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Article

Overcoming the Age Barrier: Improving Older Adults' Detection of Political Disinformation With Media Literacy

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Abstract
This experimental study analyzes the effect of media literacy on the ability of Spanish seniors over 50 years of age to identify fake news. The experiment measures the improvement achieved by older adults in the detection of political disinformation thanks to a digital competence course offered through WhatsApp. The study comprises a total sample of 1,029 individuals, subdivided into a control group (*n* = 531) and an experimental group (*n* = 498), from which a qualified experimental subsample (*n* = 87) was extracted. Results reveal that participants' political beliefs, ranging from left to right positions, influence their ability to detect misinformation. A progressive political position is associated with higher accuracy in identifying right-biased news headlines and lower accuracy for left-biased headlines. A conservative position is associated with higher accuracy when the news headline has a progressive bias, but lower accuracy when the headline is right-wing. Users are more critical when the headline has a bias against theirs, while they are more likely to believe news that confirms their own beliefs. The study adds evidence on the relevance of cognitive biases in disinformation and supports the convenience of designing specific media literacy actions aimed at older adults.

Keywords
fake news; information disorders; media literacy; news bias; older adults; political disinformation; Spain; WhatsApp

Issue
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1. Introduction

During the last two decades, the public sphere debate has been intoxicated by both the emergence of polarized discussions (Kaiser & Puschmann, 2017) and information disorders (Wardle & Derakhshan, 2017). The Covid-19 pandemic has been an example of how the dissemination of false messages on social networks can be dangerous for the physical and mental health of citizens (Salaverría et al., 2020). More recently, Russia's strategic use of manipulated messages and images about the war in Ukraine (Yablokov, 2022) has highlighted the helplessness of citizens against disinformation.

The tense political climate of recent years in many Western countries has extended the shadow of disinformation beyond health and warfare. One of the fields where disinformation has spread the most has been politics (López-García et al., 2021). Political discussion has sometimes turned into noise where all those involved—rulers, politicians, media, and activists—use any tool to attack the opponent, including lies, half-truths, or facts taken out of context (Ribeiro et al., 2017). In their detailed review of the international academic literature on political disinformation, Tucker et al. (2018) detect close links between social media, political polarization, and disinformation and point out that future research should address "the effects of exposure to information and disinformation online" (Tucker et al., 2018, p. 6).

Although some studies suggest that we may be overestimating the real effect of disinformation on society (Guess et al., 2019), there is a growing concern regarding the truthfulness of public messages of all kind, which

apparently lead many citizens to distrust institutions (Allcott & Gentzkow, 2017). Discredit also translates into citizens' disaffection with news media, especially those that do not align with their own ideology (Skovsgaard & Andersen, 2020).

Due to this widespread mistrust, it is particularly important that those groups most susceptible to being influenced by disinformation receive training in fake news detection. As a matter of fact, the fight against disinformation has become a priority for the governments of Western democracies (European Commission, 2018, 2022; Tucker et al., 2018). The European Union, for example, has launched various initiatives against this phenomenon through media literacy (Livingstone, 2014; Sádaba & Salaverría, 2023).

So far, initiatives to promote media literacy have mainly focused on young people, due to their vulnerability, their immaturity, their intensive consumption of digital content, as well as more practical reasons, such as the existence of channels through formal education that allow reaching them in an effective way (Directorate-General for Education, Youth, Sport and Culture, 2022; Herrero-Diz et al., 2021). While the strategic importance of addressing the young age group is clear, attention should be drawn to another group that is also highly vulnerable: seniors, that is, those over 50 years of age. These people have a greater interest in the news (Brashier & Schacter, 2020), as well as lower digital competence (Papí-Gálvez & La Parra-Casado, 2022). The difficulty of reaching this segment of the population, given their diversity and dispersion, makes thinking of innovative ways to act necessary.

This article offers some evidence based on experimental research conducted in Spain during April and June 2022 on how the political orientation of senior citizens determines their ability to identify disinformation online. It also explores the efficacy of a digital literacy activity addressing this age group and how it interacts with their political orientation. Two-wave research was designed with a control and an experimental group, whose members were invited to take a training course via WhatsApp for 10 days. Results show that the political beliefs of the participants influence their ability to detect misinformation. Analysis establishes also that the training activity increased their ability to detect disinformation and mitigated the effect of political orientation.

2. Political Polarization, Disinformation, and Seniors

Political orientation has emerged as an important variable in the consumption of both information and disinformation. As Wong et al. (2016) argue, in highly polarized contexts individuals tend to consume content that confirms their own opinions. This manifestation of confirmation bias (Watson, 1960) results in the deliberate avoidance of exposure to views that oppose what one advocates (Rochlin, 2017). Also significant in this context is the role of the third-person bias (Corbu et al., 2021), whereby people tend to think that others are more likely to be misled than themselves (Altay & Acerbi, 2023; Martínez-Costa et al., 2022).

The emotional component that usually accompanies polarized climates finds fertile ground in social media (Serrano-Puche, 2021). It could be said that disinformation content is psychologically and strategically designed (Au et al., 2022) and is based on the audience's loss of trust in traditional media.

All these elements have given rise to a debate about the extent to which social networks contribute to polarization by creating an "echo chamber" effect (Iandoli et al., 2021). While it is true that the "echo chamber" effect has been contested (Dubois & Blank, 2018) or it has been found how little its impact is for those voting for fringe parties (Boulianne et al., 2020), the debate is still open. Spohr (2017) warns of the importance of making citizens aware of the need to seek information from diverse sources (Bakshy et al., 2015). Media literacy has also been identified as pivotal to combat political polarization (Gaultney et al., 2022).

In this context, the 50+ population poses several challenges. On the one hand, their interest in news is clear (Brashier & Schacter, 2020), although traditional media are still a benchmark for them (Choudrie et al., 2021). This poses the second challenge, as this trust in traditional media may be related to lower digital competence (Papí-Gálvez & La Parra-Casado, 2022). The third challenge also has to do with this trust in the source, since when information reaches seniors through second-generation networks, such as WhatsApp, they tend to place their trust in the person sending them the message, a friend or family member, rather than in the medium that gives it (Valera-Ordaz et al., 2022), thus becoming potential disseminators of disinformation. Recent research has brought about another interesting aspect of WhatsApp concerning the spread of disinformation: its ability to become a friendlier space for correcting false content among family members, especially older ones, thanks to users' perception of being in a more private environment than first-generation networks such as Facebook (Kligler-Vilenchik, 2022; Malhotra, 2023). Finally, the interest in this age group as an object design of digital and media literacy strategies is recent (Ramírez García et al., 2017), which highlights the urgency of not delaying this approach any longer.

Some studies have emphasized the particular vulnerability to mis- and disinformation among individuals over 50 years of age (Brashier & Schacter, 2020; Choudrie et al., 2021; Moore & Hancock, 2022). This lower protection against misinformation is accentuated when age is associated with factors such as race or economic poverty. These worrying combinations have been detected, for example, among African American underserved older adults in the United States (Seo et al., 2019, 2021).

This article seeks to provide new evidence to help lay the foundations for future media literacy actions aimed at seniors. To achieve this goal, it is necessary

to understand how the ideological orientation of people over 50 years of age affects their competence to detect counterfeit messages. Consequently, we first seek to answer the following question:

> RQ1: To what extent does the political orientation of senior citizens determine their ability to identify false content online?

Once this aspect has been determined, it is of interest to analyze the extent to which media literacy initiatives contribute to improving the ability of seniors to detect false content. To this end, and on an experimental basis, the impact of a training action aimed at this age group has been analyzed in accordance with these two other research questions:

> RQ2: Can a digital literacy action increase the ability of seniors to identify disinformation?
> RQ3: How does the political orientation of seniors affect the effectiveness of a training action to improve their ability to identify disinformation?

3. Methods

3.1. Sample and Data

To answer these questions, the results of the course What to Do to Detect False Information on the Internet, organized in Spain by MediaWise and the digital native media Newtral, were analyzed. Based at the Poynter Institute in the United States, MediaWise is a project that, with the support of Meta, has been promoting media literacy in several countries among people of all ages since 2018. The initiative developed in Spain was aimed at individuals over the age of 50 and consisted of a free 10-day course, launched in April 2022, for which participants simply needed to have a smartphone and the WhatsApp application.

After subscribing, users received a daily session, which included a video with simple, practical techniques designed to improve their judgment in the use of internet information resources and digital skills. At the end of each session, they were asked a question about the content learned.

To test the effect of this course on seniors' ability to detect disinformation, research was designed in two waves, respectively at the beginning and the end of the training activity, on a total sample of 1,029 individuals. In the first wave, this sample was divided into two groups: an experimental group (n_{e1} = 498), which received an invitation to take the course, and a control group (n_{c1} = 531) which did not. In the second wave, 381 individuals dropped out of the experiment, reducing the total sample to 648 participants; both the experimental group (n_{e2} = 200) and the control group (n_{c2} = 448) were reduced in size.

Participants were selected from residents of Spain, aged over 50 and smartphone users. In 2019, 96% of Spaniards were estimated to own a smartphone, but only 51% of those aged 55 and over owned one (Statista, 2019). This lower smartphone usage among seniors limits the extrapolation of our results. Among mobile users, WhatsApp (90%) and Facebook (66%) were the two most used social networks in the same year (Statista, 2019). The sample composition details are shown in Table 1.

Two questionnaires were developed to assess, firstly, the baseline situation and, once the experimental group had completed the training, the effect of the course on their ability to identify disinformation. All subjects participating in the study, both in the experimental and control groups, completed the two questionnaires.

Of the 498 participants in the first experimental group (n_{e1}), 190 completed at least one of the

Table 1. Profile of the participants.

	Total sample		Experimental sample	
Sex	*n*	%	$n_{e2>5}$	%
Men	493	47.9	45	51.7
Women	536	52.1	42	48.3
Age	*n*	%	$n_{e2>5}$	%
50–59 years	335	32.6	33	37.9
60–69 years	448	43.5	41	47.1
≥70 years	246	23.9	13	14.9
Educational level	*n*	%	$n_{e2>5}$	%
Non formal	23	2.2	1	1.1
Secondary	400	38.9	25	28.7
Vocational	318	30.9	29	33.3
Polytechnic	87	8.5	11	12.6
Higher	143	13.9	12	13.8
Postgraduate	58	5.6	9	10.3
TOTAL	1,029	100.0	87	100.0

10 sessions of the course. For the purposes of data analysis, a subsample ($n_{e2>5}$) comprising 87 of these 190 cases was taken into consideration, consisting of those who, at the end of the course, had attended at least five sessions. This decision, while limiting the predictive potential of the data, is consistent with the objective of observing results clearly linked to the course.

Among the 87 participants in the experimental group subsample $n_{e2>5}$, there were slightly more men (51.7%) than women (48.3%). In the subsample of the experimental group, there was also a slightly higher percentage of people between 60 and 69 years old in relation to the total sample. The distribution of participants according to their educational level is similar (see Table 1). A chi-square test of independence showed that there was no significant association between profile of participants—sample or experimental—and sex ($p = 0.88$), age ($p = 0.90$), or educational level ($p = 0.25$; see Table 1).

The questionnaire was adapted from the one by Moore and Hancock (2022), with their permission. The questionnaire adapted for Spain was structured in six blocks. Block 1 asked participants to rate the truth or falsehood of selected headlines, using a seven-item Likert scale (from 1 = *clearly false* to 7 = *clearly true*). They were presented with a total of six headlines, three with false or inaccurate information and three with true news items. The falsehood of the news items used in the experiment was checked by using fact-checking organizations, which determined that these news items were not true. Among the false news items, one was congruent with a left-wing ideological bias, one was congruent with a right-wing ideological bias, and the third was neutral. The 12 headlines included in the two waves were extracted from media and news websites. Only news items from the last month prior to each wave were selected to potentially obtain a higher recall among the sample subjects. The Supplementary File shows the headlines used in the questionnaires for both waves.

Block 1 of the questionnaire also asked participants whether they had looked up information about the news before giving their opinion on the veracity of each headline. Block 2 asked about the technological skills of the participants. Block 3 asked about the level of trust in the information received through all media. Block 4 asked about participants' media and technology consumption habits and political preferences. Block 5 asked for demographic information. Finally, Block 6 explained any inaccuracies or misrepresentations in the headlines of Block 1.

The research was conducted between the end of April and the end of June 2022 and was carried out by the market research company YouGov. The project was approved by the Research Ethics Committee of the University of Navarra.

3.2. Measures

In Block 1, participants were asked to rate the truth or falsity of each headline, using the following scale: 1 = *clearly false* to 7 = *clearly true*. For adjustment to the other research variables, the direction of the scale was reversed for responses to false headlines so that high scores represent high levels of correctness.

The political position of the participants was asked in two ways. The first one sought to define their affiliation with certain ideological groups ("Overall, in which of the following ideological groups do you recognize yourself?"). Respondents could answer one of the following options: 1 = Left, 2 = Right, 3 = Center, and 4 = Other. In the control group, 42% said they belonged to ideological groups of the Left, 27.7% to the Right, 18.8% to the Center, and 11.6% to the Other category. The distribution in the experimental group was very similar, with 41.4% responding Left, 26.4% responding Right, 13.8% responding Center, and 18.4% belonging to the Other category.

The second question consisted of asking participants for a general description of their views on politics ("In general, how do you describe your views on politics?"). Respondents could answer one of the following options: 1 = Very Progressive, 2 = Progressive, 3 = Moderate, 4 = Conservative, and 5 = Very Conservative. To adjust this variable to the analysis, it was recoded into three categories: (a) Progressive (Very Progressive and Progressive), (b) Moderate, and (c) Conservative (Very Conservative and Conservative). In the control group, 49.3% acknowledged holding a Progressive political view compared to 46% in the case of the experimental group. The Moderate viewpoint was almost equal between the two groups (40.8% control group vs. 41.4% experimental group). Conservative political views were in the minority in both groups, with a slightly higher incidence in the experimental group (12.6% vs. 9.8%). The difference in terms of political position and views on politics makes sense in the case of Spain, where there is a varied number of political parties not always aligned to the left/right axis but with a particular focus on identity (nationalist parties). Those parties are very relevant in some territories such as Basque Country or Catalonia.

Figure 1 shows the distribution of the different views on politics according to the ideological affiliation of the participants. In the control group, subjects with a right-wing ideology defined themselves mostly as Moderate (77%). The experimental group repeated this pattern but in a less pronounced way (61%) and with a greater presence of a Progressive political point of view compared to the control group (30% vs. 17%). Of those with a left-wing ideology in the control group, 74% declared themselves to be Progressive and 23% Moderate, which was similar to the experimental group. In the control group, 52% of those with a centrist ideology said they held a Moderate political view, 32% said they were Conservative, and 14% were Progressive. In the case of the experimental group, there were fewer moderates and more conservatives (both 42%). Lastly, the ideological group configured as Others consisted mostly of subjects with Moderate political views (75% of the control group, 69% of the experimental group).

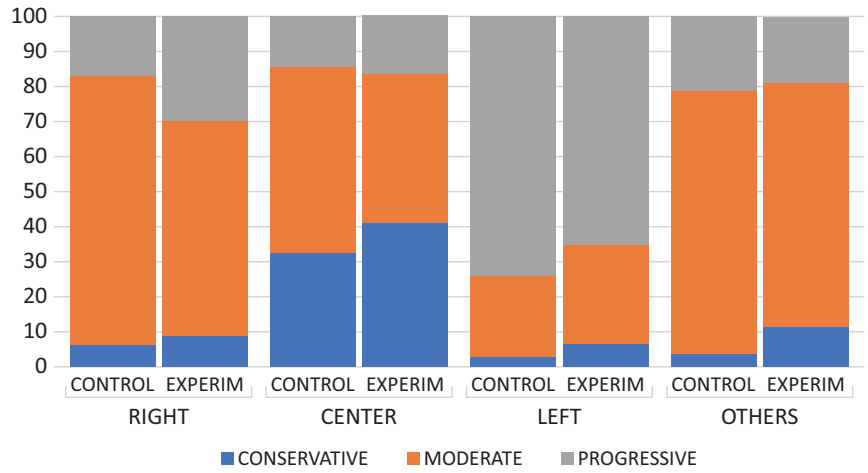

Figure 1. Political affiliation vs. viewpoint on politics: Control group (n_{c1}) and experimental group (n_{e1}).

3.3. Analysis Strategy

A t-test for related samples was applied to verify whether participation in the two waves of the study produced significant differences in the accuracy of the truth or falsity of the headlines. To investigate the relationship between political affiliation, general political views, the presence of political bias in news headlines (right-wing, left-wing, or neutral), and the degree of correctness of the truth or falsehood of each headline, we performed an ANOVA analysis. In the case of a significant relationship, we performed the Bonferroni post-hoc test indicating the effect size.

4. Results

The analysis of the difference in means indicates the presence of significant differences. For the control group, Wave 1 (M = 4.64; SD = 0.63) versus Wave 2 (M = 4.42; SD = 0.64) obtains a p-value of ≤0.001. For the experimental group, Wave 1 (M = 4.64; SD = 0.63) versus Wave 2 (M = 4.42; SD = 0.64) reflects a p-value of 0.025. These values indicate that the observed differences between the measurements are highly unlikely to have occurred by chance, supporting the idea that the differences are statistically significant. Regarding the magnitude of these differences for both groups, they can be considered between small and moderate (control group d = 0.19; experimental group d = 0.25).

4.1. Political Point of View

Taken together, the research data suggest that the general political viewpoint influences the ability to accurately verify the truth or falsity of a news headline depending on the political bias reflected in it. As can be seen in Tables 2 and 3, a Progressive political viewpoint facilitates greater accuracy in headlines with a right-wing political bias and less success when the headline has a left-wing bias. In the case of a Conservative political view, the trend is reversed: The hit rate is higher when the headline is biased to the left and falls when the approach reflects a right-wing view. In the case of holding a Moderate view, the influence of political bias to the right or left is not as pronounced in terms of the averages obtained. The absence of political bias in the news headline does not show a significant relationship with the political view of the participants and its possible influence on the verification of the news, both for the control group, except in the first wave—Wave 1: F(2.448) = 3.35, MSE = 3.35, p = 0.036; Wave 2: F(2.448) = 1.01, MSE = 1.22, p = 0.336—and in the case of the experimental group—Wave 1: F(2.87) = 0.465, MSE = 0.521, p = 0.633; Wave 2: F(2.87) = 1.56, MSE = 2.40, p = 0.216. This trend is similar between both groups, although in the case of the experimental group, there is more difference between the p-value obtained in both waves: p ≤ 0.001 (Wave 1) vs. p = 0.040 (Wave 2). Even so, the relationship is still significant, and it cannot be

Table 2. Control group: Political orientation.

		Conservative		Moderate		Progressive				
	Wave	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*(2.448)	*p*	η^2
Left headline	1	4.02	1.43	4.08	1.27	3.42	1.33	13.3***	<0.001	0.056
	2	4.73	1.24	4.58	1.23	4.18	1.21	6.88**	0.001	0.030
Right headline	1	3.76	1.67	3.99	1.39	4.96	1.31	29.4***	<0.001	0.117
	2	3.88	1.38	4.06	1.18	4.58	1.15	12.2***	<0.001	0.052

Notes: * p < 0.05, ** p < .001, *** p < 0.001.

Table 3. Experimental group: Political orientation.

		Conservative		Moderate		Progressive				
	Wave	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*(2.87)	*p*	η^2
Left headline	1	5.59	0.97	3.86	1.30	3.47	1.33	11.6***	<0.001	0.217
	2	5.55	1.42	4.51	1.27	4.26	0.99	4.96**	0.009	0.106
Right headline	1	2.91	1.36	4.16	1.42	5.21	1.38	12.9***	<0.001	0.235
	2	3.41	0.97	4.35	1.29	4.63	1.53	3.35*	0.040	0.040

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

affirmed that the training action carried out has deactivated this influence.

For the control group, the post-hoc comparison using the Bonferroni test indicates a significant difference in 10 of the 18 pairwise comparisons made (see Table 4). The Conservative–Progressive pair shows five significant differences, more pronounced when assessing headlines biased to the right. The Progressive–Moderate pair accumulates four significant differences, all of them in headlines biased to the right or to the left. Finally, the Conservative–Moderate pair shows a single difference ($p = 0.043$) in the case of a neutral headline. The distribution by waves of significant differences is even in the case of right- and left-biased headlines and disappears in the case of neutral headlines during the second wave of the study.

The pairwise comparison of the experimental group shows eight significant differences between the analyzed pairs (see Table 5). On right- and left-biased headlines, the Conservative–Progressive pair shows four significant differences and the Progressive–Moderate pair three. The Conservative–Moderate pair shows a single case of significant difference for right-biased headlines (Wave 1). The wave analysis indicates that during the second phase of this research—after conducting formative modules—the significant differences between pairs decreased. They disappeared for the Conservative–Moderate and Progressive–Moderate pairs in the case of right-biased headlines and were smaller but did not disappear in the remaining cases.

4.2. Political Affiliation

The analysis did not find significant differences according to the political affiliation of the participants in the case of a neutral headline, both for the control group—

Table 4. Control group: Post hoc analysis for pairwise comparison groups.

		Post hoc			Effect size		
	Wave	C vs. P	C vs. M	P vs. M	C vs. P	C vs. M	P vs. M
Left headline	1	0.020*	1.000	<0.001***	0.470	−0.044	0.501
	2	0.024*	1.000	0.003**	0.448	0.118	0.330
Right headline	1	<0.001***	0.964	<0.001***	−0.867	−0.164	−0.703
	2	0.001**	1.000	<0.001***	−0.594	−0.153	−0.441
Neutral headline	1	0.040*	0.043*	1.000	0.416	0.405	0.011
	2	0.497	0.575	1.000	0.233	0.215	0.017

Notes: * $p < 0.05$; ** $p < 0.01$, *** $p < 0.001$; C stands for Conservative, M for Moderate, and P for Progressive.

Table 5. Experimental group: Post-hoc analysis for pairwise comparison groups.

		Post hoc			Effect size		
	Wave	C vs. P	C vs. M	P vs. M	C vs. P	C vs. M	P vs. M
Left headline	1	<0.001***	<0.001***	0.563	1.657	1.352	0.305
	2	0.007**	0.036*	1.000	1.083	0.873	0.210
Right headline	1	<0.001***	0.030*	0.005**	−1.649	−0.899	−0.750
	2	0.034*	0.138	1.000	−0.892	−0.690	−0.202
Neutral headline	1	1.000	1.000	1.000	0.310	0.163	0.147
	2	1.000	0.287	0.899	−0.334	−0.574	0.240

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; C stands for Conservative, M for Moderate, and P for Progressive.

Wave 1: $F(3.448) = 0.397$, $MSE = 0.391$, $p = 0.0.760$; Wave 2: $F(3.448) = 0.483$, $MSE = 0.586$, $p = 0.695$—and in the experimental group—Wave 1: $F(3.87) = 0.770$, $MSE = 0.859$, $p = 0.514$; Wave 2: $F(3.87) = 0.295$, $MSE = 0.470$, $p = 0.829$.

In the case that the headline reflects some kind of political bias, political affiliation is significant. As can be seen in Tables 6 and 7, the political affiliation Right reflects a higher mean score on left-biased headlines in the control group; in the experimental group, this pattern is not so clear because it achieves its highest mean score precisely when assessing right-biased headlines during the second wave of the study and after participating in training actions. A Center political affiliation is associated for both groups with a lower score if the headline is biased to the right. In the case of belonging to the Left group, both the control and experimental groups achieve higher hits on right-biased headlines (control group, Wave 1, $M = 4.98$; experimental group, Wave 1, $M = 5.28$) and significantly lower mean hit scores if the bias is to the left (control group, Wave 1, $M = 3.29$; experimental group, Wave 1, $M = 3.44$). The political affiliation category Others is defined as having a larger mean hit difference between the two waves when the headline reflects political bias to the left.

For the control group, in both waves and according to the type of political bias of the news headline, in the case of "headline with a bias to the right" the p-value is less than 0.001. The difference in this data between both waves in left-biased headlines is quite similar to the previous case (Wave 1, $p \leq 0.001$; Wave 2, $p = 0.005$). In the experimental group, the p-value varies across waves of the study. In the case of left-biased headlines, it goes from 0.002 to 0.031 during the second wave. When the headline reflects a rightward bias, a nonsignificant difference is obtained during the second wave (Wave 1, $p \leq 0.001$; Wave 2, $p = 0.084$).

In the case of headlines with neutral political bias, the pairwise comparison is not significant under any assumption of this study (see Tables 8 and 9). For headlines with right or left bias and the control group, there is a significant difference in both waves for the pairs Right–Left and Left–Center. In the case of Center–Others, the difference is significant in both waves of right-biased headlines and in the first wave when the headline reflects a left bias. In the case of the pairs Right–Center and Right–Others the difference is significant only for right-biased headlines presented during the first wave of the study.

The experimental group has fewer instances of significant differences between pairs and all occur during the first wave of the research. In the case of right-biased headlines, significant differences are found for the pairs Right–Left, Left–Center, and Left–Others. For left-biased headlines, the significant difference is for the pairs Left–Center and Center–Others.

5. Discussion and Conclusions

The analysis shows how the political beliefs of the participants influence their ability to detect misinformation. A progressive political position is associated with a higher accuracy for right-biased headlines and a lower accuracy for left-biased headlines. A conservative position is associated with higher accuracy when the headline has a progressive bias and lower accuracy when the headline is right-wing. In other words, users are more critical when

Table 6. Control group's mean number of correct answers to the question "In which ideological group do you recognize yourself?"

		Right		Center		Left		Others				
	Wave	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*(3.444)	*p*	η^2
Left headline	1	4.19	1.27	4.43	1.40	3.29	1.21	3.77	1.20	21.2***	<0.001	0.125
	2	4.63	1.29	4.70	1.25	4.22	1.10	4.33	1.35	4.39**	0.005	0.29
Right headline	1	3.98	1.37	3.42	1.58	4.98	1.20	4.58	1.30	31.0***	<0.001	0.173
	2	3.99	1.42	3.64	1.23	4.66	1.08	4.38	1.28	18.1***	<0.001	0.109

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 7. Experimental group's mean number of correct answers to the question "In which ideological group do you recognize yourself?"

		Right		Center		Left		Others				
	Wave	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*(3.83)	*p*	η^2
Left headline	1	4.22	1.33	5.13	1.21	3.44	1.27	3.66	1.52	5.41**	0.002	0.164
	2	4.13	1.28	5.25	1.44	4.39	1.05	4.94	1.18	3.10*	0.031	0.101
Right headline	1	3.85	1.72	3.54	1.25	5.28	1.20	4.06	1.54	7.45***	<0.001	0.212
	2	4.37	1.25	3.53	1.63	4.69	1.36	4.13	1.35	2.30	0.084	0.077

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 8. Control group: Post hoc analysis for pairwise comparison groups.

		Post hoc						Effect size					
	Wave	R vs. L	R vs. C	R vs. O	L vs. C	L vs. O	C vs. O	R vs. L	R vs. C	R vs. O	L vs. C	L vs. O	C vs. O
Left	1	<0.001*	1.000	0.268	<0.001*	0.092	0.020*	0.714	0.189	0.333	0.903	−0.381	0.522
headline	2	0.025*	1.000	0.845	0.018*	1.000	0.525	0.332	0.058	0.243	0.391	−0.089	0.302
Right	1	<0.001*	0.023*	0.042*	<0.001*	0.323	<0.001*	0.750	−0.412	−0.447	−1.162	0.303	−0.859
headline	2	<0.001*	0.198	0.272	<0.001*	0.660	0.002*	0.583	−0.302	−0.332	−0.885	0.251	−0.634
Neutral	1	1.000	1.000	1.000	1.000	1.000	1.000	0.081	0.049	0.053	0.131	−0.027	0.103
headline	2	1.000	1.000	1.000	1.000	1.000	1.000	0.116	−0.096	0.015	0.020	−0.132	−0.112

Notes: * indicates that $p < 0.001$; R stands for Right, L for Left, C for Center, and O for Others.

Table 9. Experimental group: Post-hoc analysis for pairwise comparison groups.

		Post hoc						Effect size					
	Wave	R vs. L	R vs. C	R vs. O	L vs. C	L vs. O	C vs. O	R vs. L	R vs. C	R vs. O	L vs. C	L vs. O	C vs. O
Left	1	0.194	0.352	1.000	0.002*	1.000	0.029*	0.581	0.683	0.422	1.264	−0.159	1.105
headline	2	1.000	0.061	0.246	0.200	0.780	1.000	−0.216	0.938	−0.676	0.721	−0.459	0.262
Right	1	0.002*	1.000	1.000	0.003*	0.034*	1.000	1.005	−0.215	−0.151	−1.220	0.854	−0.366
headline	2	1.000	0.560	1.000	0.081	1.000	1.000	−0.237	−0.604	0.179	−0.842	0.416	−0.426
Neutral	1	1.000	1.000	0.987	1.000	1.000	1.000	0.321	–0.269	0.456	0.052	0.134	0.187
headline	2	1.000	1.000	1.000	1.000	1.000	1.000	0.009	−0.196	0.237	−0.186	0.228	0.041

Notes: * indicates that $p < 0.001$; R stands for Right, L for Left, C for Center, and O for Others.

the headline has a bias opposite to their own, and, on the other hand, they tend to believe information that confirms their own beliefs more readily. It could be said that this is a confirmation bias (Watson, 1960) and at the same time a manifestation of the third-person bias.

The finding of a significant positive difference in the correctness of the truth/false assessment of the headlines between the two waves of the study and for both groups could lead us to think that the mere fact of having made them aware of this phenomenon through the questionnaire—whether they have participated in the training activity—already provides differences that cannot be attributed to chance. This result reinforces the idea of establishing and designing specific actions aimed at this audience. However, in the case of the control group, and in relation to political affiliation, the significant difference disappears for all ideological groups (Right, Left, Center, Other) in the second wave of the experimental group. Also during this second wave, right-wing participants significantly improve their accuracy in right-wing headlines (their "weak point"). All significant differences in the pairwise comparison also disappear. This is not the case in the control group, which allows us to infer that this difference is the result of the training received, which is in line with research pointing to media literacy's impact on reducing political polarization (Gaultney et al., 2022). This is reinforced by the fact that if the headline is neutral, there is no influence of the political affiliation variable, and both groups get it right more often.

Given the importance of emotions over objective knowledge in the current polarized ideological context, it does seem relevant that media and digital literacy actions also consider the particularities of the target audience. Considering the recent interest in media and digital literacy actions aimed at this population segment (Ramírez García et al., 2017) and given their clear interest in news, this experimental study allows us to affirm the relevance of designing specific actions aimed at this population segment (Tucker et al., 2018). This study also confirms positive previous results of media literacy activities addressing this age group (Moore & Hancock, 2022).

This experiment gives hope to the role of digital and media literacy programs addressing senior citizens. In the case of Spain, using WhatsApp was perhaps detrimental to a higher involvement of the experimental group on the course content. Those designing similar initiatives in other countries should be aware of how this age group relates to different channels and platforms before choosing the most convenient one.

For the future, the results of our experiment invite us to explore whether media literacy measures have a comparatively more positive effect among older adults than the younger population. Since older citizens are more likely to vote, consume traditional media, and actively participate in politics, we can hypothesize that directing efforts to strengthen resilience against misinformation towards this segment of the population may have particularly beneficial effects on overall public trust recovery. However, this is a question that remains open for future studies. Among the limitations of this study is the fact that it included only part of this senior population, that is, those who owned a smartphone. Studies including the

whole age group will be necessary to get a more complete picture. Furthermore, the selection of WhatsApp as a channel for the training activity highlighted the need to adapt the media to their digital and media competence in the future.

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Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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