

# **The impact of political sophistication and motivated reasoning on misinformation**

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## **Abstract**

The debate around political misinformation is gaining increasing relevance among the general and academic audience. If a large body of work is devoted to understanding the mechanisms of diffusion of inaccurate/false news contents (especially on social media), few studies have focused on the individual mechanisms by which people believe in those news. We look at the interplay between two mechanisms: partisan motivated reasoning and political sophistication. While previous literature suggests that political sophisticates are *more* affected by motivated reasoning, we hypothesize that in the case of character-related misinformation the opposite is true. By using an on-line survey experiment administered to a sample of Italian citizens, we compare the perceived plausibility of real and inaccurate news contents consistent with different political leanings. Our results show that people tend to perceive all partisan-consistent news as more plausible, but political sophisticates are better able to tell real from false news. We conclude that while political information is generally affected by motivated reasoning, political sophistication can effectively reduce citizens' chances to fall for false information.

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## Introduction

Electoral democracy stands on the assumption that citizens are well-informed about the relevant political facts (Berelson et al., 1954).<sup>1</sup> Yet, decades of research on political information in Western democracies have shown that this assumption is hardly met. A large body of literature has been devoted to investigating the lack of political information in the mass public and its implications (e.g. Althaus, 2003; Arnold, 2012; Bartels, 1996; Delli Carpini and Keeter, 1996; Hobolt, 2007). More recently, scholars have focused their attention to political *misinformation*, the tendency of people to hold false beliefs about political facts (see Flynn et al., 2017; Kuklinski et al., 2000) and *disinformation*, the spread of false news with the deliberate intent to mislead the public (Wardle and Derakhshan, 2017). These phenomena have become particularly salient over the last few years due to the increase in prevalence and relevance of “fake news”, fabricated news stories that mimic the form of journalistic news (Lazer et al., 2018; Pennycook and Rand, 2018).<sup>2</sup> Due to its pervasiveness, the spread of false information has been qualified as a potential threat to democracy in a recent report by the UK House of Commons (2018). Political communication scholars are devoting much attention to

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<sup>1</sup> A previous version of this paper was presented at the Pomlab seminar, University of Milan, in January 2019. We thank Paolo Segatti and Cristiano Vezzoni for letting us include the experiment in a wave of the ITANES online panel survey, and Silvia Keeling for her help with data management. All materials to reproduce the analyses reported in the paper can be found at: <https://doi.org/10.7910/DVN/GZH5L9>

<sup>2</sup> Three conceptual clarifications are necessary. First, in the common usage (see Wardle and Derakhshan, 2017), disinformation is a subset of misinformation characterized by the deliberate intent to *cause harm* of the source agent of the message. Since here we are focusing on the receiver of the message (the public) we will use the more general term “misinformation” in reference to the state of holding inaccurate beliefs, irrespective of the intention of the source agent. Second, while the general concept of misinformation implies both believing in false facts and *not* believing in true facts, we limit our focus here to the first instance, which is the one more closely related to the diffusion of false political information. Third, the concept of “fake news” overlaps to a great extent to the one of “rumor”, “urban legend” or “myth”, with the important difference that whereas rumors (or legends, or myths) *might* be true, fake news are by definition false. We note however that in the literature the terms are usually treated as synonyms.

several aspects of dis/misinformation, including the prevalence of false news (especially on scarcely controlled public spheres, such as social media and, more in general, the internet, see Alcott and Gentzkow, 2017; Vosoughi et al., 2018), their patterns of diffusion (Guess et al., 2019), and the resistance of misinformed people to fact-checking and corrections (Nyhan and Reifler, 2010; Porter et al., 2018; Hameleers and van der Meer, 2019).

Although scholars have devoted great attention to both political information in general and misinformation in particular, the link between the two remains unclear. A robust finding in political research is that the most informed citizens are also the most likely to incur in motivated partisan biases (Lodge and Taber, 2013), which are in turn the same biases that are found to drive people's likelihood to hold false beliefs (see Flynn et al., 2017). Thus, given prior research, we should expect more informed citizens to be more likely to express partisan-consistent misbeliefs (see Miller et al., 2016 for a recent example of this phenomenon). However, many false news that citizens are exposed to are simple gossip stories that mean to affect the public perception of a politician's character, by portraying her/him as evil or incompetent, or as extraordinarily good. While most research focuses on *policy-based* misinformation (like climate change skepticism, see e.g. Kahn, 2013; Tesler, 2018), *character-based* misinformation (that is, a misbelief about a politician's personal integrity or competence) might work differently. Building on recent research in cognitive psychology (Pennycook and Rand, 2018) we theorize that integrating this type of information into one's own set of beliefs does not require more political sophistication, but on the contrary, it is hindered by it. We hypothesize that political knowledge can therefore reduce the impact of motivated reasoning on beliefs in inaccurate news stories.

By employing a randomized survey experiment on a sample of Italian residents, we investigate the individual mechanisms affecting the perceived plausibility of political false news. We compare a mechanism based on *partisan motivated reasoning* to one based on *analytical reasoning*, reflected by political sophistication. Our results show that the most important characteristic in being able to distinguishing a real from an inaccurate news item is the level of sophistication (measured with political knowledge) that one has, regardless the partisan-consistency of the news. Our contribution is twofold. First, we contribute to the conceptual debate on misinformation by introducing the distinction between issue-related and character-related false news. Second, by focusing our investigation on the latter, we present a case where political sophistication does not intensify the impact of directional motivations on misinformation.

## **Background and hypotheses**

Belief in inaccurate news stories is a special case of political misinformation. Scholars have studied citizens' tendency to hold false beliefs over a plethora of policy issues such as the state of the economy (Bartels, 2002), climate change (Kahan et al., 2012), public health (Berinsky, 2017), vaccines (Nyhan et al., 2014), gun control (Aronow and Miller, 2016), and welfare (Kuklinski et al., 2000). The two main explanations for why citizens hold inaccurate political beliefs focus on *partisan motivated reasoning* (PMR) and *dual process reasoning* (DPR) (Lodge and Taber, 2013; Kahan, 2013; Pennycook and Rand, 2018). According to the PMR model, people are likely to believe in false information when it confirms their pre-existing partisan preferences (see Flynn et al., 2017). When individuals interpret new information, they may be motivated to reach accurate conclusions (accuracy goals), or to defend their

own prior beliefs and identities (directional goals). In politics, where directional motivations are dominant, people engage in various types of biased information processing, like accepting uncritically arguments consistent with their own prior views, or challenging arguments disconfirming them (Taber and Lodge, 2006). PMR does not affect everyone's judgments in the same way. Contextual characteristics (like elite polarization) and individual characteristics (including prior attitudes and identity strength) affect motivated reasoning by altering the balance between accuracy and directional goals in people's mind (Flynn et al. 2017; Leeper and Slothuus, 2014; see also Druckman et al., 2013; Lavine et al., 2012). In sum, according to the PMR model *all* reasoning is motivated, what changes is the type of motivation.

The DPR model posits that reasoning can be fast, based on heuristics and associations (system 1), or slow, based on systematic deliberation (system 2) (see Kahan, 2013; Kahneman, 2011; Pennycook and Rand, 2018). According to this model, relying on party endorsements reflects system-1 reasoning (see also Popkin, 1991), while analytical reasoning, proper of system 2, should prompt a more accurate assessment of information. Indeed, analytical thinking has been found to be associated with greater reliance on self-interest and skepticism about religious, paranormal, and conspiratorial accounts (Pennycook et al., 2015).

PMR- and DPR-based accounts are by no means mutually-exclusive. According to Lodge and Taber's (2013) "John Q. Public" model, political perceptions and opinions are rooted in quick unconscious affective responses that are later rationalized into logically coherent conscious narratives. In other words, citizens' political beliefs are largely based on system-1 responses prompting directional motivations, while system-2 reasoning does the "dirty work" of providing a post-hoc rationale to them. One implication of this model is that more sophisticated partisans are better able to process

new information in a way that is consistent with their preferred political narratives. This prediction has found consistent empirical support (see Flynn et al., 2017) leading scholars to talk of a "paradox" of political knowledge: while democratic citizens need to be informed to make sense of the complexity of politics, in practice more informed citizens are also those that reason in the most biased way (Jerit and Davies, 2018).

Do these theoretical arguments apply also to people's belief in the false information circulating on social media nowadays? Most studies finding evidence of sophistication exacerbating partisan motivated reasoning look at misperceptions of policy issues (see Kahan, 2013; Kahan et al., 2012) or attitude formation (Taber and Lodge, 2006). These are complex domains where, indeed, great deliberative power is needed to produce a partisan-consistent response. Many false news, however, are simple gossip stories, and their need to be shocking to catch readers' attention often results in highly implausible headlines. For instance, Horne and Adali (2017) analyze the linguistic structure of a large number of fake news articles, and show that contents are short and repetitive, and do not provide much more information than what appears in the title. As Pennycook and Rand (2018) argue, plausibility might play a stronger role than the partisan direction of news stories when individuals accustomed to analytical thinking evaluate them. Consistently, they find that respondents scoring higher in a Cognitive Reflection Test are less likely to believe in false news items, whether in favor or against their own partisan group. Given the tight connection between cognitive ability and political knowledge (Delli Carpini and Keeter, 1996) we therefore expect the same effect to emerge when the latter is taken into account.

Moreover, many disinformation campaigns do not engage with policy content, but are meant to affect the public image of a politician, either by portraying them as exceptionally good and competent, or evil and incompetent. In a recent unsupervised

content analysis of a large corpus of news, both accurate and false, covered on three fact-checking websites, Torabi Asr and Taboada (2019) show that the most prevalent topic extracted is about "personal stories". In another study, Goldbeck and colleagues (2018) use manual content analysis to analyze a corpus of fake news and satire articles, and find that the most prevalent theme by far (75% in the case of fake news) is "hyperbolic" criticism or support towards a person or a group. In other words, false/inaccurate news stories are more likely to convey character-related information than issue-related information. In fact, this is likely to be the very goal of many dis/misinformation campaigns: not providing facts and arguments to inform functional decisions, but forming impressions of the (real or alleged) intentions of social actors, such as leaders or politicians (see Margolin, 2019). That is to say, many fake news do not manipulate people's perceptions of the functioning of the world, but their trust in the actors who compete for leadership. This may be the reason why pre-existing partisan affiliations have such a strong effect on perceptions of news accuracy: when lacking other personal information, individuals infer other people's trustworthiness from information about their group affiliations (Tanis and Postmes, 2005). However, for the same reason, character-related information is likely to have little bearing on politically sophisticated citizens.

Political sophistication refers to the ability to link together different issues into cognitive networks organized by ideological and party labels (Converse, 1964). This implies finding the underlying association between different pieces of information, as well as distinguishing which of them can bring a relevant contribution to the baggage of knowledge useful for the task of navigating the political domain. However, information about politicians' personal qualities is unrelated to such cognitive networks (Pierce, 1993). As a consequence, any rationalizing effort required to satisfy directional

motivations is unlikely to be fruitful, and the information about the (alleged) candidate's qualities conveyed by dis/misinformation campaigns is likely to be discarded as task-irrelevant. Consistently, Lavine and Gschwend (2008) show that political sophisticates evaluate candidates more based on issues and less on personal qualities. Political experts are also found to value task-relevant candidate traits such as competence over sociability (Funk, 1997), and are less affected by information about political scandals (Funk, 1996). Because directional motivations are weaker in low-salience domains (Flynn et al., 2017), politically sophisticated people should be *less* affected by directional motivations when evaluating the plausibility of a character-related news.

Considering the arguments brought forward, we derive three expectations. First, directional motivations should still affect partisans' judgement *all else equal*, hence we hypothesize that (*H1 - PMR hypothesis*) *citizens are more likely to believe in false news when they portray a politician from a party that they support as positive, or a politician from a party that they oppose as negative*. Second, we expect in general that more politically sophisticated people will be better able to spot when a news is inaccurate. Politically informed individuals should realize that, if a given story is true, evidence for it should be available. Moreover, political sophisticates should be better equipped to spot the implausibility of a news. Hence, we hypothesize that (*H2 - political sophistication hypothesis*) *more politically knowledgeable citizens are less likely to believe in false news than less knowledgeable citizens*. Finally, given the discussion above, sophisticated partisans should be less likely to believe in false news even when they are congruent with their own pre-existing attitudes (unless their stated belief is more expressive than sincere), hence we hypothesize that (*H3 - moderation hypothesis*) *the effect described in the PMR hypothesis is smaller among more knowledgeable citizens and larger among less knowledgeable citizens*.



## Empirical test

### *Experimental design*

We test our expectations using an online survey experiment ( $n = 3,005$ ). Respondents are randomly shown one image comprising a news headline, a picture and a short explanatory subtitle, and are asked to rate the plausibility of the news on a 11-point scale. The introductory text states in all cases that the news was recently circulating on social media. The news content is conveyed by an image, hence the text is non-selectable, and it changes across treatment groups.

*Table 1: Design of the experiment*

	Factor 2: News type		
Factor 1: Real/False	(1) Non-political, Real (n=501)	(3) Against gov, Real (n=501)	(5) Pro-gov, Real (n=501)
	(2) Non-political, False (n=501)	(4) Against gov, False (n=501)	(6) Pro-gov, False (n=500)

The experiment is a 2x3 factorial design, where each respondent is shown only *one* image from one of the six conditions defined in Table 1. This design has one major advantage: by looking at both real and false news, we have a benchmark that allows us to identify the effect of our predictors on two different phenomena. The first is the perceived plausibility of *any* pro-government or anti-government news story, regardless whether it is true or false. This is particularly interesting with respect to our first hypothesis. While the public debate on misinformation tends to focus on the presence of fabricated news, being misinformed may also imply being skeptical about real facts. According to the PMR model, in a condition of pure directional motivations, when presented to a piece of new information, people should follow their own partisan lead

in all cases. Hence, while our main interest here is in people's propensity to believe in false political information, it is useful to see whether PMR affects their judgement of accurate news as well.<sup>3</sup> The second phenomenon of interest is people's ability to distinguish between real and false information. This is a more direct test of our second hypothesis. More knowledgeable individuals should find real news as more plausible, and false news as less plausible, than those lower on political knowledge. We use a between-subject design, similar to the one employed by Pennycook and Rand (2018), which has the major advantage of avoiding that previous news shown to the same subjects affect the evaluation of following news.

Factor 1 refers to whether a news is real or false. Factor 2 refers to the type of news: whether non-political, against the government, or in favor of the government. The real news are minor news stories found on websites of mainstream newspapers. The misinformation items have been made up for this study.<sup>4</sup> In general, *all* inaccurate news items (conditions 2, 4, 6) should be regarded as *less plausible* than the real news items (conditions 1, 3, 5). The non-political news (conditions 1 and 2) serve as control group: neither motivated reasoning nor political knowledge should have any bearing on the perceived plausibility of the false news compared to the real news. By contrast,

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<sup>3</sup> We are very thankful to anonymous reviewer #2 for making this point.

<sup>4</sup> The two non-political news were also used by Pennycook and Rand (2018). The four political news were chosen for their comparability. Given our interest in character-related false news, we chose headlines portraying individual politicians in a positive or negative way, depending on the valence of the news (in favor or against the government). All politicians chosen were well-known at the time of the survey, and all of them were members of the incumbent Democratic Party. However, the topics of the stimuli change among the different conditions. This may create a confound between the nature of the news (whether it is true or false) and its topic. We believe that the minimal content of the stimuli (a headline, a picture, a short subtitle) and their visual uniformity should alleviate this problem. However, this point is important and will be discussed more in detail in the next section. For details on the different stimuli, see Appendix 1.

belief in the other two news types should be affected by motivated reasoning and political knowledge. The false news against the government should be seen as more (less) plausible by supporters of the opposition (government), and the news in favor of the government should be seen as more (less) plausible by supporters of the government (opposition) (H1). Moreover, more knowledgeable respondents should find the false story less plausible no matter what (H2). Finally (H3), we expect an interaction effect between motivated reasoning and knowledge: the effect posited in H1 should be accentuated among low-knowledge individuals, and reduced among high-knowledge individuals.

#### *Data, variables and modeling strategy*

The data come from the 2018 post-electoral wave of the on-line panel component of the Italian National Election Study (ITANES). The interviews were fielded between April 12 and 27, 2018, about a month after the national elections of March 4. The elections have seen a rise of populist parties in Italy and the defeat of the main incumbent party, the left-liberal Democratic Party (*Partito Democratico*, PD), leading the government with Prime Minister Paolo Gentiloni. After about three months of stalemate, a new government, guided by a coalition between the populist Five-Star Movement and the anti-immigrant right-wing League (formerly Northern League), took office on June 1, 2018 (see Baldini and Gilioli, 2018). For our aims, it is important to note that during the fieldwork of the survey, the incumbent was still the PD government.

As pointed out in recent studies, Italy is a country with an average level social media penetration (similar to France and Germany), in which the perils of misinformation and propaganda are clear to the population: a survey by Ceccarini and Di Pierdomenico (2018) shows that about half of the over-18 population recognize to

have been, at some point, deceived by information found on the internet which eventually revealed itself as false or inaccurate. In addition, the Italian context is characterized by a strongly polarized political landscape in which two neo-populist parties (the Five-Star Movement and the League) have engaged in a particularly aggressive communication strategy based also on inaccurate news stories, which seem to have weakly influenced voting behavior at the national elections (see Cantarella et al., 2019). The focus on Italy, thus, extends the scope of empirical research on political misinformation beyond the US, to a context particularly accustomed to misinformation.

The three key variables for our analysis are the perceived *plausibility of the news*, the respondents' *evaluation of the government*, and their degree of *political knowledge*. The plausibility of the news is measured on a scale from 0 to 10, with 0 indicating "not plausible at all" and 10 "completely plausible".<sup>5</sup> The evaluation of the government is also measured on a 0-10 scale, with 0 indicating a completely negative judgment of the government, and 10 a completely positive one. We use this indicator as a proxy for the respondents' support for the government or the opposition, as this is the most direct variable available focusing explicitly on the government.<sup>6</sup> Finally, political knowledge is measured using three items asking for factual pieces of information.<sup>7</sup> We compute an index of political knowledge using an ordinal IRT model, to account for the varying difficulty of the three items (the resulting index has *mean* = 0.001, *sd* = 0.795). We also

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<sup>5</sup> See Appendix 2 for the wording of the relevant questions.

<sup>6</sup> As a robustness check, we also performed the same analyses substituting government evaluation with the respondents' vote choice at the previous election (which took place about a month before the survey). The models are presented in Appendix 4, and show the same substantive pattern as those reported here.

<sup>7</sup> Two items (who elects the President of the Republic, who was the President of the Low Chamber at the moment of the 2018 election) are coded as either correct or incorrect response, the third item (how many deputies are in the Low Chamber) is coded as correct (the exact number, 630), almost correct (a number between 600 and 650), and incorrect. The three items scale fairly well, with a polychoric Cronbach's alpha of 0.78.

take into account a few control variables: the respondents' *level of education*,<sup>8</sup> *age*, and *gender* (a dummy variable with value 1 for males and 0 for females).

Given the complexity of the hypothesized processes, we test our hypotheses using regression analysis, instead of simply looking at differences between group means. We run three regressions, one for every news type, each including a three-way interaction between (1) a dummy variable indicating whether the news is true or false, (2) a variable measuring the respondents' evaluation of the government, and (3) a variable measuring their political knowledge. To simplify the interpretation of the results, we report predictions and marginal effects for the relevant variables.<sup>9</sup>

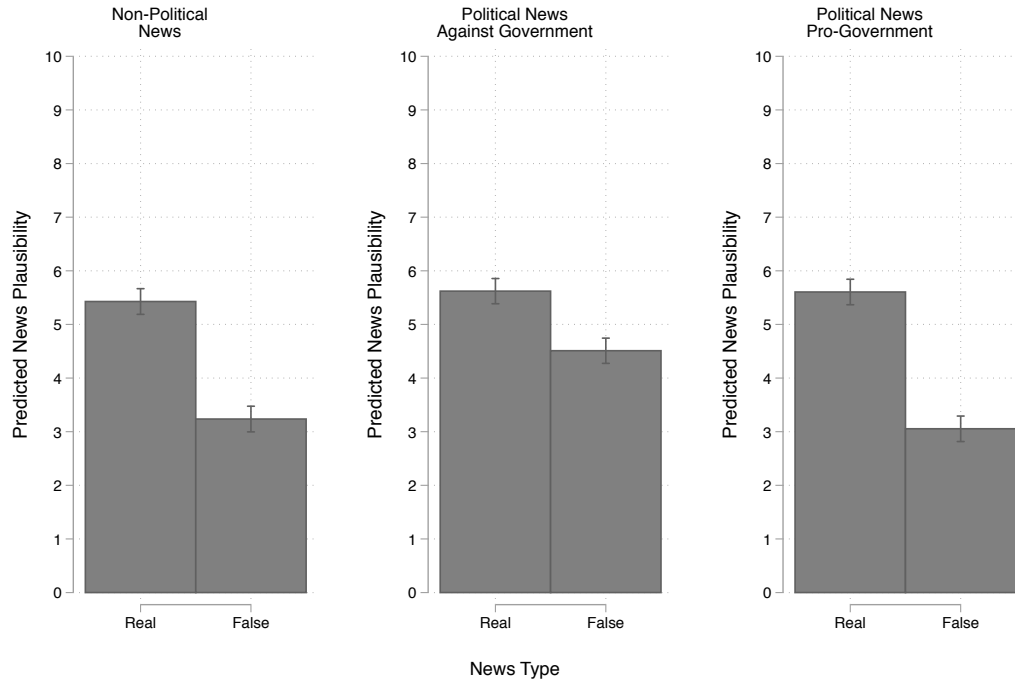
## Results

Figure 1 reports the mean perceived plausibility of all six news by news type. The figure shows that the first treatment works as expected. In all groups, the fake news is perceived on average as less plausible than the real news. The plausibility of the real news is remarkably similar across groups. In addition, while for non-political and pro-government news the average difference between the real and the false news is of about 2.5 points, for the news against the government the difference is of about 1 point.

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<sup>8</sup> The variable is coded in 3 categories: low (up to middle school degree), middle (high school degree), and high (university degree).

<sup>9</sup> See Table A1 in Appendix 3 for the full model results.



*Figure 1: Average news plausibility across groups*

Moving to the full model results, Figure 2 shows the predicted news plausibility of the six news by level of government evaluation. Here results are mixed. As we would expect, government evaluation makes no significant difference for the perceived plausibility of the two non-political news. Looking at the political news against the government, the effect of government evaluation is negative and significant for the false news, while there is no such effect for the real news. This finding is worth discussing. If respondents' perceptions were moved by pure directional motivations, as in the PMR model, those who evaluate the government more positively should find *both* news less plausible than those on the opposite end of the scale. However, the perceived plausibility of the real news is independent from government evaluations. By comparison, the pattern observed for the pro-government news is much more in line with what is expected in case of PMR at work. Here, the perceived plausibility of both news grows as a function of how positively respondents evaluate the government.

The different pattern observed among the two political news types could be due to the news themselves. The accurate news against the government may not be negative enough to trigger a positive emotional response by the subjects who are against the government. However, the topic of the news is very similar to the real pro-government news: both headlines depict a member of the government receiving criticism (in the anti-gov news) or compliments (in the pro-gov news) by the citizens. Another possible explanation, which may be worth further investigation, is that respondents are more cautious to express their belief in a negative news than in a positive one, especially in the context of a survey where they are asked to rate news plausibility and might therefore be expecting a false news coming. At any rate, and in sum, we find empirical backing of a pattern consistent with PMR in most conditions.

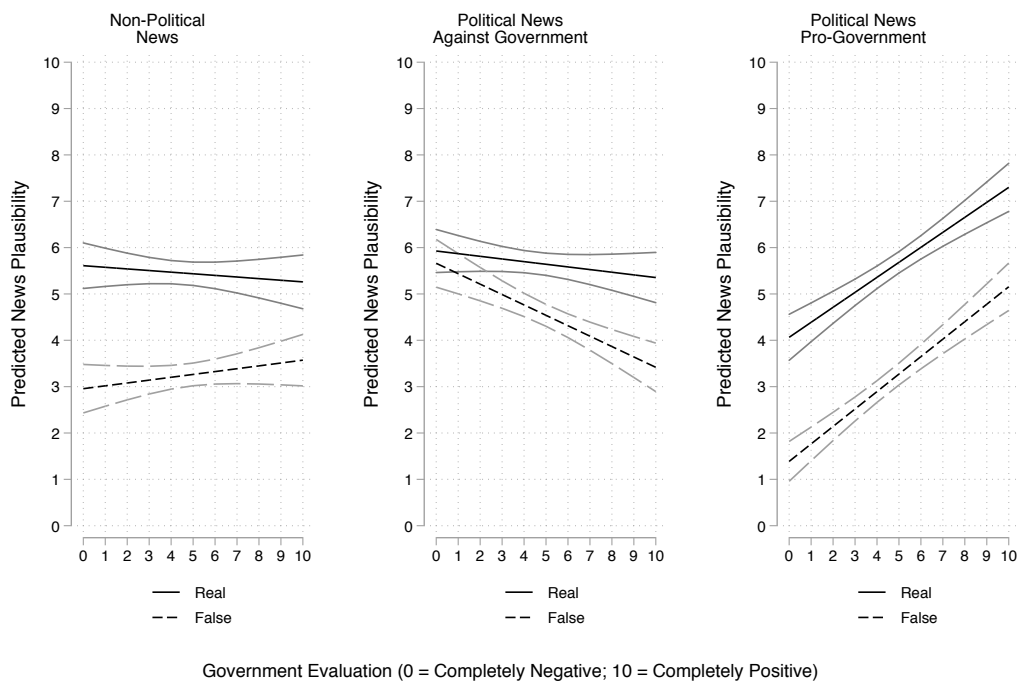


Figure 2: Predicted plausibility of inaccurate vs. real news by government evaluation

Looking at the effect of political knowledge, Figure 3 shows that the more knowledgeable the respondents are, the less plausible they evaluate the inaccurate news item against the government with respect to the real news (in line with H2). Very low levels of political knowledge are associated with perceiving of the inaccurate item as no less plausible than the real content. However, the same effect is not observed for the pro-government inaccurate content. The two lines go in the expected direction (growing plausibility of the real news and decreasing plausibility of the false news as a function of knowledge), but the effect is not statistically significant. Moreover, the inaccurate news is always rated as less plausible than the real news, irrespective of the degree of political knowledge. Hence, even here, we find only partial validation of our hypothesis.

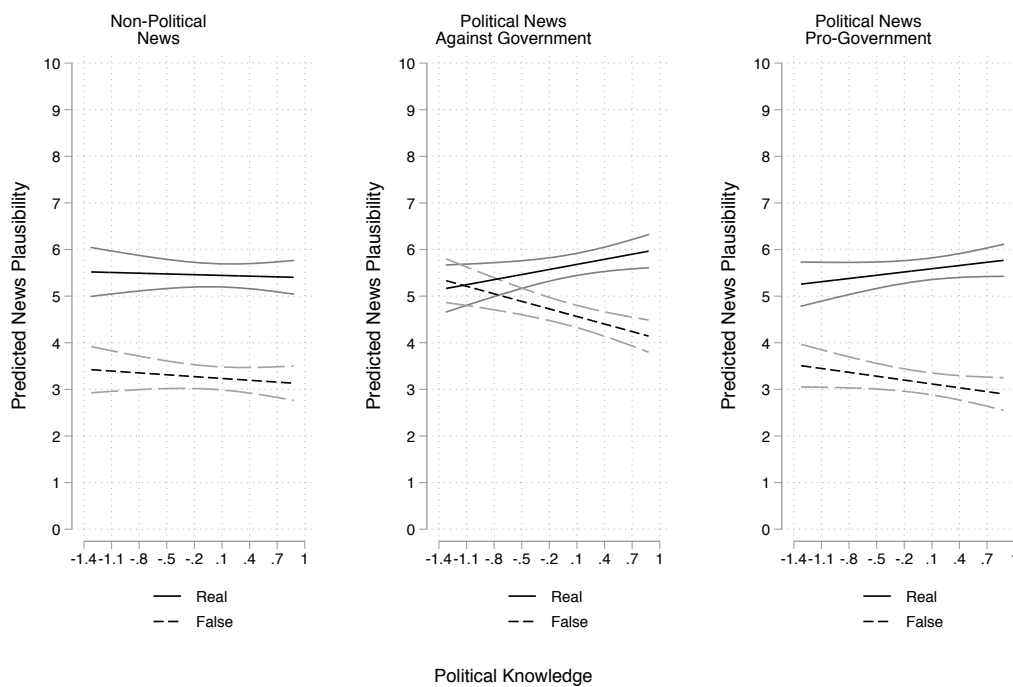
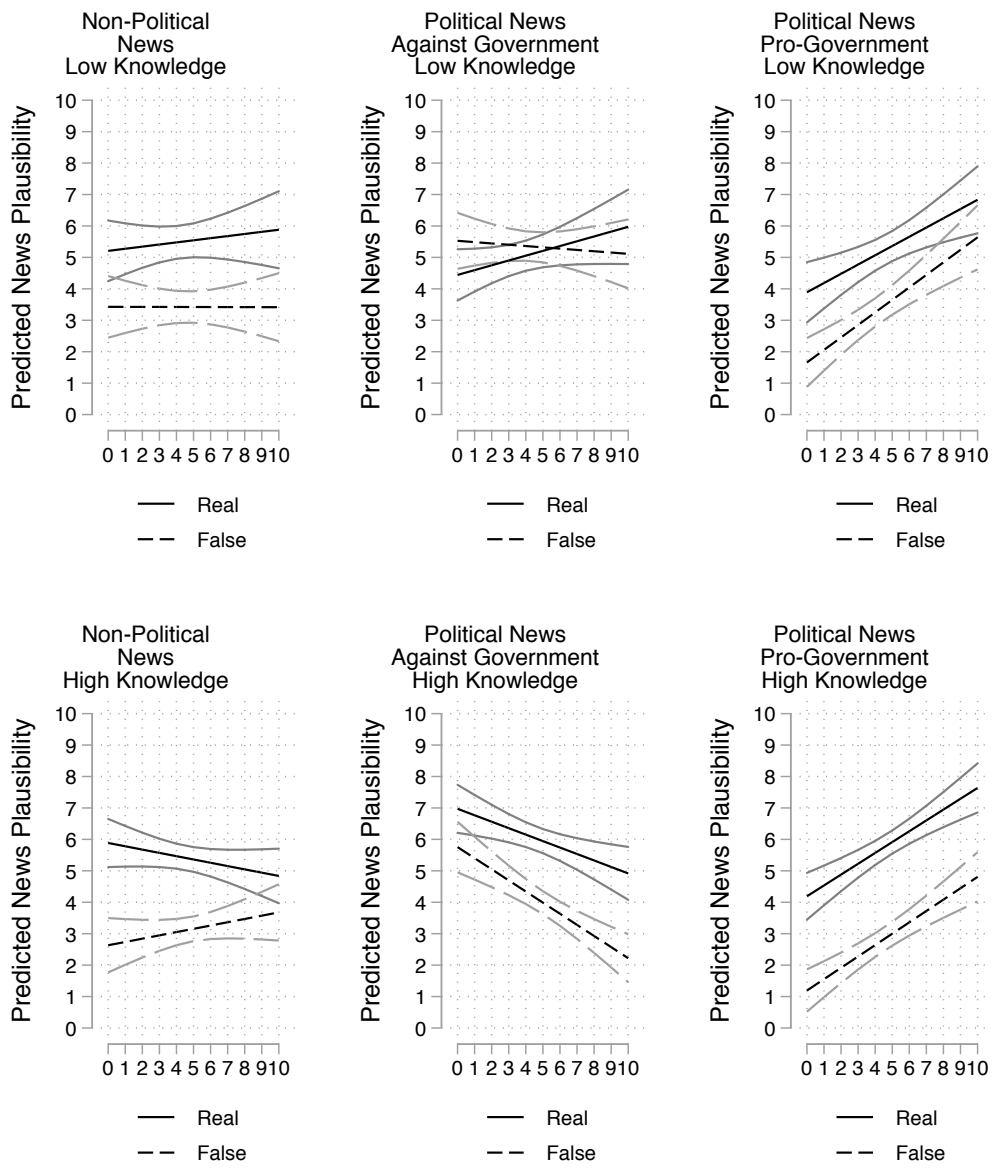


Figure 3: Predicted plausibility of inaccurate vs. real news by political knowledge





Government Evaluation (0 = Completely Negative; 10 = Completely Positive)

*Figure 4: Predicted plausibility of inaccurate vs. real news by government evaluation and political knowledge*

Finally, Figure 4 plots the result of the three-way interaction, showing the predicted plausibility of the two news types by government evaluation, for respondents of low

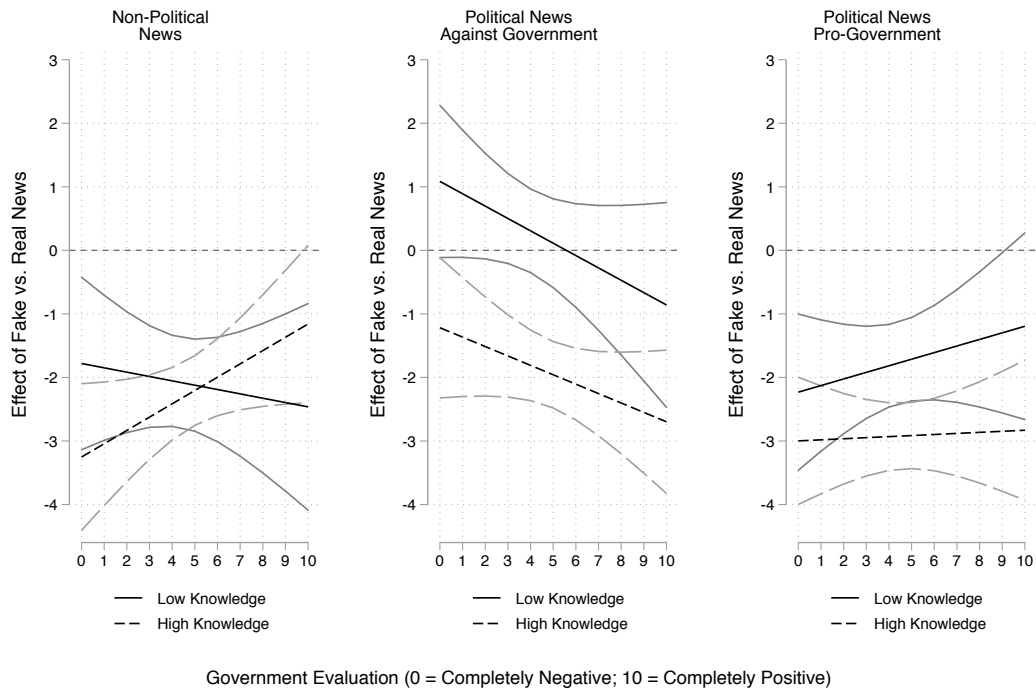
knowledge (minimum value) and high knowledge (maximum value).<sup>10</sup> These results do not confirm our H3, revealing instead a more complex picture. Looking at the political news against the government, the two slopes of government evaluation are negative and significant, signaling PMR at work, but only for high-knowledge individuals. For those with low political knowledge, the perceived plausibility of both news does not change as a function of government evaluation. The result for the pro-government news is slightly different. Here both low-knowledge and high-knowledge individuals show a pattern consistent with PMR: the perceived plausibility of the news grows significantly as a function of government evaluation. However, what changes consistently as a function of political knowledge is the *difference* in perceived plausibility between the real and the false news. For high-knowledge respondents, in both news types, the difference in plausibility between real and false news is greater than for low-knowledge respondents.

Contrary to our H3, the effect of PMR appears to be accentuated (or rather enabled) by political knowledge for the anti-government news. As far as the pro-government news is concerned, knowledge makes less of a difference on the incidence of PMR. However, according to the theory, political sophisticates are no more likely to take a false news as true when it fits their partisan preferences, but instead they are better able to spot whether it is false or not. In this respect, what matters is the ability of

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<sup>10</sup> As far as the full model is concerned, we have performed several checks in order to verify the robustness of the results. Following the suggestions of Hainmueller, Mummolo, and Yu (2019) we have fitted the full model with binning estimators, finding no substantive difference with the model presented in the paper (analyses available in Appendix 6). In addition, we have investigated the significance and magnitude of the three-way interaction, which was part of the hypothesis testing, and the non-significance of which might have led to the concern that the experimental design is under-powered. Post-hoc Minimum Detectable Effect and Minimum Sample Size analyses (available in Appendix 7) lead us to conclude that magnitude of the effect is very small and substantially non-influential in the empirical working of the models.

discriminating between the real and the false news. Here, the two central panels of Figure 4 confirm the expectation: while low-knowledge respondents tend to evaluate the real news and the false news as equally plausible, those with higher knowledge perform better in discerning between the two types of news, by viewing the false news as significantly less plausible than the real one. Although less sharp, results in the right panels go in the same direction. The difference in plausibility between real and false news is about 1 point for low-knowledge individuals, and doubles for those with higher knowledge.



*Figure 5: Marginal effect of inaccurate vs. real news by government evaluation and political knowledge*

This point is more clearly shown in Figure 5, which plots the marginal effect of the news being false vs. real by government evaluation for high and low-knowledge individuals. For what concerns the anti-government news, once we take into account

political knowledge, the effect of government evaluation on the plausibility of the false vs. the real news is no longer significant. However, the difference between more and less knowledgeable individuals remains significant, with the former always rating the false news item as significantly less plausible than the real news (regardless their government evaluation) and the latter having an effect indistinguishable from zero for all levels of government evaluation. The effect is weaker for the pro-government news. Here, both groups of respondents perceive the false news as less plausible than the real news. Again, however, those who are less knowledgeable tend to perform worse in discerning real and false news (although the difference in marginal effects is not significant), with very extreme subjects on the positive end of government evaluation not being able to significantly differentiate between real and false news.

In sum, while political sophisticates are likely to have a biased judgement when confronted to *all* new pieces of information, they are yet more likely to tell the difference between real and false information. This evidence is consistent with both the PMR and the DPR model. The findings make two important points: on the one hand, partisan motivated reasoning does not affect *misinformation* in particular, it affects *information* in general. Political sophistication, on the other hand, does make people better able to tell if a news is false, although it does nothing to alleviate their partisan bias when it gets to evaluate any type of character-related information.

## **General discussion**

The public debate about “fake news” and their role in influencing political behaviors has recently flourished. Political communication research started investigating the topic, mainly by focusing on the mechanisms of diffusion of misinformation (Lazer et al., 2018) and the effectiveness of possible counter-measures

to their spread, such as fact-checking and debunking (see Porter et al., 2018; Hameleers and van der Meer, 2019). However, a pressing question remains whether it really is so easy to spoil the public debate with false information. Much research on political misinformation suggests that *yes, it is*, as long as the false information fits with people's pre-existing (partisan) narratives. The perception of truth appears to be subject to political leanings, in line with much research showing the pervasiveness of directional motivated reasoning in any political domain. We ask in this paper whether the old-fashioned normative adage that good citizens need to be well-informed about politics still holds in the age of political misinformation. While previous research shows that politically sophisticated individuals are better able to rationalize new information to make it fit with their own political preferences or identities, we show that in the case of "character-related" misinformation, more politically-knowledgeable individuals are, all else being equal, better able to spot the implausibility of a news story.

Our findings confirm the idea that partisan motivated reasoning is a powerful bias affecting the way citizens process political information. When confronted to a new piece of information, people use their own preexisting partisan insight to evaluate its plausibility. However, we also find that there is a "truth factor" that allows people to spot when a news is false, and this factor is more visible to political sophisticates. The two processes coexist in a different way than we initially hypothesized. We expected a clash between partisan bias and general knowledge to occur in the field of misinformation. We found that the scope of the former is not limited to misinformation, while this is the case regarding the latter. So does motivated reasoning affect political information? Yes. Does it affect *misinformation* in particular? No, at least with regards to political sophisticates. We could highlight this difference thanks to our empirical design, which includes both real and false information. We believe this is an interesting

finding, as it contributes to make a clearer picture of what is the role of directional motivations and sophistication in citizens' acquisition of new political information, whether true or false.

Our design has one important limitation: the real news and the false news used as stimuli are about different stories, hence there might be a perfect confound between whether a news is true or false and its content.<sup>11</sup> Although this might not be an ideal setup for an experiment, we argue that this is the best possible design we could employ to maintain a balance between internal and external validity, given the subject of the study. First, while different in topic, the news can be regarded as functionally comparable. In all news, the protagonists are well-known politicians from the then-incumbent Democratic Party. Moreover, all news share the same character-based narrative: they all tell a story which highlights the virtues or the flaws of a political character. Additionally, given the minimal textual content of the stimuli, we do not think that the context in which such virtues and flaws are displayed weighs too much in the informational value of the news.

A further argument in defense of this kind of design lies in the nature of the subject matter. A news story is a collection of small pieces of information (which include the main characters involved in the story, their interactions, the setting in which the story takes place, and so on), and false news in particular, in order to look credible, must contain a certain amount of details that shall appear at least vaguely plausible to the readers. In the case of our study, the story is about a politician interacting with somebody else, and the result of such interaction can put the politician under a positive or a negative light. However, for the news to be effective, the interaction must occur in a credible context, which is the topic of the news. While it is relatively easy to make up

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<sup>11</sup> We thank reviewer #2 for making this point.

an interaction which makes the protagonist look good or bad, it is much more difficult to do so holding the all other pieces of information constant. In our view, this can be done only with the risk of generating stimuli that are not credible. Imagining a design which allows to manipulate the truthfulness of a character-related news without at the same time altering the content of the news itself seems thus an extremely challenging (if not impossible) task.

### **Concluding remarks**

Political misinformation can distort collective decisions (Brown, 2018) undermining in the long run the functioning of democratic institutions (Bennett and Livingston, 2018; Weeks and Gil de Zúñiga, 2019). While institutions themselves have only recently started acknowledging the problem (see House of Commons, 2018; Wardle and Derakshan, 2017) it is of pressing importance for political communication research to understand the mechanisms governing misinformation to help find a solution. This study aims to contribute to this endeavor in two ways. First, by discussing the distinction between "issue-related" and "character-related" misinformation, we aim at increasing the conceptual clarity regarding the diffusion of false news that appears to be plaguing modern democracies. While debating over concepts may seem to merely distract researchers from more important topics, such as the diffusion and consequences of misinformation (Weeks and Gil de Zúñiga, 2019), we believe that looking at the personal nature of many false news can help positioning misinformation in the wider framework of political persuasion in current times. Political communication scholars have devoted much attention to the "personalization of politics", the process by which political actors, citizens and the media become increasingly focused on the personal characteristics of candidates and leaders (McAllister, 2007). While literature on the

topic is vast, and evidence regarding the relative importance of different traits is mixed (see Adam and Maier, 2010; Rahat and Sheafer, 2007; Van Aelst et al., 2011), we believe that the prevalence of false news stories targeting individual politicians (as shown in Torabi Asr and Taboada, 2019, and Goldbeck et al., 2018) is just another implication of the same process. In this respect, the fact that more politically sophisticated citizens are less likely to fall for false information while, as shown by other studies cited above, they are more likely to hold partisan-consistent misbeliefs on policy matters, reflects the same pattern observed in previous studies of political sophistication and candidate evaluation (Funk, 1997; Lavine and Gschwend, 2008).

Secondly, our study should bring the attention back to the normative importance of political knowledge, even though the *zeitgeist* in behavioral research appears to be that cognitive biases like motivated reasoning are nearly everywhere. Currently, the solution to the problem of online misinformation that is receiving most attention implies identifying and removing false news contents from social media platforms (see Pennycook and Rand, 2019). While this strategy is surely promising, our finding suggests that another potentially effective approach would be to provide citizens with the epistemic tools to identify and avoid misinformation. This could be done for instance in school, by training students on critical thinking and teaching them the basic concepts to navigate the political world. To be sure, this would not completely solve the problem of misinformation, especially when it affects more complex policy topics, as extensively shown by some of the studies cited above. However, it could help reduce the demand for false news, and therefore their presence in the already complex information environment.



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## Appendix 1 - Experimental conditions

### T1: Non-political, Real

Title: *A six-story wave in the Atlantic ocean is the biggest ever recorded*

Subtitle: *Scientists have attributed the huge wave (as tall as a six-story building) to a combination of a cold front in Northern Atlantic between Iceland and...*

(adapted from Pennycook and Rand, 2018)



**Un'onda di sei piani nell'Oceano Atlantico è la più alta mai registrata**

Gli scienziati hanno attribuito l'enorme onda (alta come un palazzo a sei piani) a una combinazione di un fronte freddo nel nord dell'Oceano Atlantico tra Islanda e Reg...

### T2: Non-political, Fake

Title: *The noble gesture of Corona brewery founder: making everyone in his village a Millionaire*

Subtitle: *The entrepreneur Antonino Fernandez, born in the Spanish village of Cerezales in 1917, gave 2mln euro to each resident in the small town...*

(adapted from Pennycook and Rand, 2018)



**Il nobile gesto dell'inventore della Corona: rende tutti i suoi compaesani milionari**

L'imprenditore Antonino Fernandez, nato nel villaggio spagnolo di Cerezales nel 1917, avrebbe regalato 2 milioni di euro a ogni abitante del paesino della provincia...

### T3: Against government, Real

Title: *Protests against Poletti minister during a convention in Turin: «Poletti starves the youth»*

Subtitle: *A group of activists protested against the minister from Gentiloni's government (A/N: the incumbent government when the survey took place) near Hotel Fortino, where a convention of CISL (A/N: a national worker union) is taking place...*



#### Proteste contro il ministro Poletti durante un convegno a Torino: «Poletti affama i giovani»

Un gruppo di attivisti ha contestato il ministro del governo Gentiloni nei pressi dell'Hotel Fortino, dove è in corso un convegno della Cisl nazionale a cui partecip...

### T4: Against government, Fake

Title: *Renzi's shocking reply to an unemployed person: «You are lazy»*

Subtitle: *Striking reply of PD's secretary to an unemployed person from Matera who was asking for more jobs in his region: «The economy is growing and there's also...*



#### La risposta shock di Renzi a un disoccupato: «Sei pigro»

Clamorosa risposta del segretario PD a un disoccupato materano che stava domandando più lavoro sul territorio: «Il paese sta crescendo e c'è anche una cert...



### T5: Pro-government, Real

Title: «Gentiloni, you are great!» a citizen compliments with the Prime Minister during his visit in Modena

Subtitle: The Prime Minister, Paolo Gentiloni, emphasized the importance of government's investments in the rural areas. «Cities are...



**‘Gentiloni sei grande’ un cittadino si complimenta con il presidente durante la sua visita a Modena**

Il presidente del Consiglio, Paolo Gentiloni, si e' soffermato sul valore degli investimenti che il governo sta attuando in favore delle periferie "le città sono una...

### T6: Pro-government, Fake

Title: A collaborator reveals «Gentiloni gives away 90% of his income to charity organizations»

Subtitle: The statement from a collaborator of the PM: «About 90% of the salary Gentiloni gets as an MP and Prime Minister is donated every month to organizations...



**Un collaboratore rivela: «Gentiloni devolve il 90% del suo stipendio in beneficenza»**

La soffiata di uno stretto collaboratore del premier: «circa il 90% dello stipendio da parlamentare e da premier di Gentiloni viene devoluto ogni mese ad associazioni ...

## Appendix 2 - Key variables

### News plausibility

*Quanto ritiene plausibile la seguente notizia?* [How plausible do you think the news is?]

0 = *Per niente plausibile* [Not at all plausible]

10 = *Totalmente plausibile* [Completely plausible]

### Knowledge

1) *Saprebbe dire da chi viene eletto il Presidente della Repubblica?* [Do you know who elects the President of the Republic?]

[Right answers: deputies and senators; the parliament; the members of parliament; the low and the high chamber. Wrong if response is only low chamber or only high chamber]

Coded as: Right; Wrong; Don't know

2) *Lei sa chi era al momento delle elezioni del 4 marzo scorso il Presidente della Camera dei Deputati?* [Do you know who was the President of the Chamber of Deputies at the time of the elections on March 4?]

[Right answer: Laura Boldrini]

Coded as: Right; Wrong; Don't know

*Saprebbe dire quanti sono, all'incirca, i deputati della Camera dei Deputati?* [Do you know how many members are there in the Chamber of Deputies?]

[Right answer: 630. Almost right answer: between 600 e 650]

Coded as: Right; Almost right; Wrong; Don't know

### Government evaluation

*Come valuta l'operato del governo guidato da Paolo Gentiloni, in una scala da 0 a 10 (dove 0 = 'giudizio completamente negativo' e 10 = 'giudizio completamente positivo')?*

[How do you evaluate the job of the government guided by Paolo Gentiloni, on a scale from 0 to 10?]

0 = *Giudizio completamente negativo* [Completely negatively]

10 = *Giudizio completamente positivo* [Completely positively]

999 = *Non saprei* [Don't know]

### Appendix 3 - Full model results

*Table A1: Full model results*

VARIABLES	(1) Non-political	(2) Against Gov	(3) Pro Gov
Fake news (ref. Real news)	-2.624*** (0.363)	-0.235 (0.350)	-2.671*** (0.334)
Political knowledge	0.294 (0.313)	1.098*** (0.285)	0.130 (0.304)
Government evaluation	-0.639 (0.456)	-0.999** (0.409)	-0.333 (0.397)
Fake news * Pol Knowledge	-0.0315 (0.0487)	-0.0525 (0.0453)	0.323*** (0.0462)
Fake news * Gvt. evaluation	0.0909 (0.0684)	-0.168** (0.0650)	0.0539 (0.0622)
Pol Knowledge * Gvt. evaluation	-0.0746 (0.0608)	-0.156*** (0.0575)	0.0219 (0.0559)
Fake news * Pol Knowledge * Gvt. evaluation	0.120 (0.0863)	0.0201 (0.0801)	-0.0377 (0.0751)
Education	-0.0225 (0.102)	-0.164* (0.0863)	-0.0646 (0.0926)
Age	-0.00525 (0.00583)	-0.0138** (0.00559)	0.000318 (0.00550)
Gender	-0.0117 (0.185)	0.194 (0.173)	-0.0761 (0.173)
Constant	5.920*** (0.487)	6.873*** (0.439)	4.236*** (0.467)
Observations	967	958	949
R <sup>2</sup>	0.142	0.118	0.288

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### Appendix 4 - Alternative specification with vote choice instead of government evaluation

As a robustness check, we also performed the same analyses substituting government evaluation with the respondents' vote choice at the previous election (which took place about a month before the survey). We recoded party choice as a dummy variable with value 0 if the respondent voted for a "challenger" party and 1 if the respondent voted for an incumbent party (this way the variable has the same direction as the "government evaluation" variable).

We grouped vote choice options as follows:

**Challenger:** Go Italy (*Forza Italia*), League (*Lega*), Brothers of Italy (*Fratelli d'Italia*), Us with Italy/UDC (*Noi con L'Italia/UDC*), Five Star Movement (*Movimento 5 Stelle*), Free and Equal (*Liberi e Uguali*), a district candidate of the center-right coalition, a district candidate of the Five Star Movement.

**Incumbent:** Democratic Party (*Partito Democratico*), Together (*Insieme*), Civic Popular (*Civica Popolare*), More Europe (+*Europa*), a district candidate of the center-left coalition.

Table A2: Full model results, alternative specification

VARIABLES	(1) Non-political	(2) Against Gov	(3) Pro Gov
Fake news (ref. Real news)	-2.444*** (0.235)	-0.831*** (0.231)	-2.529*** (0.228)
Political knowledge	-0.145 (0.230)	0.307 (0.219)	-0.143 (0.211)
Voted for incumbent	-0.356 (0.339)	-0.511 (0.316)	1.046*** (0.302)
Fake news * Pol Knowledge	-0.0876 (0.312)	-0.983*** (0.296)	-0.228 (0.290)
Fake news * Voted for incumbent	0.0582 (0.466)	-1.255*** (0.435)	0.247 (0.439)
Pol Knowledge * Voted for incumbent	-0.219 (0.442)	-0.0204 (0.424)	0.821** (0.404)
Fake news * Pol Knowledge * Voted for inc.	1.194* (0.615)	0.203 (0.587)	-0.374 (0.593)
Education	0.0662 (0.129)	-0.0259 (0.121)	0.0607 (0.121)
Age	-0.00437 (0.00688)	-0.0173*** (0.00648)	-7.35e-06 (0.00648)
Gender	-0.0138 (0.212)	0.0723 (0.198)	0.177 (0.202)
Constant	5.716*** (0.558)	6.764*** (0.509)	5.072*** (0.520)
Observations	745	746	770
R <sup>2</sup>	0.170	0.151	0.225

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Figure A1: Predicted plausibility of inaccurate vs. real news for those who voted for the an incumbent or a challenger party

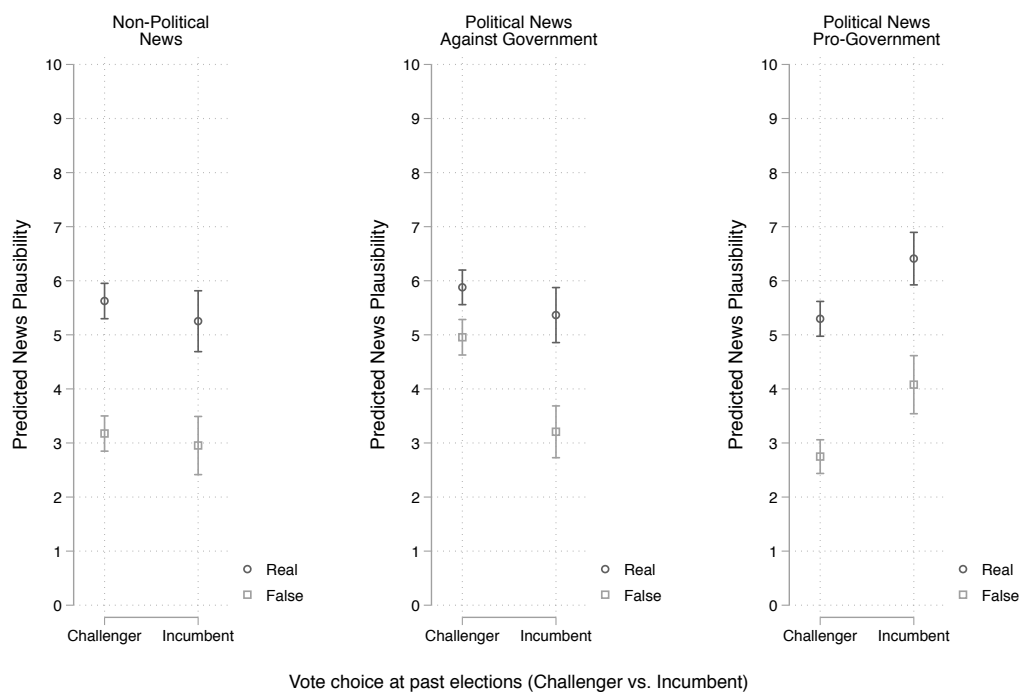
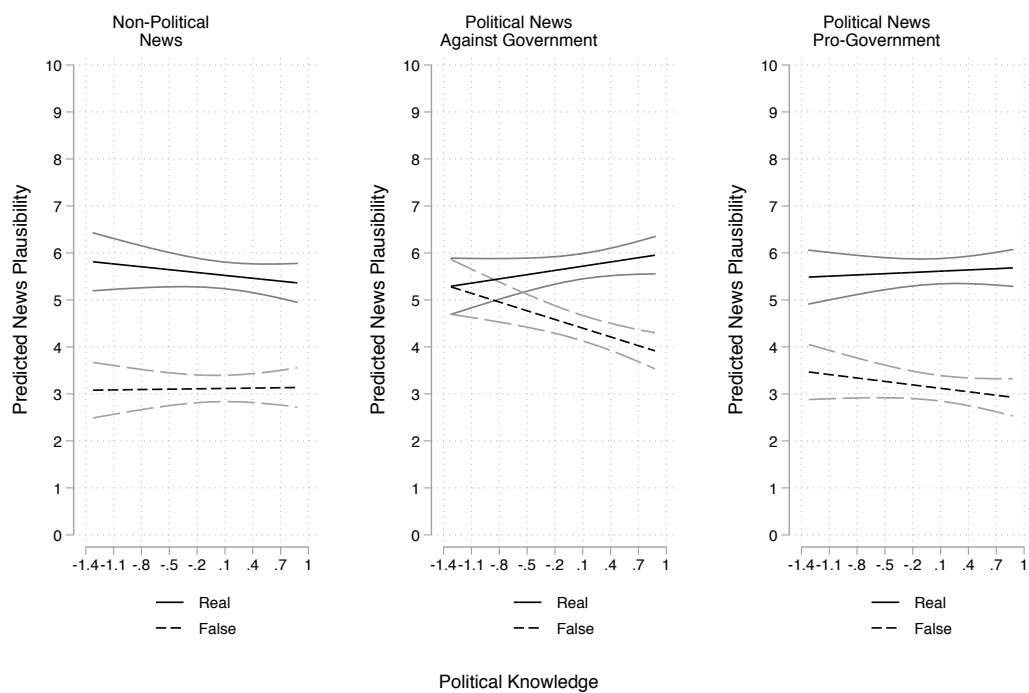
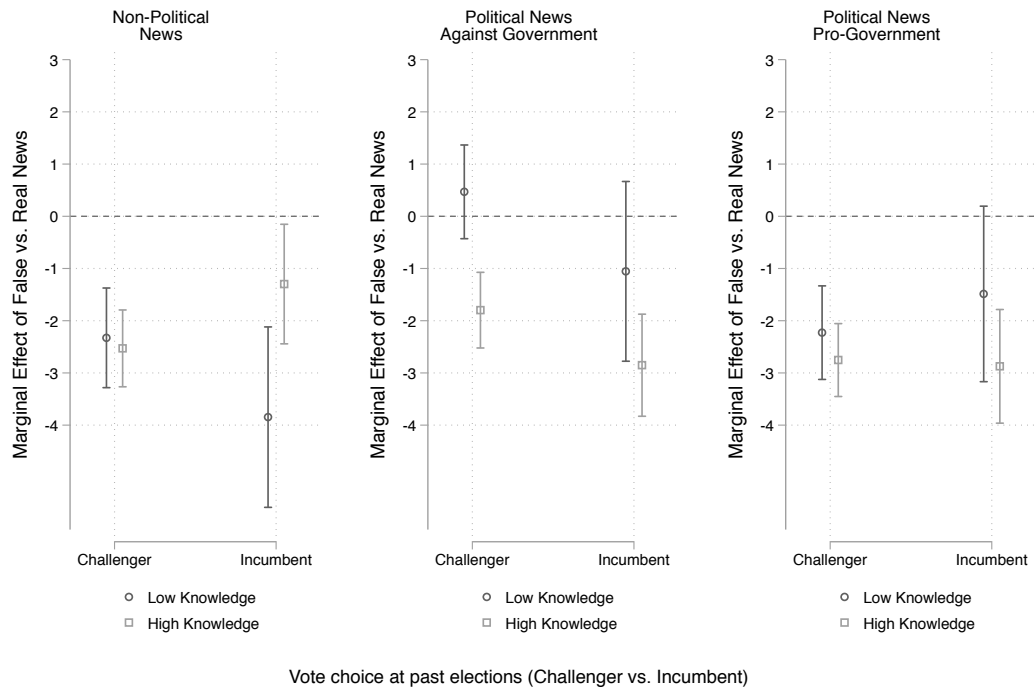


Figure A2: Predicted plausibility of inaccurate vs. real news by political knowledge (alternative model specification)



*Figure A3: Marginal effect of inaccurate vs. real news by vote for incumbent or challenger party and political knowledge*



## Appendix 5 - Knowledge and government support

*Table A3: Average government evaluation for low and high knowledgeable respondents across the three news types*

	Low pol. know	High pol. know
Non-political news	4.43	4.77
Political News Against Govt.	4.11	5.10
Political News Pro-Govt	4.39	4.83

Note: Low political knowledge are those scoring below the median in the political knowledge index. High political knowledge are those with a score equal or greater than the median.

## Appendix 6 - Binning estimators models

Below, it is possible to find results for the models fitted with binning estimators. More precisely, political knowledge has been recoded in a way that the continuous IRT variable is mostly divided in two categories, each weighting about half of the sample (56% low and 46% high), while government evaluation has been recoded so that 0-3 values are coded as “low evaluation” 4-6 are coded as “Middle evaluation” and “7-10” are coded as “High evaluation”. As it can be seen from the Figure below the results are not dissimilar from the results employed using continuous variable. In this case, we can say that our data do not suffer the issue pointed out by Hainmueller, Mummolo and Xu (2019).

*Figure A4: Full model marginal effects with binning estimates*

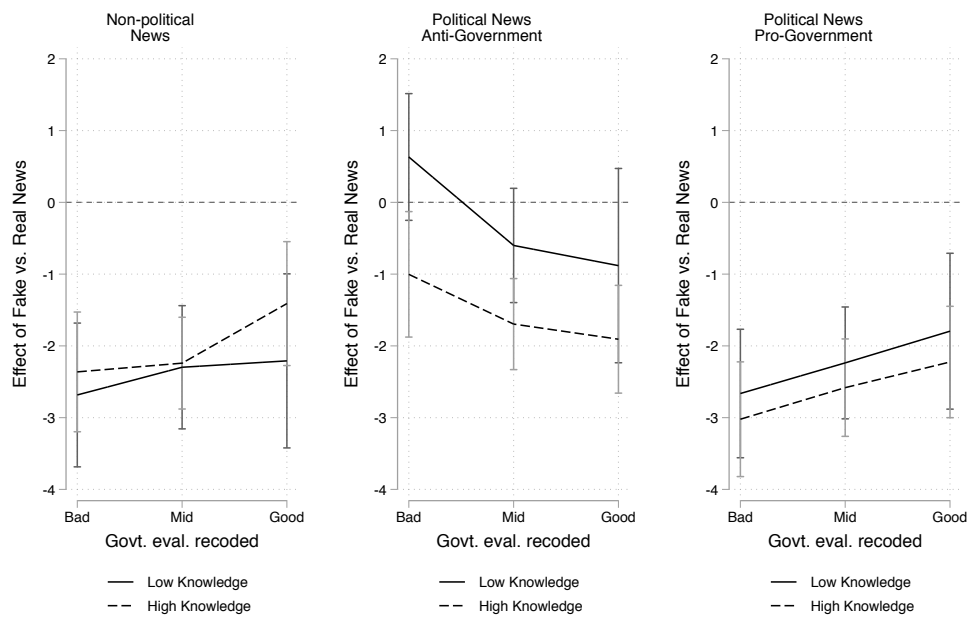




Table A4: Full models with binning estimators

Indep. Variables	(1) Non-political	(2) Against Gov	(3) Pro Gov
Inaccurate news (ref. Real news)	-2.68*** (0.51)	0.63 (0.45)	-2.66*** (0.46)
Political Knowledge: High (ref. Low)	0.03 (0.46)	1.13*** (0.42)	0.21 (0.46)
Mid. govt. eval	-0.13 (0.46)	0.53 (0.41)	1.04** (0.44)
High govt. eval.	-0.10 (0.60)	0.63 (0.60)	1.70*** (0.52)
Inaccurate * High Know	0.32 (0.66)	-1.64*** (0.63)	-0.36 (0.61)
Inaccurate * Mid govt. eval.	0.39 (0.67)	-1.23** (0.61)	0.43 (0.61)
Inaccurate * High govt. eval.	0.47 (0.80)	-1.51* (0.82)	0.87 (0.72)
High know * Mid govt. eval.	0.20 (0.59)	-0.77 (0.56)	-0.25 (0.58)
High know * High govt. eval.	-0.38 (0.74)	-1.40* (0.73)	0.31 (0.66)
Inaccurate * High know * Mid govt. eval.	-0.26 (0.86)	0.54 (0.82)	0.01 (0.81)
Inaccurate * High know * High govt. eval.	0.48 (1.01)	0.61 (1.01)	-0.07 (0.91)
Education	-0.04 (0.10)	-0.18** (0.09)	-0.05 (0.09)
Age	-0.01 (0.01)	-0.01*** (0.01)	0.00 (0.01)
Gender	-0.09 (0.18)	0.23 (0.17)	-0.04 (0.17)
Constant	5.95*** (0.52)	6.06*** (0.47)	4.71*** (0.52)
Observations	967	958	949
R-squared	0.14	0.10	0.28

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix 7 - Significance and magnitude of the three-way interaction

As it can be seen in Appendix 3, the three-way interactions, which are part of the hypotheses, are not significant in the models. This might lead to hypothesize that the experimental design is under-powered, which can represent a crucial issue in drawing theoretical conclusions. Although the most straightforward answer would be to perform a power analysis, relying on a simple post-hoc power analysis to assess whether the sample size is sufficient to provide a significant effect or not is regarded as problematic in the literature. Indeed, Hoenig and Haisey (2001), Lenth (2007), Yuhan and Maxwell (2005), and Gelman (2019) all strongly advise against post-hoc power analyses because observed power and p-value are directly related, that is, reporting a post-hoc power analysis means reporting the p-value in a different way, with the unfortunate consequence of always having low observed power when reporting non-significant effects, and always high observed power when reporting significant effects (for a formal demonstration of the issue with post-hoc power analysis, see Hoenig and Haisey, 2001).

Our aim here, however, is assessing whether the magnitude of the effect is truly small in the population (and thus non-significance is a product of the effect's magnitude) or, rather, whether the effect would be significant if the experiment was enough powered (in this case, the small sample size would be the reason of the non-significance of the estimate). Several contributions (e.g. Bloom, 1995; McKenzie and Ozier, 2019) point out the possibility to answer this question using the Minimal Detectable Effect (MDE), i.e. the minimal coefficient's magnitude that, given the estimated standard error, would be significant to a specific threshold, with a specific power. MDE has the advantage of depending only on the (estimated) standard error and not on the (noisier) estimated coefficient. MDE can be calculated as follows:

$$\beta_{\text{MDE}} = (t_{\alpha/2} + t_{1-k}) \sigma_{\beta} \quad (1)$$

Where  $t_{\alpha/2}$  is the critical value for the specific significance threshold requested (1.96 for a 5% threshold),  $t_{1-k}$  is the standardized normal score that corresponds to the cumulative probability of the desired power (when power is 80% it is equal to 0.84) and  $\sigma_{\beta}$  is the SE observed in the fitted model. In general, low values of the MDEs (better, small differences between the MDE and the observed coefficient) reasonably suggest

that the reason for the low level of significance must be identified in the low power of the experiment, while large differences between the MDE and the observed value suggest a coefficient-driven non-significance.

Results of the MDE (5% threshold, 80% power) are shown in table below. In both the relevant cases (three-way interactions for anti- and pro- government equations), the MDE are 8-10 times bigger than the effect estimated with our data. Although the MDE is mainly employed for comparisons between studies (and we do not have any idea of the real effect of the same experiment in other samples), we can provide additional insights of the nature of the difference between estimated and expected results (in case of significance): in both the cases taken into account, the MDE for the coefficients are out of the 95% confidence interval boundaries, meaning that we have sufficient evidence to believe that, granted that the SE is unbiased, an hypothetical significant value of the three-way interactions would be in any case significantly different from the estimate that we see in our data.

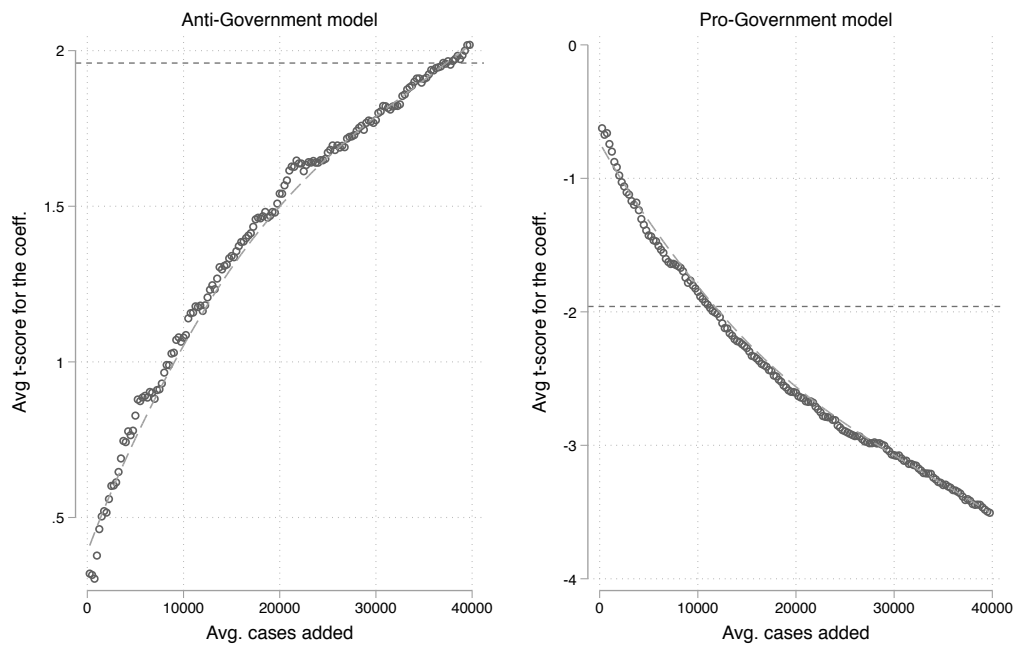
*Table A5: Minimal Delectable Effects and observed effects and CI*

Coefficient	Coeff.	S.E.	MDE	CI lower CI upper		Sample	
				(obs)	(obs)	size	MSS
Against Govt. 3-w inter.	0.020	0.080	0.224	-0.137	0.177	958	~37,000
Pro Govt 3-w inter.	-0.038	0.075	0.210	-0,185	0.109	949	~11,250

As an additional piece of evidence, we have calculated the post-hoc minimal sample size (MSS) necessary to have the observed coefficients significant. In this case, we can assume that if the sample size required to have a significant coefficient is way beyond the sample that is reasonable to have in a ordinary national sample, it is the magnitude of the coefficients “driving” the non-significance, not the number of cases. Testing the MSS of a linear model (and especially the three-way interaction we are interested in) can be quite complex with a closed solution. Hence, we opted for a brute-force approach, performing a Monte Carlo simulation in which a higher number of random cases coming from the same dataset is progressively included in the regression model. The operation has been repeated for 100 times and the results have been averaged. Results can be appreciated in Figure A5. The x-axis plots the (increasing) sample size, obtained by randomly duplicating cases, while the y-axis plots the significance of the three-way interactions. As the figure shows, the sample needed to

see a significant effect for the three-way interaction largely exceed both our sample and the boundaries of a usual nationally representative sample (the sample requested to get a significant three-way interaction for the anti-government model is about 37,000 cases, and for the pro-government model is 11,250 cases, about 25 times the actual sample, see last column of the table above).

*Figure A5: Simulated minimal Sample Size and t-scores (dashed line set at 1.96)*



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