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THE ABILITY TO DETECT AND LIKELIHOOD TO DISSEMINATE FAKE HEADLINES ACROSS FOUR EU COUNTRIES[1]

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ABSTRACT: We conduct an online survey across four countries of the European Union (Germany, Ireland, Poland, and Spain) to study how the socio-economic determinants of their citizens condition their ability to detect fake headlines and their likelihood of sharing them using social media. Additionally, we analyze the impact of attitudinal and ideological variables on the probability of detecting (and sharing) fake news. Results point to a significant role of some socio-economic and political variables in determining both the probability of detecting and sharing fake news on social media; results also show interesting country heterogeneity. Political headlines are more likely to be misclassified, which underscores the challenge of overcoming ideological biases in media consumption. We highlight the importance of fostering digital literacy, especially among young and more vulnerable individuals, to promote responsible democratic citizenship.

JEL Codes: D90 · D91
Keywords: Fake News · Misinformation · Social Media · Survey · Attitudes

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1 Introduction

The rise of fake news on social media platforms has posed a significant threat to informed public discourse and democratic processes (Reglitz, 2022; McKay and Tenove, 2021; Silva and Proksch, 2021). The ability to accurately identify fake news is crucial in mitigating its adverse effects. Indeed, the interplay between scientific knowledge, democratic debate, and the proliferation of esotericism and fake news has emerged as a critical area of study.

The advent of social media has significantly altered the landscape of information dissemination, creating both opportunities and challenges for public discourse (Lazer et al., 2018). Scientific knowledge, rooted in empirical evidence and rigorous methodology, serves as a cornerstone for informed democratic debate. However, the rise of esotericism and fake news poses a threat to this ideal, often undermining rational discussion with unverified and misleading information. Social media platforms, while democratizing access to information and amplifying diverse voices, have also become fertile ground for the spread of misinformation. The algorithms that drive these platforms often prioritize engagement over accuracy, leading to the viral spread of content that can distort public understanding and erode trust in scientific institutions and, hence, affect the process of forming individuals' opinions on the most relevant issues, such as the role of democracy in our societies.

This dynamic creates a paradox: the same technologies that enable widespread access to scientific knowledge can also facilitate the proliferation of esoteric beliefs and fake news. The consequences of this phenomenon are profound, impacting public health, environmental policy, and political stability. The COVID-19 pandemic, for example, has starkly illustrated the dangers of misinformation, as false claims about the virus and vaccines have circulated widely, sometimes with deadly consequences. Similarly, climate change debates are frequently muddied by pseudoscience and denialism, hindering effective policy responses (see, among others, (Clarke, 2024)).

Human judgment in identifying fake news is influenced by various demographic characteristics, including age, education, cultural background, and political affiliation. These factors affect how individuals perceive and classify news content, with studies showing that older adults, those with lower digital literacy, and individuals with strong political biases are more susceptible to believing and sharing fake news (Guess et al., 2019; Pennycook and Rand, 2019). In particular, individuals are more likely to accept information that aligns with their pre-existing beliefs (Allcott and Gentzkow, 2017).

Previous research has highlighted the varying degrees of susceptibility to fake news across different demographic groups. For instance, older adults and individuals with lower levels of digital literacy are generally more prone to believing and sharing fake news compared to younger, more digitally-savvy populations (Guess et al., 2019; Pennycook and Rand, 2019). Understanding these demographic influences is crucial for developing effective strategies to combat fake news.

In this paper, we conduct a large online survey across four European Union countries (Germany, Ireland, Poland, and Spain) to study how the socio-economic determinants of their citizens condition their ability to detect fake headlines and their likelihood of sharing them using social media. Additionally, we analyze the impact of attitudinal and ideological variables on the probability of detecting (and sharing) fake news. The primary motivation for this study is to explore both the determinants of believing and sharing fake news among people from diverse demographic backgrounds to obtain insightful information that can be used by researchers and policymakers to combat the negative impact of fake news. Results point to a significant role of some socio-economic and political variables in determining both the probability of detecting and sharing fake news on social media; results also show interesting country heterogeneity. Political headlines are more likely to be misclassified, highlighting the influence of political biases. Respondents are significantly worse at classifying news when it involves political content, which underscores the challenge of overcoming ideological biases in media consumption. We highlight the importance of fostering digital literacy, especially among young and more vulnerable individuals, to promote responsible democratic citizenship.

2 Survey Design

The survey consisted of two waves administered during 12 days. In the first wave, respondents were told about the two waves of the survey and were presented with the survey instructions see Appendix B). Respondents were told that they would see a series of headlines that could be true or false. Their task was to i) evaluate the likelihood that the headline was true/false using a slider with a probability ranging from 0% to 100%; ii) state whether they would share the news on social media using a radio button with the options [Yes, No]; and iii) assess whether the headline would help/harm the current government if it were true (see Table 1 for the exact wording of the questions).

In the first wave, respondents evaluated ten headlines. The news and their order were randomly assigned at the respondent level. To avoid any formatting effects, we randomized the wording of the questions to respondents such that respondents were asked for the likelihood of the headline being either *true* or *false* and asked whether the news would *help* or *harm* the government if true. The formatting was randomly assigned to each respondent at the beginning of the first wave.[1] In the second wave, respondents were asked to evaluate eight headlines in the same way as in wave 1 and then asked to respond to socioeconomic and political inclination questions (Table 14 in Appendix B). Respondents did not receive any feedback on the veracity of the headlines until the end of the second wave.

The survey was conducted in four European countries: Germany, Ireland, Poland and Spain. All survey documentation was translated into the four relevant languages and some questions were country-specific (see subsection 2.1).[2]

Table 1: Questions and input method

Question	Input Method
Evaluate how likely it was that the headline is [True/False] using a slider to indicate the probability	Slider ($p \in [0, 100]$)
State whether they would share the news on social media	Radio button [Yes, No]
Evaluate whether the headline would [help/damage] the current government if it were true	Likert scale [1–5]

2.1 News Typologies

In our survey, we use a total of 102 different headlines (see Table 13 in Appendix A). 86 headlines for all four countries and 4 headlines that are country specific. Hence, there was a pool of 90 headlines available for each country. Headlines per country are divided into three types: 1) 40 true headlines coming from reliable news sources like the New York Times (*true* news, henceforth); 2) 26 fake headlines that have been flagged by Snopes,[3]

[1]This last question is not addressed in the present version of the analysis.

[2]We report in this paper the English version of the survey design and the headlines used; translated versions in German, Polish and Spanish are available upon request.

[3]https://www.snopes.com/

a third party news verifier commonly used in the literature which we call (*fake* of *false* news, henceforth), and 3) 24 fake headlines that we made up (*invented* news, henceforth).

While it is common for experiments using fake news to include news verified by third parties, it is not so common to use news that are made up. However, an important question for any paper researching fake news is that respondents might not believe a headline is fake even if a third-party verifier (e.g., Snopes) has established that a piece of information is "fake". This is the reason why we also include news that we made up and, therefore, are unequivocally fake. Respondents are told, during the initial instructions to conduct the survey, that there are these three types of news.

Another advantage of the *invented* news is that, while *true* and *fake* news were literally translated across the four languages of our survey, some of the *invented* headlines were adapted to each country by including the names of members of the government or opposition for each country.[4] These tailored headlines allow us to study not only the effects of fake headlines across different countries of the European Union, but also to correlate within a country the effect of fake news across different points of the political spectrum.

Of the 90 news headlines per country compiled, we classified 50% as Pop/Culture and 50% as Political. Therefore, we are also able to analyse the ability to detect fake headlines and the likelihood of sharing them using social media depending on the contents of the headline.

3 Data and Results

3.1 Descriptive Statistics

The survey was run by YouGov between July 23rd and September 3rd, 2024, across Germany, Spain, Ireland, and Poland. In total, 806 participants took part in the first wave, with 749 participating in both waves (see Table 2).[5]

[4]For example, news headline number 88 reads: *Mary Lou McDonald's (Ireland) / Friedrich Merz's (Germany) / Jarosław Kaczyński's (Poland) / Alberto Nuñez Feijoo's (Spain) Campaign Manager Linked to Disinformation Campaigns.*

[5]In Germany there are more participants finishing wave 2 than wave 1 because some participants who failed the attention checks in wave 1 were still re-contacted in wave 2 when they did pass those tests. The

Table 2: Total participants, by country

Country	Both waves	First wave only
Germany	193	192
Ireland	176	201
Poland	191	206
Spain	189	207
Total	**749**	**806**

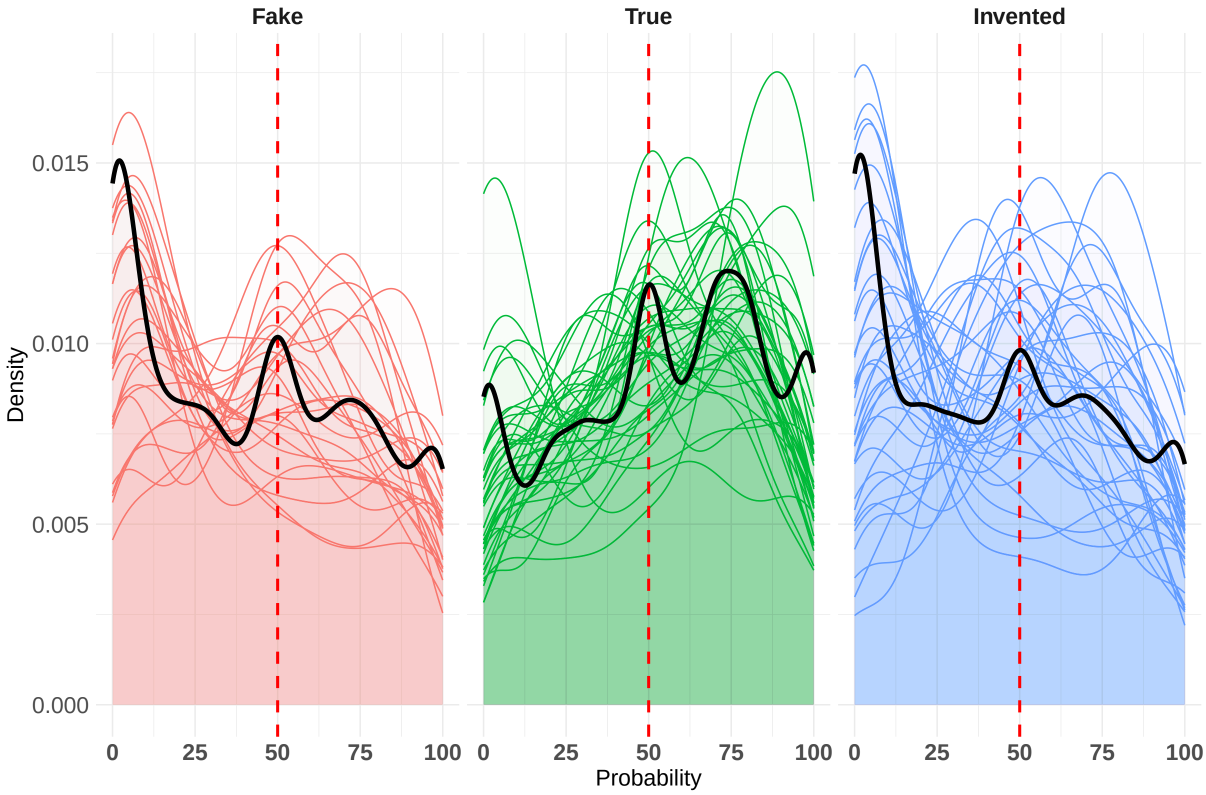
Figure 1 plots the density function of the probabilities for each of the news across the three types (*True*, *Fake*, *Invented*). In black we plot the average density for each type of news. As expected, both the Invented and Fake average line is downward sloping (more mass for low probability of the news being considered as fake) while the average for the True news has a positive slope (more mass in higher probability of the headline being considered as true). There is vast heterogeneity in the responses for each individual headline. Moreover, the densities are multimodal as respondents, as expected, tend to give answers at "round" values like 50% or 75%. Figure 2 presents the same density plots across countries. The same overall patterns are observed at the country level, however, interesting dynamics also seem to appear; in Poland, Germany, and Spain individuals seem to be those that predict more the nature of fake news; Spanish and Irish respondents are those that better catalog true news, while Polish citizens those with a distribution of both true and fake news more centered at the 50%.

Table 3 reports descriptive statistics of the probabilities across the three types of news. It is clear that, in general, respondents report higher probabilities for true headlines, on average above the 50% threshold. Moreover, there are the above-mentioned differences between countries. Respondents, in general, are not likely to share many headlines on social media, on average 22.2% for true news (with a 28.78% high for Ireland); 19.88% for false headlines (with a 16.67% low for Germany) and a similar percentage for Invented headlines than those that come from a verification source.

Table 14 in Appendix B presents the main variables used in the survey (asked at

company in charge of carrying out the survey automatically discards respondents who fail to pass such quality checks. Removing those few individuals from the dataset does not alter the obtained results.

Figure 1: Overall density of the stated probability that each headline is true by type of headline.



the end of the second wave) and their precise definition. We have grouped them into four broad types: socio-economic (gender, age, household income, employment, and education); ideology (extremism, feminism too far, and climate change); engagement with democracy (fair elections and political disengagement) and trust/use of social media (social networks, trust newspapers, trust fake news).

The next sections provide further analysis to deepen the specificities of these four European countries on the main drivers of both detecting and sharing false information.

Figure 2: Country density of the stated probability that each headline is true by type of headline.

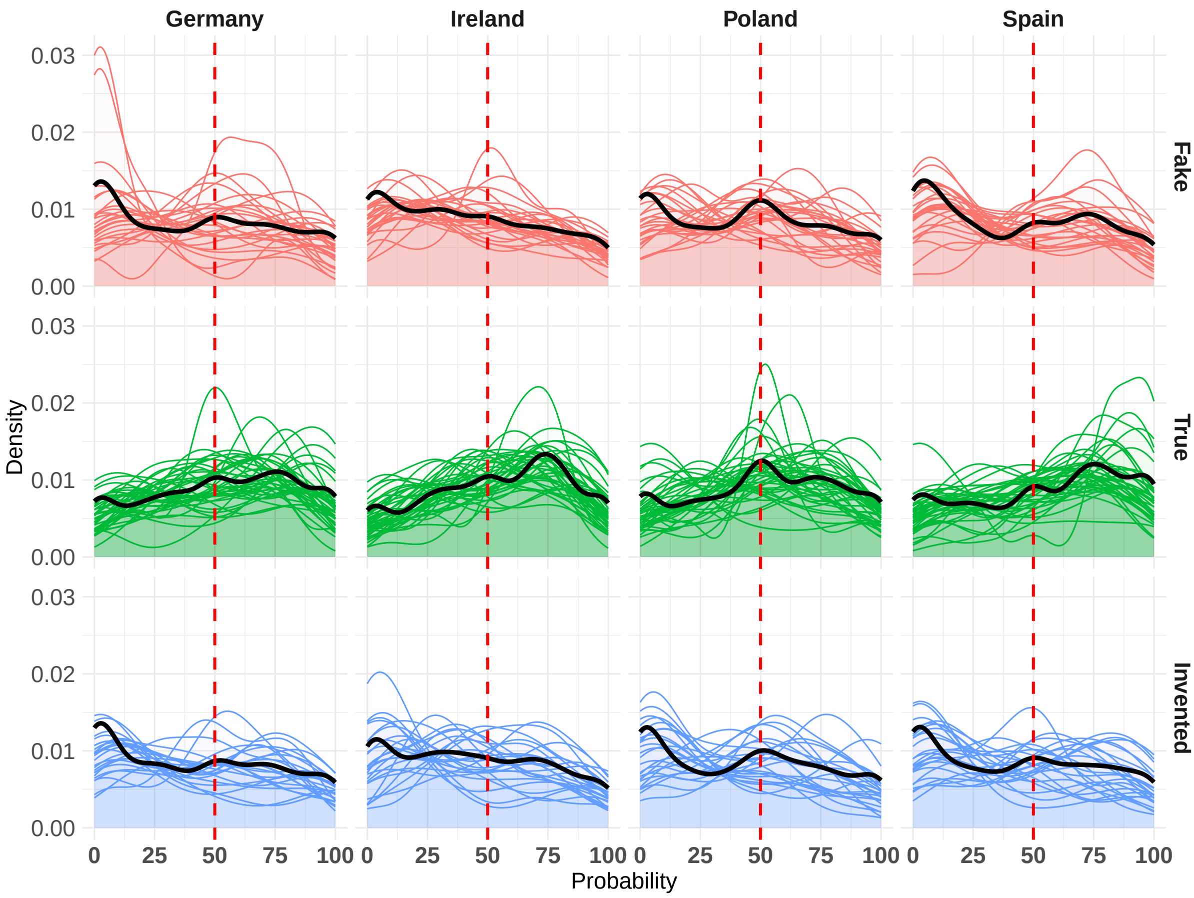


Table 3: Descriptive Statistics and Social Responses by True and Country

	Number	Prob. True	std	min	25%	50%	75%	max	Social Media Share
				Overall Statistics					
Invented	4200	43.82	32.91	0.0	11.0	43.0	71.0	100	18.69
Fake	3632	43.44	32.94	0.0	10.0	44.0	71.0	100	19.88
True	6220	53.35	30.99	0.0	29.0	54.0	80.0	100	22.20
				Country-level Statistics					
Germany									
Invented	1030	43.03	33.49	0.0	10.00	41.0	71.0	100	16.31
Fake	894	43.35	34.04	0.0	10.00	44.0	71.0	100	16.67
True	1540	52.84	31.10	0.0	29.00	52.0	80.0	100	18.96
Ireland									
Invented	1029	44.12	31.46	0.0	17.00	41.0	70.0	100	24.68
Fake	881	42.32	31.73	0.0	13.00	40.0	69.0	100	28.04
True	1508	54.04	29.55	0.0	30.00	56.0	79.0	100	28.78
Poland									
Invented	1075	44.16	33.18	0.0	11.00	47.0	71.0	100	16.37
Fake	925	44.87	32.64	0.0	14.00	48.0	71.0	100	17.73
True	1588	51.50	30.74	0.0	27.75	50.0	78.0	100	19.02
Spain									
Invented	1066	43.94	33.47	0.0	10.00	46.0	71.0	100	17.54
Fake	932	43.17	33.31	0.0	10.00	44.0	72.0	100	17.38
True	1584	55.03	32.37	0.0	27.00	60.0	81.0	100	22.29

3.2 Aggregate Results

In Table 4 we regress the probability that subject i gave to headline h of being true ($p_{i,h}$) on dummies for each country, a dummy for the type of news ($True$, $False$, $Invented$), and a dummy for the type of news (*Political*) in column (1). In column (2) we add headline fixed-effects, and in column (3) sociodemographic variables. This initial set of results helps us evaluate how credulous individuals are with respect to the information they are exposed to.

Reassuringly, respondents report statistically higher average true probabilities to true headlines than to fake/invented ones. The average reported probability for false news of being true is 33% (constant in column 3). The coefficient for true headlines is positive and statistically significant across all models, indicating a higher probability of respondents perceiving these headlines as true: on average, the reported likelihood of true headlines being true is 10 percentage points higher than for fake or invented ones. As expected, invented headlines show a similar probability of being reported as false headlines. In general, there are no differences across countries regarding the assessed probability of a headline being true. If anything, looking at column 3, Irish, Polish, and Spanish respondents tend to report lower probabilities than Germans (omitted category) to report headlines being true.

More interesting is the effect of political headlines on the stated probabilities. On average, respondents report a 15.1% higher likelihood that a headline is true when the topic is Political than when it is a Pop/Culture related type of headline (omitted category). Sociodemographic variables do not seem to have a large impact on the reported probabilities. We only observe that older respondents are less likely to assess headlines as true, as indicated by the negative and significant coefficient for age. Household income and employment do not show significant results (if anything, high-income individuals show a lower probability of assessing news as true compared to middle-income individuals; and part-time and non-employed show a higher probability of reporting headlines being true compared to full-time workers). In general, the main socio-economic variables seem not to play a significant role regarding the probability of reporting a headline being true.

Table 4: OLS of reported probability of a headline being true

	(1)	(2)	(3)
Headline=True	9.479***	10.497***	10.781**
Base: Headline=Fake news	(0.711)	(3.999)	(4.200)
Headline=Invented	0.274	4.394	3.194
	(0.702)	(4.835)	(4.960)
Ireland	0.583	0.189	-1.516
	(1.310)	(1.349)	(1.506)
Poland	0.129	-0.790	-2.264
	(1.231)	(1.250)	(1.529)
Spain	1.190	0.856	-1.081
	(1.218)	(1.243)	(1.543)
Political	1.936***	13.877***	14.913***
	(0.618)	(4.639)	(4.810)
Female			-0.814
			(1.017)
Age			-0.103***
			(0.032)
Low income			0.118
Base: Middle income			(1.307)
High income			-2.655*
			(1.506)
Employment (part-time)			2.335
Base: Employed full-time			(1.662)
Unemployed & Inactive			1.657
			(1.553)
Primary at most			2.691
Base: Secondary			(2.736)
Vocational			1.634
			(1.344)
College/Uni			2.120
			(1.326)
MA/MBA/PhD			2.393
			(1.668)
Extremist (L or R)			0.069
			(0.350)
Climate Change			-0.568
			(0.562)
Feminism too Far			-0.262
			(0.478)
Fair Elections			1.072*
			(0.615)
Political Disengaged			-0.092
			(0.404)
Social Networks			0.571
			(0.384)
Trust Newspapers			-0.321
			(0.470)
Trust Fake News			0.359
			(0.512)
Constant	42.102***	30.469***	33.161***
	(1.011)	(3.277)	(5.171)
Observations	14052	14052	12312
Adjusted R^2	0.023	0.057	0.064
Headline Fixed Effects	No	Yes	Yes
Sociodemographics	No	No	Yes

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
All SE clustered at the respondent level

Regarding political attitudes, we do not observe significant results for political ideology, political extremism, climate change beliefs or believes that feminism has gone "too far". The only political variable with a significant impact on the probability of reporting a headline as being true is "Fair Elections", which captures the individual's belief in fair elections and democracy. This variable has a positive and significant effect, indicating that respondents who believe in fair elections are more likely to report that headlines are true. I.e., individuals appear more credible regarding the information they encounter when they are more engaged with democracy.

In Table 5, we assess to what extent participants would be willing to share the headlines they have read on social media, and what characteristics could explain their willingness to do so. The dependent variable is *Share*, a dummy variable which takes value 1 if respondents would share the headline online and zero otherwise. A relevant result is the positive correlation between true news and the likelihood of sharing the news. This result is in contrast with the results reported by Serra-Garcia and Gneezy (2021). Spaniards seem the ones to be less willing to share news on social media, and this result is not affected by the nature of the news headline (Political or Pop/Culture).

When analyzing the probability of sharing news on social media we find more socio-economic and political characteristics of survey respondents to be relevant for that decision. Older individuals seem less likely to share news online, which suggests that older adults may have different motivations or levels of digital literacy that influence their propensity to share news. Similarly, results show that women are generally less likely to share news on social media compared to males. This gender difference in sharing behaviour could be attributed to varying levels of engagement with social media platforms or differences in risk perception regarding the spread of misinformation.

Regarding more economic variables we find that both higher-income and low-income levels seem to be less willing to share news compared to middle-income individuals. I.e., middle-income individuals are those seemingly more active when it comes to sharing. Moreover, we obtain a significant result for employment status — we observe that unemployed individuals have a more active sharing behaviour than those who work (either full or part-time). The level of education attained does not seem to significantly influence the sharing behavior of individuals.

Table 5: Linear probability model of sharing headlines on social media

	(1)	(2)	(3)
True Headline	0.024***	0.089*	0.112**
Base: Headline=Fake news	(0.007)	(0.047)	(0.047)
Invented Headline	-0.012	-0.026	-0.030
	(0.008)	(0.055)	(0.056)
Ireland	0.098***	0.101***	0.040
	(0.030)	(0.030)	(0.031)
Poland	0.003	0.002	-0.034
	(0.025)	(0.025)	(0.031)
Spain	0.020	0.020	-0.073**
	(0.024)	(0.024)	(0.029)
Political	-0.005	0.035	0.034
	(0.008)	(0.051)	(0.050)
Female			-0.041**
			(0.019)
Age			-0.002***
			(0.001)
Low income			-0.067**
Base: Middle income			(0.028)
High income			-0.074***
			(0.026)
Employment (part-time)			0.015
Base: Employed full-time			(0.032)
Unemployed & Inactive			0.071**
			(0.031)
Primary at most			0.090
Base: Secondary			(0.068)
Vocational			-0.006
			(0.026)
College/Uni			0.008
			(0.026)
MA/MBA/PhD			-0.007
			(0.031)
Extremist (L or R)			0.033***
			(0.007)
Climate Change			0.003
			(0.010)
Feminism too Far			0.001
			(0.009)
Fair Elections			-0.017
			(0.011)
Political Disengaged			-0.008
			(0.008)
Social Networks			0.009
			(0.008)
Trust Newspapers			0.028***
			(0.009)
Trust Fake News			0.049***
			(0.009)
Constant	0.171***	0.128***	0.091
	(0.019)	(0.038)	(0.091)
Observations	14052	14052	12312
Adjusted R^2	0.011	0.018	0.097
Headline Fixed Effects	No	Yes	Yes
Sociodemographics	No	NO	Yes

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
All SE clustered at the respondent level

With regard to political and ideological factors, we find that those individuals at the extremes of the ideological spectrum tend to share more headlines on social media. This result adds evidence to studies such as (Hopp et al., 2020) that show that sharing countermedia content on Facebook is positively associated with ideological extremity, while it finds no significant relationship between ideological extremity and countermedia sharing on X (Twitter).[6] Moreover, individuals who have more trust in traditional media outlets (newspapers) do share more news headlines, potentially as a way to reinforce their trust in these sources. Related to this result, Talwar et al., 2019 find that high levels of online trust are positively associated with sharing fake news, and negatively associated with authenticating news before sharing. Similarly, those individuals that admit that have (mistakenly) trusted fake news are also more prone to share information on social media, which is an important result to consider in our context.

In Table 6 we examine who is more likely to correctly assess whether news are true or false. The dependent variable is the dummy *Correct*, which takes value one if the news were correctly classified (e.g., p <50% and the news were false or p >50% if the news were true) and zero otherwise. If participants assign a probability of 50% to the headline being true, we disregard that particular observation.

We do not find a difference in whether individuals are better at correctly classifying true or false headlines; the same results hold for our invented headlines, underlining the validity of the headlines we designed to make cross-country comparisons. On average, individuals are good at correctly identifying if a headline is false or true: in the model in column 3, the average accuracy of respondents is 68.4%, which is not a minor result.[7]

In this line, it is remarkable to see that respondents are significantly worse at classifying news when these are of political content. This suggests that most misclassifications are likely driven by political biases and preferences. We also see that the attitude of respondents to fake news has a significant and negative effect on the ability to classify headlines, a result that seems consistent: those individuals that in the past admitted to

[6] Our survey question was general regarding the probability of sharing the headline on social media, broadly defined.

[7] The news most believed to be true was "Climate Change Powered the Mediterranean's Unusual Heat Wave", with a 69% average true rating, whereas the least perceived to be true was "14 major US cities say goodbye to meat, dairy, and private cars", with a 30.5% average true perception.

having trusted fake news are not as good as other individuals in detecting the nature of the headlines they face. Moreover, we find that those individuals who belief in free elections are more likely to correctly classify news (no causality suggested, though).

When examining the factors that influence individuals' accuracy in identifying the veracity of news headlines we obtain that the probability of correctly classifying news headlines is 64.1% and this is independent if the headline is true, false, or invented by us. Therefore, in general, survey participants can correctly classify headlines; and Irish people are above average (i.e., better) in doing so. Our results suggest that respondents do not significantly differ in their ability to classify true headlines compared to fake or invented ones. This suggests that the inherent characteristics of the headlines themselves do not strongly influence the accuracy of classification. However, political headlines are notably more challenging to classify correctly, indicating that political biases and preferences may play a significant role in misclassification.

Older individuals are generally better at correctly classifying news headlines. This positive correlation between age and classification accuracy may be attributed to greater life experience and a more developed sense of skepticism towards dubious information, while we do not find a significant impact of gender, income, or employment status on the ability to classify news correctly. Regarding ideological and attitudinal factors, we find that respondents who believe that elections are held freely in their country, and believe in democracy, are more likely to correctly classify news headlines. This positive correlation indicates that trust in democratic processes may be associated with better media literacy. Interestingly, individuals who have a negative attitude towards fake news are better at correctly classifying headlines; and those more prone to sharing news on social media are worse at identifying the correct nature of headlines.

Table 6: Linear probability model: correct classification of news

	(1)	(2)	(3)
True Headline Base: Headline=Fake news	-0.008 (0.016)	-0.001 (0.064)	0.001 (0.067)
Invented Headline	-0.005 (0.011)	-0.048 (0.078)	-0.045 (0.081)
Ireland	0.021* (0.013)	0.029** (0.014)	0.040*** (0.014)
Poland	-0.012 (0.013)	0.004 (0.013)	0.012 (0.015)
Spain	0.016 (0.013)	0.025* (0.014)	0.027* (0.015)
Political	0.010 (0.008)	-0.172*** (0.064)	-0.163** (0.066)
Female			-0.007 (0.010)
Age			0.002*** (0.000)
Low income Base: Middle income			0.011 (0.012)
High income			0.016 (0.013)
Employment (part time) Base: Employed full time			-0.022 (0.015)
Unemployed & Inactive			-0.012 (0.014)
Primary at most Base: Secondary			-0.021 (0.016)
Vocational			-0.013 (0.013)
College/Uni			-0.006 (0.012)
MA/MBA/PhD			-0.007 (0.017)
Extremist (L or R)			0.002 (0.003)
Climate Change			-0.000 (0.005)
Feminism too Far			-0.003 (0.004)
Fair Elections			0.015*** (0.005)
Political Disengaged			-0.002 (0.004)
Social Networks			-0.004 (0.004)
Trust Newspapers			0.003 (0.004)
Trust Fake News			-0.009** (0.004)
Would share in social media			-0.042*** (0.010)
Constant	0.561*** (0.014)	0.731*** (0.044)	0.648*** (0.056)
Observations	13007	13007	11405
Adjusted R^2	0.000	0.028	0.034
Headline Fixed Effects	No	Yes	Yes
Sociodemographics	No	No	Yes

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
All SE clustered at the respondent level

3.3 Country Specific Results

Table 7 presents a regression analysis examining the probability of news being defined as true across the four countries: Germany, Ireland, Poland, and Spain. In general, the probability of defining a news headline as false is below the 50% (constant term of the regressions); especially low in Poland (25.11%), similar in Germany and Spain (around) 30% and high in Ireland (40.11%). Also, Ireland shows the highest probability of defining a news headline as true (17.84% above the probability of defining a headline as false). Invented headlines, as expected, do not show any particular pattern differential from false headlines. Generally, regressions do not show many of the considered socio-economic and political variables as statistically significant. However, some intuitions can be derived from Table 7.

First, political content significantly affects news perception. The coefficients are positive for all four countries and are statistically significant for Germany and Poland, indicating that political headlines are more likely to be perceived as true across countries. This trend underscores the influence of political information, which may be perceived as credible due to its prominence and relevance.

"Female" shows predominantly negative and non-significant coefficients across all countries. This suggests that gender generally does not significantly affect the perception of news as true. Age consistently shows a negative and statistically significant effect in some models, particularly in Ireland (column 4) and Spain (column 8). This suggests that older individuals in these countries are less likely to perceive news as true, possibly due to increased skepticism; or in other words, young people are more likely to perceive news as true (i.e., young individuals seem to be more credulous).

In general, household income, employment status, and educational attainment do not show significant results. The only significant result appears for educational attainment in Germany, which shows that individuals with primary or vocational studies are more likely to catalog a headline as true (compared to individuals with secondary education).

Even if regression results are not conclusive regarding the importance placed on climate change (significant for Ireland) and the agreement with the statement "feminism has gone too far" (significant for Spain), if anything, participants seem to be negatively associated with perceiving news as true, indicating that more skeptical individuals could be less likely to perceive news as true (less credulous).

Table 7: Probability the news is defined as true

	Germany		**Ireland**		**Poland**		**Spain**	
	Prob.	Prob.	Prob.	Prob.	Probv	Prob.	Prob.	Prob.
True Headline	11.865	9.982	16.414**	17.845**	0.055	2.644	13.155	12.230
Base: Headline=Fake news	(8.056)	(8.466)	(7.860)	(8.155)	(7.941)	(8.571)	(8.093)	(8.643)
Invented Headline	-4.114	-2.601	3.103	3.322	-3.532	-3.842	1.905	-0.125
	(7.423)	(7.831)	(7.729)	(8.120)	(7.419)	(7.652)	(7.653)	(8.162)
Political	19.536**	19.111**	9.106	11.977	17.667*	16.930*	9.595	11.359
	(8.935)	(9.397)	(9.714)	(10.173)	(9.184)	(9.657)	(9.343)	(9.581)
Female		-1.404		-1.160		0.663		-3.236
		(2.008)		(2.635)		(2.170)		(2.075)
Age		-0.032		-0.169**		-0.065		-0.210***
		(0.065)		(0.082)		(0.064)		(0.064)
Low income		-0.089		-2.873		0.108		1.412
Base: Middle income		(2.681)		(3.348)		(2.329)		(2.672)
High income		-0.730		-3.812		0.288		-3.715
		(2.174)		(3.333)		(4.450)		(2.776)
Employment (part-time)		4.769*		3.177		-1.857		1.498
Base: Employed full-time		(2.425)		(4.072)		(4.013)		(3.088)
Unemployed & Inactive		3.376		1.583		2.670		2.892
		(3.751)		(3.428)		(3.255)		(2.667)
Primary at most		6.826**		0.791		-2.218		3.868
Base: Secondary		(3.398)		(6.183)		(4.573)		(3.596)
Vocational		5.423**		-3.388		0.634		0.644
		(2.226)		(2.920)		(3.643)		(2.629)
College/Uni		1.490		-1.051		3.669		1.527
		(2.974)		(2.950)		(2.375)		(2.856)
Masters/PhD		2.951		0.783		-1.720		2.436
		(2.412)		(3.888)		(5.735)		(2.932)
Extremist (L or R)		0.741		-0.522		0.413		-0.249
		(0.656)		(0.834)		(0.595)		(0.716)
Climate Change		-0.225		-1.998**		0.120		5.800
		(1.579)		(0.972)		(0.866)		(3.703)
Feminism too Far		-2.569		-1.446		1.121		-5.481*
		(2.215)		(0.980)		(0.967)		(3.097)
Fair Elections		2.713		1.223		-0.093		1.763
		(2.039)		(1.182)		(1.018)		(1.377)
Political Disengaged		-1.465*		0.350		0.638		0.381
		(0.842)		(0.951)		(0.860)		(0.749)
Social Networks		0.058		1.401		1.223		-0.137
		(0.744)		(0.912)		(0.834)		(0.738)
Trust Newspapers		-0.607		-0.043		1.289		-0.658
		(0.823)		(1.079)		(1.137)		(0.795)
Trust Fake News		-0.296		0.739		-0.949		1.804*
		(1.015)		(1.114)		(1.098)		(0.961)
Constant	24.214***	30.433***	30.480***	40.119***	33.815***	25.116**	33.750***	31.743***
	(6.184)	(9.375)	(6.767)	(12.710)	(6.472)	(10.778)	(6.464)	(9.532)
Observations	3464	3006	3418	2970	3588	3204	3582	3132
Adjusted R^2	0.054	0.077	0.057	0.069	0.060	0.066	0.083	0.097
Headline Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sociodemographics	No	Yes	No	Yes	No	Yes	No	Yes

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All SE clustered at the respondent level

More interesting is to understand the sharing behaviour of news on social media, which plays a pivotal role in information dissemination. Understanding the factors that influence this behaviour is essential for comprehending how news spreads and how misinformation can be curbed. Table 8 presents a linear probability model examining the likelihood of sharing news on social media across our countries of analysis.

In general, when controlling for socio-economic and political factors (full models) there is no significant coefficient for the probability of sharing a headline when is fake, which in principle should be seen as a positive result: fake news are not more likely to be shared. Moreover, we obtain significant results for Ireland and Spain regarding an increased probability of sharing true headlines; Germany also shows a positive (not statistically significant) coefficient for the probability of sharing true headlines compared with false headlines, while for Poland the coefficient is close to 0, therefore there is no differentiated behaviour regarding sharing headlines, whether true or false. In general, hence, the nature of the headlines significantly influences the probability of sharing news on social media; and the sharing behaviour is higher for true news, reflecting a slight preference for credible information.

In the estimations reported in Table 8 we find some significant variables in explaining sharing news on social media. First, gender, is represented by the variable "Female". Ireland (column 4) and Poland (column 6) present a negative and significant coefficient, indicating that females in these countries are less likely to share news on social media. Secondly, age shows a (small) negative and significant coefficient in Germany (column 2) and Ireland (column 4), indicating that older individuals in these countries are less likely to share news on social media. This could be attributed to lower social media usage among older demographics. However, this result is reversed in Poland. Third, regarding the income of respondents, it seems that compared to the middle-income class, lower– and upper-income individuals tend to share less news on social media, this result being especially significant for Poland. Fourth, employment status shows positive effects for all countries and is significant in Germany (column 3), indicating that individuals without a full-time or a part-time job are more likely to share news. Fifth, educational attainment seems not to play any role in the sharing behaviour of individuals.

Table 8: Linear probability model for sharing the news in social media

	Germany		Ireland		Poland		Spain	
True Headline	0.078	0.026	0.126	0.162*	-0.015	-0.014	0.158*	0.237***
Base: Headline=Fake news	(0.090)	(0.093)	(0.110)	(0.096)	(0.093)	(0.092)	(0.085)	(0.077)
Invented Headline	-0.036	-0.092	0.036	0.105	-0.120	-0.130	0.046	0.074
	(0.084)	(0.075)	(0.092)	(0.080)	(0.094)	(0.093)	(0.079)	(0.068)
Political	0.071	0.155*	-0.033	-0.048	0.037	0.001	0.067	0.014
	(0.094)	(0.081)	(0.116)	(0.105)	(0.118)	(0.116)	(0.082)	(0.078)
Female		0.002		-0.120**		-0.076*		0.004
		(0.029)		(0.047)		(0.041)		(0.040)
Age		-0.003*		-0.006***		0.002*		-0.001
		(0.001)		(0.002)		(0.001)		(0.001)
Low income		-0.072		-0.128*		-0.087**		-0.058
Base: Middle income		(0.062)		(0.074)		(0.043)		(0.060)
High income		-0.004		-0.049		-0.218***		-0.075*
		(0.035)		(0.051)		(0.058)		(0.045)
Employment (part-time)		0.063		0.022		-0.045		0.076
Base: Employed full-time		(0.051)		(0.069)		(0.049)		(0.076)
Unemployed & Inactive		0.194***		0.111		0.075		0.079
		(0.063)		(0.070)		(0.058)		(0.053)
Primary at most		0.069		0.332**		-0.171***		-0.066
Base: Secondary		(0.081)		(0.136)		(0.062)		(0.109)
Vocational		-0.006		-0.061		0.003		-0.017
		(0.040)		(0.061)		(0.060)		(0.051)
College/Uni		0.074		-0.042		-0.050		-0.003
		(0.055)		(0.057)		(0.042)		(0.054)
Masters/PhD		0.002		-0.072		0.080		-0.035
		(0.046)		(0.070)		(0.086)		(0.053)
Extremist (L or R)		0.019*		0.065***		0.022*		0.014
		(0.012)		(0.015)		(0.012)		(0.010)
Climate Change		0.058*		0.007		0.002		0.023
		(0.035)		(0.018)		(0.015)		(0.051)
Feminism too Far		-0.100***		0.001		-0.002		-0.077**
		(0.034)		(0.017)		(0.016)		(0.037)
Fair Elections		0.035		-0.026		-0.029		0.050
		(0.040)		(0.019)		(0.018)		(0.042)
Political Disengaged		-0.008		-0.022		-0.001		-0.015
		(0.015)		(0.017)		(0.016)		(0.013)
Social Networks		0.016		-0.007		0.029*		0.005
		(0.011)		(0.017)		(0.017)		(0.015)
Trust Newspapers		-0.002		0.054***		0.031		0.009
		(0.013)		(0.016)		(0.022)		(0.015)
Trust Fake News		0.031*		0.050***		0.011		0.058***
		(0.016)		(0.017)		(0.016)		(0.015)
Constant	0.107*	0.066	0.240***	0.368	0.222***	0.140	0.071	-0.033
	(0.059)	(0.130)	(0.087)	(0.236)	(0.081)	(0.188)	(0.049)	(0.171)
Observations	3464	3006	3418	2970	3588	3204	3582	3132
Adjusted R^2	0.004	0.103	-0.008	0.259	0.004	0.088	0.033	0.116
Headline Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sociodemographics	No	Yes	No	Yes	No	Yes	No	Yes

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Note: All SE clustered at the respondent level

Regarding political variables, some interesting patterns also arise at the country level. Political content in headlines is only significant (and positive) for Germany, suggesting that they are more likely to be shared in Germany than in other countries. Extremism shows a significant positive effect in Germany, Ireland, and Poland, suggesting that individuals with extreme political views are more likely to share news in these countries. This result is consistent with the results showing political disengagement (Political Disengaged): even if they are not statistically significant, we see a negative coefficient for all countries (suggesting that disengagement from politics reduces sharing behaviour). Similarly, individuals who agree with the statement "feminism has gone too far" reveal some significant negative effects for Germany and Spain, indicating that individuals who agree with this statement in these two countries are less likely to share news.

Those individuals who admit to occasionally failing for fake news (Trust Fake News) show significant positive coefficients in Germany, Ireland, and Spain (also positive for Poland), indicating a propensity to share (likely) dubious information.

We find mild results regarding the trust in newspapers (Trust Newspapers): if anything, the impact is positive (significant for Ireland). With regards to the use of social networks (Social Networks): if anything, the impact is positive (significant for Poland), indicating that those individuals who declare they trust newspapers and who are active in social media are more likely, as expected, to share news.

In the current media landscape, accurately distinguishing between true and false news headlines is a critical skill that may differ across countries. Table 9 presents a comprehensive regression analysis examining the various factors that influence an individual's probability of correctly assessing the veracity of news headlines.

First, we analyse the nature of the headlines themselves, i.e., whether individuals correctly assess the nature of the headline. The baseline category is the probability of detecting a fake headline —this is given by the constant in the model. The full specification for each country shows a range between 62.4% probability of detecting fake news in Germany (the lowest) to a 70.08% probability of detection in Poland, the highest. The coefficients for true headlines lack statistical significance across all countries, suggesting that for participants the probability of correctly assessing true headlines does not differ from fake news. As expected, the coefficients for invented headlines are not statistically significant and are very small in most cases, indicating that these headlines are virtually indistinguishable from false headlines.

Political content in headlines emerges as a significant factor in some models, with negative coefficients indicating a lower probability of correct assessment for political headlines. This effect is particularly pronounced in Poland (column 5), where the coefficient is negative and significant. This finding underscores the complexity and potential bias associated with political information, which may be more confusing than non-political content.

The variable "Female" predominantly shows negative and non-significant coefficients, implying that being female does not significantly affect one's ability to correctly identify the truthfulness of headlines. This suggests that gender alone does not play a decisive role in media literacy in Germany, Ireland, Poland, or Spain. Age is one of the few variables that consistently shows a positive and statistically significant effect on the probability of correctly assessing headlines. Older individuals are slightly more likely to correctly identify the veracity of news in Germany, Poland, and Spain, which may be attributed to greater life experience and perhaps a more developed sense of skepticism towards dubious information.

Household income presents a more nuanced picture. While the coefficients for the lowest income category (Low income) are positive but not significant, the highest income category shows positive and significant coefficients in some models, particularly in Ireland (column 4). This indicates that individuals in higher income brackets may be better at correctly assessing headlines, potentially due to better access to education and information resources. Related to the socio-economic characteristics of respondents, employment status, represented by categories (part-time and unemployed/inactive), shows mostly negative and non-significant coefficients across all countries. This suggests that employment status does not have a strong impact on the ability to assess news headlines correctly.

Table 9: Linear probability model: correct assessment of the news as true/false

	Germany		Ireland		Poland		Spain	
True Headline	-0.102	-0.146	-0.084	-0.075	0.141	0.163	0.042	0.075
Base: Headline=Fake news	(0.132)	(0.137)	(0.122)	(0.126)	(0.135)	(0.141)	(0.127)	(0.138)
Invented Headline	0.042	0.009	-0.041	-0.058	0.092	0.098	-0.021	-0.020
	(0.113)	(0.120)	(0.107)	(0.111)	(0.116)	(0.122)	(0.113)	(0.120)
Political	-0.162	-0.119	-0.065	-0.082	-0.346***	-0.326**	-0.122	-0.124
	(0.127)	(0.133)	(0.128)	(0.135)	(0.129)	(0.135)	(0.129)	(0.132)
Female		0.028		-0.018		-0.019		-0.021
		(0.021)		(0.021)		(0.019)		(0.018)
Age		0.002**		0.001		0.001**		0.002***
		(0.001)		(0.001)		(0.001)		(0.001)
Low income		0.002		0.041		0.002		-0.007
Base: Middle income		(0.033)		(0.027)		(0.021)		(0.027)
High income		-0.002		0.044*		-0.049		0.020
		(0.026)		(0.023)		(0.065)		(0.027)
Employment (part-time)		-0.034		-0.037		0.016		-0.059
Base: Employed full-time		(0.029)		(0.025)		(0.027)		(0.037)
Unemployed & Inactive		-0.014		0.000		-0.010		-0.017
		(0.043)		(0.032)		(0.025)		(0.026)
Primary at most		-0.065*		0.007		-0.011		-0.002
Base: Secondary		(0.035)		(0.030)		(0.040)		(0.041)
Vocational		-0.025		-0.006		-0.014		-0.026
		(0.026)		(0.028)		(0.029)		(0.023)
College/Uni		-0.029		-0.017		0.025		-0.028
		(0.025)		(0.024)		(0.021)		(0.026)
MA/MBA/PhD		-0.012		0.001		-0.009		-0.043
		(0.035)		(0.032)		(0.055)		(0.032)
Extremist (L or R)		0.002		0.001		0.007		-0.002
		(0.007)		(0.006)		(0.005)		(0.005)
Climate Change		-0.018		0.006		-0.003		-0.041
		(0.016)		(0.008)		(0.008)		(0.025)
Feminism too Far		0.060***		-0.012		-0.008		0.043*
		(0.020)		(0.008)		(0.008)		(0.022)
Fair Elections		-0.036*		0.022**		0.014*		0.017
		(0.020)		(0.009)		(0.008)		(0.011)
Political Disengaged		0.005		-0.001		0.003		-0.014**
		(0.009)		(0.009)		(0.008)		(0.006)
Social Networks		-0.003		0.003		-0.017**		0.002
		(0.009)		(0.008)		(0.008)		(0.007)
Trust Newspapers		0.011		-0.002		-0.005		0.002
		(0.009)		(0.008)		(0.009)		(0.007)
Trust Fake News		-0.015		-0.012		0.007		-0.017*
		(0.010)		(0.009)		(0.008)		(0.010)
Would share in social media		-0.043*		-0.061***		-0.018		-0.037
		(0.023)		(0.022)		(0.019)		(0.024)
Constant	0.778***	0.624***	0.720***	0.673***	0.769***	0.708***	0.714***	0.675***
	(0.081)	(0.115)	(0.091)	(0.124)	(0.084)	(0.105)	(0.087)	(0.112)
Observations	3195	2763	3215	2789	3295	2977	3302	2876
Adjusted R^2	0.023	0.039	0.021	0.027	0.037	0.036	0.047	0.053
Headline Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sociodemographics	No	Yes	No	Yes	No	Yes	No	Yes

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All SE clustered at the respondent level

The educational level attained provides more varied and interesting insights. Primary education (Primary at most) and vocational training (Vocational) show, in general, negative coefficients that for Germany turn to be statistically significant. Higher education levels such as college/university (College/Uni) and advanced degrees (MA/MBA/PhD) exhibit mixed results. The coefficients for these higher education categories are sometimes negative and non-significant, indicating that higher education alone does not guarantee better media literacy in these countries. However, results seem to point out that lower educational levels are correlated with a lower capacity to detect the real nature (true or false) of news headlines.

Political extremism, whether left or right (Extremist (L or R)), shows no significant impact, suggesting that extreme political views do not significantly alter the ability to assess news correctly. The importance placed on climate change (Climate Change) and agreement with the statement "feminism has gone too far" (Feminism too Far) reveal mixed effects. While the former shows no significant impact, the latter exhibits positive and significant coefficients in some models, particularly in Germany (column 1) and Spain (column 8). This indicates that individuals who agree with the statement about feminism are somewhat more likely to correctly assess headlines in these countries.

Trust in newspapers (Trust Newspapers) and the tendency to fail to detect fake news (Trust Fake News) also provide intriguing insights. While trust in newspapers shows no significant impact, the tendency to consume fake news is mostly associated with a lower probability of correct assessment, highlighting the potentially detrimental effect of exposure to false information (significant coefficient for Spain). Similarly, the use of social networks (Social Networks) presents mixed and sometimes significant results, particularly in Poland (column 6), suggesting a varied impact on media literacy. This indicates that social media can both aid and hinder the ability to assess news, depending on how it is used.

Political disengagement (Political Disengaged) shows predominantly non-significant coefficients across all countries, except a significant negative effect for Spain indicating that disengagement from politics, if something, has a negative effect on the ability to assess news and information. The importance of fair elections (Fair Elections) shows positive and significant coefficients for Ireland and Poland, suggesting that individuals who value fair elections may be better at identifying true and false headlines, while a negative sign for Germany.

3.4 News Typology: Pop/Culture vs Political Headlines

Table 10 presents the results of an Ordinary Least Squares (OLS) regression analysis examining the probability that respondents reported a headline as true. The analysis is divided into two categories depending on the type of headline: Pop/Culture and Political headlines. Results show that, in general, respondents are significantly more likely to classify as true Pop/Culture headlines. In this sense, Ireland and Poland show a different pattern and have a negative coefficient for reporting Pop/Culture headlines as true, suggesting respondents in these countries are less likely to believe these types of headlines are true.

For political headlines, the coefficients are generally positive but not significant. Regarding socioeconomic and political determinants of reporting a headline being true, we find that age has a negative and significant effect on both types of headlines, indicating older respondents are less likely to believe headlines are true. Apart from age, we find that only two variables seem to matter for Pop/Culture headlines: females report fewer headlines being true if they are Pop/Culture and those individuals who admit to having believed fake news are more likely to report a Pop/Culture headline as true. Regarding Political headlines the variables ”Fair Elections” and “Social Networks” are significant and positive, suggesting that, on average, those who believe in fair elections and those who are more active on social networks are more likely to report headlines as true.

Again, it is maybe more interesting to analyse sharing behaviour and the probability of correctly assessing headlines. Table 11 presents the linear probability model for sharing news on social media depending on the type of headline. Taking the fully specified model (with all explanatory variables) we obtain that political headlines are more likely to be shared if perceived as true. Spaniards, in general, are significantly less likely to share political content compared to Germans (omitted category) while respondents in Ireland seem to be more likely to share both Pop/Culture and Political headlines (columns 2 and 5), showing a higher engagement with news sharing (even if the statistical significance disappears in the model with the full set of control variables).

Table 10: OLS of reported probability of a headline being true

	Pop/Culture			Political		
	probability	probability	probability	probability	probability	probability
True Headline	8.377***	17.040***	17.311***	10.455***	10.509***	10.808**
Base: Headline=Fake news	(0.944)	(4.108)	(4.328)	(0.965)	(3.994)	(4.203)
Invented Headline	-0.306	7.232	8.085*	1.004	3.706	2.800
	(0.920)	(4.467)	(4.567)	(1.070)	(4.806)	(4.941)
Ireland	-0.871	-0.888	-2.739	1.745	1.206	-0.391
	(1.643)	(1.623)	(1.818)	(1.518)	(1.567)	(1.754)
Poland	-1.925	-1.914	-3.789**	1.748	0.264	-0.940
	(1.519)	(1.515)	(1.858)	(1.471)	(1.494)	(1.769)
Spain	1.508	1.478	-1.041	0.946	0.282	-1.053
	(1.541)	(1.514)	(1.850)	(1.474)	(1.504)	(1.840)
Female			-2.259*			0.153
			(1.294)			(1.159)
Age			-0.161***			-0.060*
			(0.039)			(0.036)
Low income			0.849			-0.238
Base: Middle income			(1.609)			(1.511)
High income			-2.774			-2.637
			(1.846)			(1.720)
Employment (part-time)			1.897			2.718
Base: Employed full-time			(2.204)			(1.765)
Unemployed & Inactive			1.406			2.081
			(1.854)			(1.789)
Primary at most			2.374			2.743
Base: Secondary			(3.021)			(3.500)
Vocational			3.571**			-0.032
			(1.676)			(1.600)
College/Uni			3.673**			0.758
			(1.624)			(1.492)
MA/MBA/PhD			2.029			2.512
			(2.172)			(1.777)
Extremist (L or R)			0.037			0.070
			(0.410)			(0.405)
Climate Change			-0.689			-0.466
			(0.678)			(0.637)
Feminism too Far			-0.040			-0.447
			(0.607)			(0.534)
Fair Elections			0.617			1.442**
			(0.781)			(0.638)
Political Disengaged			-0.357			0.153
			(0.523)			(0.472)
Social Networks			0.383			0.772*
			(0.487)			(0.450)
Trust Newspapers			-0.137			-0.503
			(0.556)			(0.540)
Trust Fake News			1.186*			-0.362
			(0.631)			(0.569)
Constant	43.464***	30.838***	36.457***	42.694***	43.980***	45.642***
	(1.193)	(3.333)	(5.439)	(1.284)	(3.438)	(5.918)
Observations	6210	6210	5417	7842	7842	6895
Adjusted R^2	0.016	0.053	0.064	0.024	0.055	0.062
Headline Fixed Effects	No	Yes	Yes	No	Yes	Yes
Sociodemographics	No	No	Yes	No	No	Yes

Standard errors in parentheses. All SE clustered at the respondent level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

We find a series of statistically significant variables that explain the individual probability of sharing news headlines. For both types of headlines (Pop/Culture and Political): young people, politically extremist, middle-income class, those who trust traditional media, and those who are aware of the existence of fake news share more headlines on social media; while those who consider elections fair seem to share less Pop/Culture headlines; and females seem to report less Political news and unemployed people more Political headlines.

Finally, Table 12 examines the factors influencing the correct classification of news headlines as true or false, utilizing a linear probability model. The analysis is divided into two categories: Pop/Culture and Political headlines. Various sociodemographic and country-specific variables are considered to understand their impact on media literacy and the ability to discern the veracity of information. The constant term of the models report the probability of assessing correctly the headline if it is false: 62% for Pop/Culture and 48% for Political, so political false headlines are more difficult to be detected by individuals.

True headlines have a lower probability of being detected than false headlines for Pop/Culture headlines, indicating that respondents find it more challenging to correctly classify these headlines compared to political ones. This suggests that Pop/Culture headlines might be more ambiguous or less straightforward, making it harder for respondents to determine their truthfulness. In contrast, the coefficients for true political headlines are not significant, implying that respondents do not find these headlines significantly more difficult to classify correctly than false political headlines. Again, invented headlines just behave as false headlines.

The analysis with country effects reveals interesting country-specific trends. For instance, respondents in Ireland and Spain show positive coefficients for the correct classification of Pop/Culture, suggesting they are better at identifying the veracity of headlines compared to German respondents for this type of headline. The Irish also have a significant positive coefficient for political headlines.

Table 11: Linear probability model for sharing news

	Pop/Culture			Political		
	Share	Share	Share	Share	Share	Share
True Headline	0.028***	0.019	0.028	0.019*	0.089*	0.112**
Base: Headline=Fake news	(0.010)	(0.045)	(0.047)	(0.011)	(0.047)	(0.047)
Invented Headline	0.001	-0.010	0.016	-0.027**	-0.026	-0.026
	(0.010)	(0.049)	(0.047)	(0.013)	(0.054)	(0.055)
Ireland	0.104***	0.104***	0.050	0.093***	0.099***	0.036
	(0.033)	(0.033)	(0.035)	(0.031)	(0.031)	(0.032)
Poland	0.009	0.008	-0.027	-0.001	-0.003	-0.037
	(0.027)	(0.027)	(0.035)	(0.026)	(0.026)	(0.032)
Spain	0.036	0.036	-0.050	0.007	0.005	-0.092***
	(0.027)	(0.027)	(0.032)	(0.026)	(0.026)	(0.029)
Female			-0.026			-0.053***
			(0.021)			(0.020)
Age			-0.002***			-0.002***
			(0.001)			(0.001)
Low income			-0.062**			-0.072**
Base: Middle income			(0.032)			(0.030)
High income			-0.105***			-0.052*
			(0.029)			(0.028)
Employment (part-time)			0.019			0.012
Base: Employed full-time			(0.038)			(0.032)
Unemployed & Inactive			0.019			0.109***
			(0.035)			(0.032)
Primary at most			0.109			0.071
Base: Secondary			(0.075)			(0.067)
Vocational			0.036			-0.040
			(0.029)			(0.027)
College/Uni			0.024			-0.008
			(0.028)			(0.028)
MA/MBA/PhD			0.019			-0.028
			(0.032)			(0.033)
Extremist (L or R)			0.029***			0.035***
			(0.007)			(0.007)
Climate Change			-0.004			0.008
			(0.011)			(0.011)
Feminism too Far			0.000			0.002
			(0.010)			(0.009)
Fair Elections			-0.020			-0.016
			(0.012)			(0.012)
Political Disengaged			-0.015*			-0.003
			(0.009)			(0.008)
Social Networks			0.008			0.009
			(0.009)			(0.008)
Trust Newspapers			0.035***			0.023**
			(0.010)			(0.009)
Trust Fake News			0.047***			0.050***
			(0.010)			(0.010)
Constant	0.159***	0.122***	0.120	0.179***	0.169***	0.098
	(0.020)	(0.039)	(0.097)	(0.020)	(0.041)	(0.098)
Observations	6210	6210	5417	7842	7842	6895
Adjusted R^2	0.010	0.019	0.097	0.011	0.017	0.101
Headline Fixed Effects	No	Yes	Yes	No	Yes	Yes
Sociodemographics	No	No	Yes	No	No	Yes

Standard errors in parentheses. All SE clustered at the respondent level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: Linear probability model for correct classification

	Pop/Culture			Political		
	Correct	Correct	Correct	Correct	Correct	Correct
True Headline	-0.030	-0.324***	-0.313***	0.007	-0.001	-0.000
	(0.021)	(0.058)	(0.062)	(0.019)	(0.064)	(0.067)
Invented Headline	0.001	-0.090	-0.083	-0.010	-0.050	-0.045
	(0.015)	(0.063)	(0.065)	(0.017)	(0.080)	(0.083)
Ireland	0.019	0.023	0.028	0.023	0.034*	0.047**
	(0.019)	(0.019)	(0.022)	(0.016)	(0.019)	(0.020)
Poland	-0.002	0.001	-0.000	-0.021	0.007	0.024
	(0.019)	(0.019)	(0.024)	(0.016)	(0.019)	(0.022)
Spain	0.027	0.029	0.033	0.007	0.022	0.028
	(0.019)	(0.019)	(0.022)	(0.016)	(0.019)	(0.022)
Female			-0.010			-0.002
			(0.015)			(0.012)
Age			0.002***			0.002***
			(0.000)			(0.000)
Low income			0.019			0.010
Base: Middle income			(0.020)			(0.016)
High income			0.027			0.016
			(0.021)			(0.018)
Employment (part-time)			-0.018			-0.026
Base: Employed full-time			(0.023)			(0.021)
Unemployed & Inactive			-0.031			-0.003
			(0.024)			(0.017)
Primary at most			0.006			-0.052**
Base: Secondary			(0.032)			(0.024)
Vocational			-0.028			-0.002
			(0.020)			(0.018)
College/Uni			-0.015			-0.002
			(0.019)			(0.016)
MA/MBA/PhD			-0.030			0.008
			(0.026)			(0.021)
Extremist (L or R)			0.005			-0.003
			(0.004)			(0.003)
Climate Change			-0.006			0.004
			(0.008)			(0.006)
Feminism too Far			0.001			-0.007
			(0.007)			(0.006)
Fair Elections			0.009			0.021***
			(0.008)			(0.007)
Political Disengaged			-0.005			0.001
			(0.006)			(0.005)
Social Networks			0.002			-0.009*
			(0.006)			(0.005)
Trust Newspapers			-0.001			0.004
			(0.006)			(0.005)
Trust Fake News			-0.002			-0.019***
			(0.007)			(0.006)
Constant	0.561***	0.732***	0.644***	0.568***	0.558***	0.479***
	(0.018)	(0.044)	(0.070)	(0.017)	(0.049)	(0.068)
Observations	5750	5750	5030	7257	7257	6375
Adjusted R^2	0.001	0.031	0.034	0.001	0.025	0.033
Headline Fixed Effects	No	Yes	Yes	No	Yes	Yes
Sociodemographics	No	No	Yes	No	No	Yes

Standard errors in parentheses. All SE clustered at the respondent level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Some sociodemographic factors significantly influence the ability to correctly classify news headlines. Gender shows predominantly negative and non-significant coefficients, implying that being female does not significantly affect one's ability to correctly identify the truthfulness of headlines. Age consistently shows a positive and significant effect, indicating that older individuals are better at correctly classifying news headlines, for both types. This could be due to greater life experience and a more developed sense of skepticism towards dubious information.

Political headlines are better classified by individuals who trust in democracy (fair elections) and are less accurately classified by individuals who are very active on social networks, and who admit to having consumed fake news in the past. Interestingly, people who declare themselves to be at the extreme of the ideological spectrum are not more skillful to correctly assess if the headlines they face are true or false.

4 Conclusion

This study provides a comprehensive analysis of the socio-economic determinants influencing the ability to detect fake news and the likelihood of sharing them across four European countries: Germany, Ireland, Poland, and Spain. Our findings reveal significant variations in media literacy and sharing behaviors influenced by demographic, ideological, and social factors. To sum up our main results, we find that, on average, individuals tend to correctly classify true news as true and false news as fake. We believe this to be good news.

With regard to credulity, older individuals and those in higher income brackets generally exhibit better media literacy, accurately assessing the veracity of news headlines more frequently. Political headlines pose a significant challenge, often leading to misclassification, particularly in Poland. This highlights the complexity and potential biases associated with political information. In contrast, gender does not significantly affect the ability to detect fake news, except in Spain where females are less likely to perceive news as true. Higher education levels do not consistently guarantee better media literacy.

Our results have also significant implications for understanding the dynamics of information spread on social media. The tendency to share fake or sensational news more than true news emphasizes the challenges in combating misinformation. Efforts to improve digital literacy and critical thinking skills among social media users are essential to mitigate the spread of false information. Moreover, the influence of demographic and socio-economic factors on sharing behavior suggests that targeted interventions may be necessary to address specific groups that are more prone to sharing misinformation. We find that the propensity to share news on social media is influenced by various factors, including age, income, and political extremism. Interestingly, individuals who trust fake news are more likely to share dubious information, these individuals could benefit from tailored educational campaigns to enhance their ability to discern credible information.

Moreover, in this study, we have provided a multifaceted view of the factors influencing the probability of correctly assessing news headlines across four European countries Germany, Ireland, Poland, and Spain. Considering separate country respondents, we show that age and income, particularly in higher brackets, positively impact media literacy. In contrast, political content and exposure to fake news pose significant challenges. The findings highlight the complexity of media literacy, influenced by a web of demographic, ideological, and social factors. As society continues to navigate the information age, these insights are crucial for developing strategies to enhance public understanding and resilience against misinformation in different national contexts.

Our study underscores the importance of understanding the nuanced interplay between socioeconomic factors and media literacy. As misinformation continues to pose a threat to informed public discourse and democratic processes, these insights are crucial for developing effective strategies to enhance public understanding and resilience against fake news. Future research should explore the impact of educational interventions and policy measures tailored to different demographic groups to mitigate the spread of misinformation.

By shedding light on the determinants of fake news detection and dissemination, this research contributes to the broader effort to safeguard democratic values and promote a well-informed citizenry in the digital age.

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A News

Table 13: News headlines used in the survey

News #	True	News Text
1	True	U.S. Warns Allies Russia Could Put a Nuclear Weapon Into Orbit This Year
2	True	Putin denies plans to deploy nuclear weapons in space
3	True	Amid Food Shortages, People in Gaza Are Ambushing Aid Convoys
4	True	Climate Change Drove Drought in the Amazon
5	True	Climate Change Powered the Mediterranean's Unusual Heat Wave
6	True	Some July Heat: 'Virtually Impossible' Without Climate Change, Analysis Finds
7	True	White House Directs Agencies to Account for Climate Change in Budgets
8	True	Warm temperatures prompt cancellation of World Cup ski races in Garmisch and Chamonix
9	True	Belarus leader Lukashenko calls for armed street patrols, warns of 'extremist' crime
10	True	Dutch nationalist Wilders lashes out against Ukrainian refugees
11	True	Alabama Supreme Court rules frozen embryos are children, imperiling IVF
12	True	Pope John Paul II covered up child abuse as cardinal in Poland, says report
13	True	Vatican approves blessings for same-sex couples in landmark ruling
14	True	Singapore paid Taylor Swift to be the only country in the South East of Asia to host her concerts
15	True	Cats Are Banned in the Town of Longyearbyen, Norway
16	True	France to Ban Smoking in Forests, on Beaches and Near Schools
17	True	Major French Retailer Drops PepsiCo Products Over High Prices

Continued on next page

News #	True	News Text
18	True	Biden Marks Ramadan, Saying the War Has Inflicted ‘Terrible Suffering’ on Gaza
19	True	US says UFO sightings likely secret military tests
20	True	After 217 Covid Vaccines, Man Had No Side Effects and Robust Immunity
21	True	Calls to examine Russian Red Cross links to Putin’s war in Ukraine
22	True	Nearly half of the tap water in the US is contaminated government, study finds
23	True	Nuclear fusion: new record brings dream of clean energy closer
24	True	The British Natural History Museum describes more than 800 new species
25	True	Tibet boarding schools: China accused of trying to silence language
26	True	Contaminated food kills 3,000 Americans every year and makes 48 million sick
27	True	Student sentenced to death in Pakistan over Whatsapp messages
28	True	Pope and Milei meet as Argentina gains first female saint
29	True	The UN warns of ”climate apartheid”: the rich are saved and the poor suffer
30	True	Gaza medics tell BBC that Israeli troops beat and humiliated them after hospital raid
31	True	King Charles III Made $34M in Rent in 2023
32	True	Israel Detain and Place Numbered ID Tags on Workers from Gaza
33	True	Pope Francis Say ’Being Homosexual Is Not a Crime’
34	True	China hawk says Beijing could attack Taiwan by 2024, bringing ‘war to the West’
35	True	A new global gender divide is emerging: Young men and young women’s world views are pulling apart
36	True	Nine out of 10 people are biased against women, says ‘alarming’ UN report

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News #	True	News Text
37	True	Requests for couples euthanasia rise in the Netherlands
38	True	Coffee drinkers have much lower risk of bowel cancer recurrence, study finds
39	True	Elon Musk's X to pay legal bills for Canadian doctor chastised over COVID-19 tweets
40	True	Russia adds chess legend Kasparov to 'terrorists and extremists' list
41	Invented	The President of the European Commission Von der Leyen announces a reduction in military spending to demonstrate goodwill towards Putin
42	Invented	Xi Jinping hints at "reunification by force" with Taiwan in a televised national address
43	Invented	The EU Parliament has passed a directive to legalize sales of lab grown meat
44	Invented	Louvre to rise general admission tickets from €22 to €55 to prevent massive lines
45	Invented	Cristiano Ronaldo converts to Islam in hope of surpassing Messi's popularity in the world
46	Invented	Recent studies show that in 2020 the major cause of death both in the USA and in the EU was COVID
47	Invented	NASA Identifies new Fungus Growing on Mars
48	Invented	New Study Shows Wi-Fi Signals Linked to rapid Brain Aging of women
49	Invented	Artificial Intelligence to Help Judges Reach Verdicts in the Court of Justice of the European Union
50	Invented	World Health Organization Declares Screen Time as Global Pandemic
51	Invented	New Study Claims Drinking Coffee Reduces Lifespan by 10 Years, but only if caffeinated
52	Invented	Lab-grown Meat Found to Cause Parkinson, Long-Term Study shows
53	Invented	Cacao Plants Face Extinction Risk in the midst of a global

Continued on next page

News #	True	News Text
		chocolate shortage
54	Invented	After issuing warrant for arrest for the Estonian PM, now Russia has issued another one for the UK Prime Minister Rishi Sunak
55	Invented	Putin's presence at Navalny's funeral causes riots and ends up with more than 400 arrested
56	Invented	Mbappe signs with Man City in a deal to make a "legendary duo for the decades" with Haaland
57	Invented	Biden pledges to hold a referendum on establishing an upper age limit of 70 for being a presidential candidate if he is re-elected
58	Invented	FIFA unveils a plan to mandate the inclusion of at least one woman per team in all male games from 2028 onwards
59	Invented	A source with close ties to Buckingham Palace disclosed that King Charles developed cancer due to excessive cellphone usage
60	Invented	The Netherlands Requires You To Be Fully Vaccinated Before Receiving Assisted Suicide
61	Fake	Ukraine's Zelenskyy purchased two luxury yachts last October
62	Fake	Joe Biden's climate plan includes cutting 90% of red meat from our diets by 2030
63	Fake	Putin bans 5G in Russia due to health concerns
64	Fake	Canadian government admits 74% of triple-vaccinated people now have Vaccine Acquired Immunodeficiency Syndrome (VAIDS)
65	Fake	The European Medicines Agency (EMA) has admitted that COVID-19 jab can have an adverse effect on female fertility
66	Fake	The Italian government led by Meloni has forbidden the use of hijab in schools
67	Fake	After months of protests, the morality police in Iran has been abolished
68	Fake	Iceland has recently banned COVID-19 vaccinations because of their dramatic negative side-effects

Continued on next page

News #	True	News Text
69	Fake	Elon Musk is planning to make Alcatraz Island, the former penitentiary, into Twitter's new headquarters
70	Fake	Macaulay Culkin will be returning for a new "Home Alone" film titled "Cabin Alone" on Disney+
71	Fake	Leonardo DiCaprio donated 10 Million dollars to the Ukrainian government
72	Fake	Herpes infection possibly linked to COVID-19 vaccine, study says
73	Fake	Numerous studies have shown that wearing underwire bras causes breast sagging
74	Fake	NASA has issued a warning about a pending "internet apocalypse" caused by a solar storm
75	Fake	Giving your dog ice or ice water on a hot day is likely to cause your pet to die from bloating and spasms
76	Fake	The "Olympic Committee" banned former NCAA swimmer Lia Thomas, a transgender woman, for life
77	Fake	Charles Darwin professed a belief in God and recanted the theory of evolution on his deathbed
78	Fake	Women Retain DNA from Every Man They've Slept With
79	Fake	Walt Disney was born out of wedlock to a woman from Almería, Spain
80	Fake	Joe Biden owns an island next to the island that was owned by Jeffrey Epstein
81	Fake	Twitter fined $30B for violating hate speech laws in Germany
82	Fake	Poland has refused to allow mosques to be constructed until churches can be built in Saudi Arabia
83	Fake	Pope Francis Forgive 4,444 Pedophile Priests in Australia back in 2018
84	Fake	Sweden has recognized sex as a sport and is preparing for the world's first championship

Continued on next page

News #	True	News Text
85	Fake	Former President Barack Obama admitted on camera that he was born in Kenya, not the United States
86	Fake	14 major US cities say goodbye to meat, dairy, and private cars
87	Invented (Ireland)	Minister of Education Norma Foley Conflict of Interest in Awarding Contracts to Family-Owned Businesses
88	Invented (Ireland)	Mary Lou McDonald's Campaign Manager Linked to Disinformation Campaigns
89	Invented (Ireland)	Mary Lou McDonald Plan in Ireland for a State-Run Social Media Platform Unveiled
90	Invented (Ireland)	The minister of foreign affairs Micheál Martin donated the equivalent of the minimum wage each month to Save the Children
91	Invented (Spain)	Minister of Education Pilar Alegría Conflict of Interest in Awarding Contracts to Family-Owned Businesses
92	Invented (Spain)	Alberto Nuñez Feijoo's Campaign Manager Linked to Disinformation Campaigns
93	Invented (Spain)	Alberto Nuñez Feijoo Plan in Spain for a State-Run Social Media Platform Unveiled
94	Invented (Spain)	The minister of foreign affairs José Manuel Albares Bueno donated the equivalent of the minimum wage each month to Save the Children
95	Invented (Germany)	Minister of Education Bettina Stark-Watzinger Conflict of Interest in Awarding Contracts to Family-Owned Businesses
96	Invented (Germany)	Friedrich Merz's Campaign Manager Linked to Disinformation Campaigns
97	Invented (Germany)	Friedrich Merz Plan in Germany for a State-Run Social Media Platform Unveiled
98	Invented (Germany)	The minister of foreign affairs Annalena Baerbock donated the equivalent of the minimum wage each month to Save the Children
99	Invented (Poland)	Minister of Education Barbara Nowacka Conflict of Interest in Awarding Contracts to Family-Owned Businesses

Continued on next page

News #	True	News Text
100	Invented (Poland)	Jarosław Kaczyński's Campaign Manager Linked to Disinformation Campaigns
101	Invented (Poland)	Jarosław Kaczyński Plan in Poland for a State-Run Social Media Platform Unveiled
102	Invented (Poland)	The minister of foreign affairs Radosław Sikorski donated the equivalent of the minimum wage each month to Save the Children

B Extra Figures

Figure 3: Bar graphs with percentages of self reported political positioning from 0[Extreme Left] to 10[Extreme Right] by country.

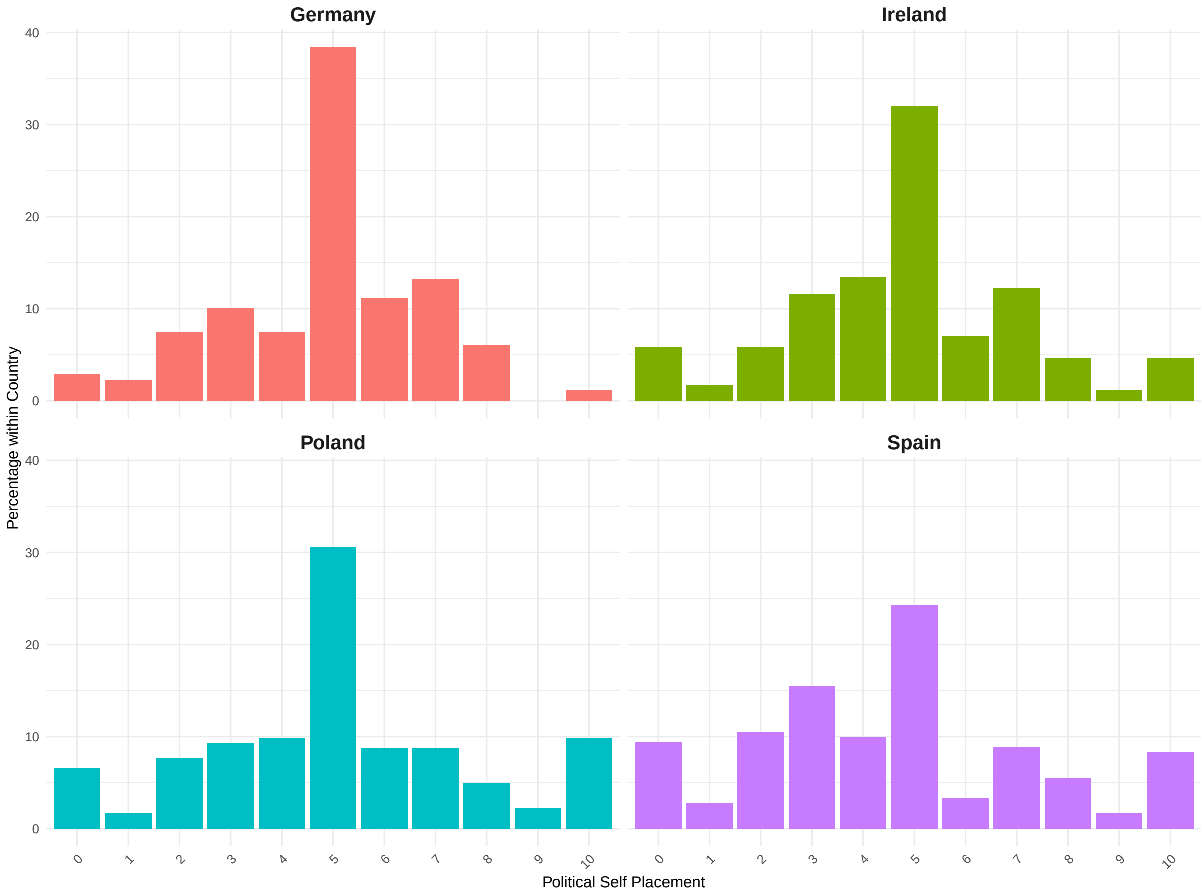


Figure 4: Survey instructions (1/3)

YouGov

Welcome to this survey, a collaborative effort between the University of Barcelona and the Technical University in Berlin. Please read the instructions carefully and try to answer all questions as accurately as possible.

The survey is divided into two parts. Today, you will participate in Part 1 and an additional invitation will be sent to you to take part in Part 2 within the next few days.

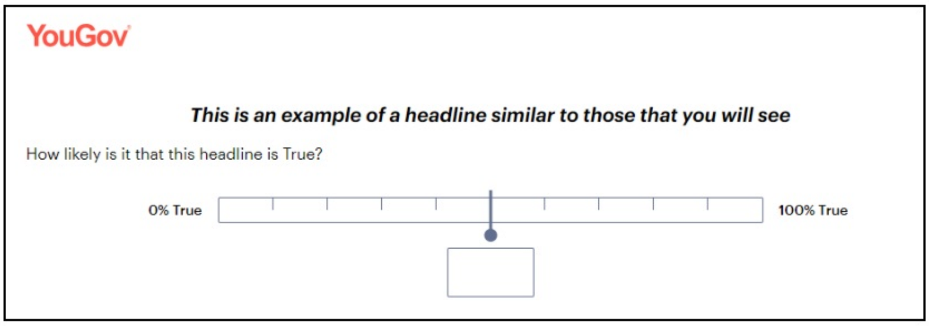
We have tested the survey and have calculated that you will need about 6-8 minutes to complete each part of the survey. You will be credited 50 points into your YouGov account after you answer each survey. Once you have completed both surveys 25 extra points will be credited in your account

To proceed, click on the next button.

Figure 5: Survey instructions (2/3)

YouGov

In the following, we will present you with 10 news headlines as in the screenshot below:



The headlines may be true or false.

True headlines come from reputable newspapers known for their high journalistic standards and rigorous source verification. False headlines are either created by us, the researchers in charge of the survey, or identified as false by news verification organizations.

For each headline, your task is to:

1. **Assess the likelihood that the headline is True.**

   To do so, use the slider to indicate the probability that the headline is True.

   The slider ranges from 0% (indicating the news are certainly not True) to 100% (indicating absolute certainty that the news are True).

Figure 6: Survey instructions (3/3)

2. **State whether you would share this headline on social media.**

   To do so, you will be able to select across the options:

   - Yes
   - No

3. **Evaluate the political impact of the headline if it were true**

   To do so, you will be able to select across a range of options that go from "Strongly favors right wing parties" to "Strongly favors left wing parties".

   If it does not favor anyone in particular, you can select the middle point "No impact on either left-wing or right-wing parties". If you are not sure, you can select "I do not know".

Please provide the most accurate answer for each question. This survey has scientific purposes, so we ask you to refrain from using external sources such as search engines or Artificial Intelligence chatbots to answer the questions.

Upon completing part 2 of the survey, we will disclose which headlines were true and which were false.

To start part 1, click on the arrow below.

Figure 7: Survey sponsorship

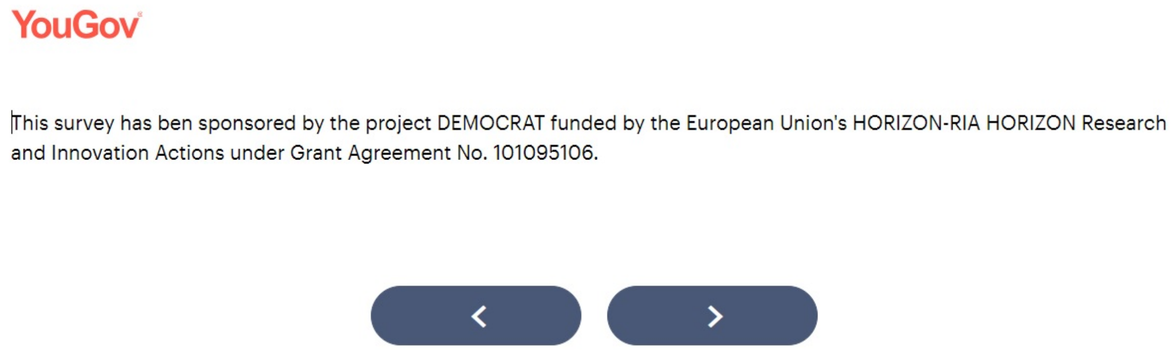


Table 14: Variables and definitions

Type of Variable	Name of Variable	Definition of Variable
Socio-economic	Female	Gender of the respondent
	Age	Age of the respondent
	Household Income	Gross household income Low: Less than 15,000€ per year Medium: 15,000€ - 50,000€ per year High: More than 50,000€ per year
	Employment Status	Full time workers / Part time workers Not working
	Education Attained	Primary / Secondary / Vocational College-Uni / Masters-PhD
Ideology	Extremism (L-R)	| 5-Ideology |, where Ideology goes from 0 (Left) to 10 (Right)
	Feminism too Far	Do you agree or disagree with the following statement? - Feminism has gone too far
	Climate Change	Do you agree or disagree with the following statement? - Climate change is caused mostly by human activities
Engagement with Democracy	Fair Elections	Do you agree or disagree with the following statement? - Elections in this country are free & fair
	Political Disengaged	I feel disengaged from politics and politicians
Trust/use of social media	Social Networks	I use social media both to keep up with people, to find and share information about topics that matter to me
	Trust Newspapers	I trust newspapers to print the truth
	Trust Fake News	I admit it, I sometimes think fake news is real, only to find out later it was incorrect

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