQP own coding
Knowledge Index	1091	0	3	2.034	0.872	-	-	0.647	Own calculation

Turning to the independent variable, computation of quality has followed a different path. Knowledge is an additive index composed of three items of factual knowledge. SQP only predicts the quality of single questions, not indices or sum scores. Therefore, we implemented the step-by-step procedure described in chapter 7 by DeCastellarnau and Saris (2014). The calculation is thus manually undertaken. The first step consists in obtaining the quality of the items used for the additive index from SQP (as described above). We then proceed with the formula for the calculation of the quality of additive indices, also known as composite score. The quality of the unweighted additive index is defined as (Saris and Gallhofer 2014, 297, DeCastellarnau and Saris 2014, chapter 7):

$$Quality\ of\ the\ additive\ index\ S = 1 - \frac{var(e_s)}{var(S)}$$

Where S refers to the additive index, var(e_s) is the variance of the errors in S and var(S) is the variance of the additive index. The variance of errors is calculated as follows:

$$Error\ variance\ of\ the\ additive\ index\ (S) = var(e_s)$$
$$= \left(1 - q_i^2\right) \cdot var(y_i) + 2 \sum (r_i \cdot m_i \cdot r_j \cdot m_j)(s_i \cdot s_j)$$

Where:

- q^2_i is the measurement quality for each indicator of the index
- $var(y_i)$ is the variance of each indicator of the index
- $r_{i,j}$ is the reliability of each indicator of the index, where j≠i

the measurement quality. That is further explained in F.A.Q. 5 : http://sqp.upf.edu/loadui/#5. Therefore, in this case, coding has been based on Italy, using Italian as language of reference, and we employed France as the country for the prediction.

- $m_{i,j}$ is the method effect (computed as $\sqrt{1-v^2}$, where v is the validity) of each indicator of the index, where j≠i
- $s_{i,j}$ is the standard deviation of each indicator of the index, where j≠i

The result is the measurement quality of the composite score composed of the four items of knowledge, whose value is 0.647.

Using the information about the measurement quality, we ran a SEM regression analysis with correction for measurement errors. To do so, we transformed the observed correlation matrix (Table B) by subtracting the common method variance from the variables that share the same method and replacing the variances in the diagonal by the measurement quality. Thus, the correlation matrix becomes a covariance matrix (Table C) and is used as input for the new regression corrected for measurement errors.

Table B. Observed correlation matrix, input of the regression before correction.

	Knowledge	Gender	Age	Education	Economic situation	Interest	TV	Newspapers	Web
Knowledge	1								
Gender	-0.05	1							
Age	0.02	0.03	1						
Education	0.19	-0.01	-0.34	1					
Economic situation	0.06	0.01	-0.07	0.38	1				
Political interest	0.28	-0.15	0.08	0.27	0.19	1			
Television	0.21	-0.10	0.04	0.20	0.13	0.36	1		
Newspapers	0.17	-0.14	0.04	0.22	0.14	0.32	0.46	1	
Internet	0.10	-0.11	-0.08	0.17	0.07	0.31	0.32	0.36	1

Table C. Covariance matrix, input of the regression after correction.

	Knowledge	Gender	Age	Education	Economic situation	Interest	TV	Newspapers	WEB
Knowledge	0.64								
Gender	-0.05	1							
Age	0.025	0.03	0.99						
Education	0.19	-0.01	-0.34	0.97					
Economic situation	0.06	0.01	-0.07	0.38	0.59				
Political interest	0.28	-0.15	0.08	0.27	0.19	0.69			
Television	0.21	-0.10	0.04	0.20	0.13	0.36	0.65		
Newspapers	0.17	-0.14	0.04	0.22	0.14	0.32	0.36	0.63	
Internet	0.10	-0.11	-0.08	0.17	0.07	0.31	0.07	0.26	0.63