

Abstract

Is Facebook eroding the public agenda? Evidence from survey and web-tracking data

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Preserving a common public agenda positively affects social integration, minimizing social cleavages and polarization. While social media are known for fragmenting the media environment, research has not devoted much attention to their effect on the public agenda. This paper addresses whether consuming news through Facebook shapes individual agendas that diverge from the set of most important problems (MIPs) as perceived by the general public. Our research design combines survey and web-tracking data to analyse how Facebook-referred news consumption influences individual consumers' agendas. We find that when Facebook is a relevant news referral, people are less likely to mention the top MIPs for a representative sample of the Spanish population. We discuss the implications of our findings for the public agenda.

Keywords: public agenda, agenda-setting, social media, Facebook, public opinion.

The authors want to thank the support of the Spanish Ministry of Science and Innovation (Grant number CSO2013-47082)

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Preserving a common public agenda is important for social integration, collective decision-making, and democratic stability. The lack of a common public agenda, understood as the concerns of citizens on public matters, has been seen to endanger social integration, increase political polarization and maximize social cleavages, which could ultimately translate into fragmented parliaments and seriously compromised governances.

The connection between traditional media and the public agenda is undisputed, but much less has been written on the impact of social media over individuals' public agenda, in spite of social media's increasing popularity and ability to shape the public agenda (Sayre et al., 2010). Social media are known for facilitating audience fragmentation (e.g., Klinger & Svensson, 2015; Sunstein, 2009), which may lead audiences to isolate themselves from the larger public discourse and, in the process, undermine the very notion of a common public agenda (Chaffee & Metzger, 2001).

This study aims at clarifying the role of social media platforms in agenda-setting by looking at the effects of social media on citizens' individual agendas. No study that we know of has yet analysed social media's agenda-setting power from the perspective of people's cognitions about the most important problems (MIPs), which ultimately define the public agenda (McCombs & Shaw, 1972). More specifically, we ask whether using social media to follow news shapes (individual) agendas that diverge from the set of MIPs as most commonly perceived by the general public, thus reducing the amount of consensus over the public agenda. We focus on Facebook (FB) because it is by far

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the most used platform to get news (Nick Newman, Fletcher, Kalogeropoulos, Levy & Nielsen, 2017) and the largest social media platform.

Of note, our data-collection strategy constitutes another novelty of this study. Most studies looking for social media effects on public opinion rely on survey data and, hence, on reported measures of news consumption (e.g., Gil de Zúñiga, Weeks, & Ardèvol-Abreu, 2017; Shehata & Strömbäck, 2018; Vaccari et al., 2016; Valeriani & Vaccari, 2015). Instead, we use web-tracking data to obtain observed measures of news media exposure through social media and combine them with survey data. We aim to relate the observed use of FB for news exposure to individual agendas. We harness the potential of our data-collection strategy and research design to overcome the well-known issues (e.g., inaccurate self-reporting) when measuring news exposure through survey data (Prior, 2009).

The paper starts with a literature review on the agenda-setting effects of digital media, which discusses the lack of attention to social media. The research design follows, which highlights the value of our direct measures of exposure for news media use obtained by tracking online behaviour. The presentation of the estimation results for the common public agenda and a discussion of its implications close the paper.

Social media and public agenda

The agenda-setting process describes the ability of news media to influence the salience of topics in the public agenda, which, in turn, refers to the concerns of average citizens. Traditionally, mass media were shown to have a central role in the agenda-setting process because they had considerable and monopolistic leverage over the topics that people thought about (McCombs & Shaw, 1972; Williams & Carpini, 2004). Yet, with the emergence of online media, and particularly of social media, this might be changing.

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Online media have allegedly undermined the traditional agenda-setting model (Takeshita, 2006) by expanding the number of media outlets and information sources. Unbounded information has created opportunities for nonmainstream political actors to influence the news agenda (Kutz, 1998, quoted in Williams & Carpini, 2004). Furthermore, more recently, social media platforms have given citizens a more active role in the production, distribution, and consumption of news (Buns, 2003; Goode, 2009; Singer, 2014; Trench & Quinn, 2016; Williams & Carpini, 2004), contributing to nest individuals in personalized, issue-specific, and network-dependent streams of news (Klinger & Svensson, 2015; Shehata & Strömbäck, 2018).

A more decentralized and personalized communication environment, such as the one just described, might undermine traditional “top-down” agenda-setting processes and increase the risk of audience fragmentation. Audience fragmentation is a concern from a normative point of view because it can erode the “common ground” that facilitates social integration, social consensus, and the bridging of social cleavages (Chafee & Metzger, 2001; Hollander, 2008; Tewksbury, 2005; Shaw & Hamm, 1997; Takeshita, 2006; Sunstein, 2009). Although some scholars acknowledge that a more decentralized and fragmented media environment might also have some positive consequences—e.g., diversifying and expanding the public agenda (Chafee & Metzger, 2001, p. 375)—the prevailing view is that audience fragmentation “will make agreement among respondents over the ‘most important problems’ extremely unlikely” (p. 374), undermining the “social glue” that holds democratic societies together (Sunstein, 2009).ⁱ More important for our study, fragmentation is likely to alienate individuals from the nation’s central issues (Fonseca 2015).

A vast amount of news consumption is now taking place through social media platforms, which facilitate the filtering and personalization of content like no other

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through several curation processes. Most social media sites are based on largely unknown algorithms that promote news content tailored to match individuals' preferences and previous interactions. Social media platforms are hence highly engineered domains where news content is no longer presented and organized according to the editorial decisions of news publishers, but instead follows patterns of personal and social behaviour, which in turn may create fragmented domains where news content differs from individual to individual. Yet again, and despite these major changes in how news is distributed and consumed online, the literature (i.e., Sunstein, 2009; Chafee & Metzger, 2001; Bennet & Iyengar, 2008) has largely ignored the role of social media in the reconfiguration of the public agenda, particularly whether social media platforms erode or renew citizens' consensus over the public agenda.ⁱⁱ

The literature on the agenda-setting process and social media has mostly focused on the reciprocal influences between social and traditional media in the construction of public agenda (Chu & Fletcher, 2014; Cornfield, Carson, Kalis, & Simon, 2005; Farrell & Drezner, 2008; Groshek & Tandoc, 2017; He, Zha, & Li, 2013; Meraz, 2009; Reese, Rutigliano, Hyun, & Jeong, 2007; Sayre et al., 2010), devoting very little attention to social media effects at the citizen level. Even studies looking at the primary-level agenda-setting effects of social media on users (Ceron et al., 2016; Kwak et al., 2010; Park et al., 2013) have generally tested these effects indirectly through user conversations at the aggregate level. Within this literature, no study that we know of has yet directly asked citizens about the MIPs of their country to test the agenda-setting effects of social media. This despite the fact that agenda-setting refers very specifically to the impact of news coverage by the media on the importance accorded to issues by the public.

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A large number of studies suggest that using social media for consuming news is a completely different experience from using legacy media (Klinger & Svensson, 2015; Messing & Westwood, 2012; Shehata & Strömbäck, 2018), which might affect the way people learn about politics and about the MIPs of their societies.

For a start, the dissemination of news is not social media's primary function. In a study using direct measures of news consumption through social media, Flaxman et al. (2016) found that only 1 in 300 clicks of links posted on FB lead to substantive news articles; the vast majority of these clicks, they found, go to video- and photo-sharing sites. Therefore, even if more people have some exposure to news through social media, all kind of soft content continue to dominate information exchanges in these platforms. As a result, people getting news primarily from social media might have some trouble to reach news stories about the topics that constitute the public agenda.

Second, citizens that use social media for news are more likely to be exposed to a more personalized news environment than what is promoted by legacy media. From a network-logic perspective (Klinger & Svensson, 2015), social media are, above all, domains where different curation processes take place to sort the kinds of messages that individuals are exposed to (Thorson & Wells, 2015).ⁱⁱⁱ In turn, curation processes determine how information flows combine in an individual's social network and the messages that are more likely to be sorted out and passed on within that particular network. Through personal choice (Bakshy, Messing & Adamic, 2015; Barberá, 2014) and social and algorithm curation, social media is likely to expose people to like-minded ideas and information (Klinger & Svensson, 2015), narrowing their worldviews and reducing their potential exposure to problems and issues that are not of interest to them and their immediate surroundings.

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Third, through social sharing of messages, users are replacing professional editors concerning decisions in information selection and distribution, reproducing the “two-step” information model (Lazarsfeld, Berelson, & Gaudet, 1944) at a large scale. Even if much of the news content shared in social media comes from mainstream media (Newman, 2011), in choosing which news to read and share with others, users are making editorial decisions concerning news value and visibility (Singer, 2014). Moreover, studies show that the popularity of a news story (i.e., the number of social endorsements) among peers, and not professional gatekeepers, is what determines people’s choices concerning news selection and distribution (Messing & Westwood, 2012). In turn, by having an impact on news visibility, users’ decisions also help to create a parallel news agenda, especially when they systematically select types of news that are different from the legacy media agenda.

Recent research finds partial support for a (social) news agenda gap. This research suggests that issues that gain prominence in social media platforms systematically differ from the issues emphasized by legacy media (Bright, 2016). The discrepancy between what people share in social media and what they read in legacy media might “make news consumed through social media qualitatively different from news consumed directly through online platforms” (Bright, 2016: 344).

Other studies, in contrast, agree that mainstream media still retain an important capacity to impose their topics on users’ conversations in social media (e.g., Ceron et al., 2016; Kwak et al., 2010; Majó-Vázquez, Zhao & Nielsen, 2017; Park et al., 2013). However, most of these studies are based on Twitter data, and this platform has been seen to have special characteristics, particularly to be more “newsy” than others or to better resemble an information-sharing network than a social network (Ceron, 2015; Colleoni, Rozza, & Arvidsson, 2014; Groshek & Tandoc, 2017; Kwak et al., 2010).

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In sum, several factors might contribute to making the experience of using social media to consume news different from using traditional media. People getting news regularly from FB might be exposed to more entertainment, soft news, and personal stories that often neglect a factual approach; they might be nested in personalized spaces that increase exposure to like-minded information; finally, they might be exposed to an alternative social (news) agenda resulting from users' new role as (secondary) gatekeepers (Singer, 2014). All of these factors might help to shape individual agendas that diverge from the set of problems that are commonly perceived as most important by the general public. This would lead to our sole and main hypothesis: *News consumption through FB decreases the likelihood of mentioning the most important problems as perceived by the general public.*

Data and Measures

This study uses two interdependent datasets to investigate the effects of FB as a referral for news on individual agendas. First, we use survey data to measure individual agendas, and secondly, we use web-tracking data to trace individuals' online activity, which allows measuring visits to news outlets and identifying points of access to these visits—that is, when an individual has reached a news outlet from FB. Our data comes from a study conducted in Spain, where 73% of the population uses FB and, of them, 47% use it to get news. These figures stand in (stark) contrast with those for Twitter, which is used by 33% of the Spanish population, but, of this population, only 18% use it for getting news (Newman et al., 2017)

Participants in our study are part of an opt-in panel of a Spanish market research firm, which recruited individuals using online contacts and offering incentives for completing structured questionnaires on their personal electronic devices (home computers, tablets, or cell phones). We targeted a sample of 1000 people, and the final

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response rate was 75%, which is a satisfactory figure and in line with the tendencies reported in the academic literature (Cook, Heath, & Thompson, 2000; Krosnick, 1999) . We retained 40.8% of the subjects for our tracked sample. All analyses are performed using this restricted sample (N=408). Individuals in our (tracked) sample explicitly agreed to share their anonymized browsing history for our study. The size of our sample accords with previous research analyzing individual observed digital news consumption (Guess, 2016; Guess, 2015). All our participants answered an initial questionnaire from January to February 2015, tapping different socio-demographics. A second survey was administered from February to April 2015, where people in our panel were invited to answer questions about the MIPs.

As for the sociodemographic characteristics of our tracked sample, their ages range from 18 to 74 ($M=36$, $SD=13.73$). In total, 49% are female. Education levels vary between primary studies and college; the largest group completed a college degree (57%), closely followed by those with secondary studies (45%). These figures match the characteristics of the Spanish online population (Robles, Molina, & De Marco, 2012). Despite these similarities, we must refrain from making overgeneralizations from our final sample, since people who voluntarily accept being tracked are generally less concerned about privacy. Yet we can see this attitude as an advantage and assume that they will not modify their news consumption routines as a result of our study. Notably, our subjects agreed to being tracked long before we started the study, which may have also helped to mitigate any initial change in their regular behavior.^{iv}

Our sample targets all individuals of the Spanish online population, except for those living in Catalonia. At the time we launched our study, one issue clearly marked the public agenda in Catalonia, in stark contrast to other Spanish regions: the prospect of becoming an independent state. Avoiding this region helps us to assess the impact of

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the digital media on individual agendas in everyday life instead of during major political events, which tend to more easily draw people together around short-lived problems (M. McCombs & Zhu, 1995).

To measure individual agendas we borrowed the standard open-ended questions for the nation's MIPs, largely used in this research field (M. McCombs & Zhu, 1995). We asked our respondents "What do you think is the most important political or social problem in Spain?"^v Then we repeated the same question for the second and third MIPs (the usual procedure used in public opinion surveys; such as the ones conducted by the Spanish public survey institute, Centro de Investigaciones Sociológicas, CIS). Finally, respondents were asked: "Could you tell us whether there are any other important political or social problems in Spain?" In answer to this question, they could mention up to 10 more problems. In total, thus, subjects could provide up to 13 MIPs. On average, our sample reported 5.9 (full sample) and 6 (tracked sample) problems. The open-ended answers were coded by two researchers following the Policy Agenda Project codebook^{vi}.

To create a measure of common public agenda, we used the top two MIPs mentioned by the Spanish representative surveys conducted by the CIS at the time of our fieldwork (February-April 2015), which were unemployment and corruption.^{vii} These problems have been at the top of the public agenda for several years now, and they continue to be. Next, we identified the individuals in our sample mentioning these two issues among the declared problems (up to 13). Finally, as our two main dependent variables, we created two dichotomous variables. The first, more restrictive, takes the value 1 if the individual mentions unemployment and corruption among the top three MIPs. The second one, less restrictive, takes the value 1 if he or she mentions them among all the reported MIPs (up to 13). In total, 46% of individuals in our sample

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mentioned unemployment and corruption among the top-three main problems, and almost 60% (59.5%) mentioned them among all the problems recalled.^{viii}

Then, we used online tracking data to identify points of access to news, particularly whether people access news media through social media. We have online tracking data for over a period of three months (27 January 2015 to 27 April 2015) that allows us to trace the sequence of navigation of each individual during the whole period of study and identify the sites he or she visited before visiting news media. We restricted our tracking to a list of 42 news outlets corresponding to the top most visited news outlets in 2015, as reported by Alexa. This list includes 99,85% of all reported visits to online news media in our sample.^{ix}

The next step was to identify when a visit to a news outlet originated at FB. For this, we first identified when a visit to a social media site simply preceded a visit to any of the 42 news media outlets tracked in our study (condition 1). Note, however, that for a website (A) to work as a referral of another (B), precedence in time (condition 1) is not sufficient; there must be some time overlap between those visits (condition 2). Hence, we labeled a site as a referral if the difference between the start time of navigation at the site of destination (at t_{i+1}) and the start time of navigation at the site of origin (at t_i) is smaller than the duration (D) of navigation in the site of origin (t_i) (we add an extra second to account for the time of changing from one page to the next). More formally:

$$(SNt_{i+1}) - (SNt_i) < (DNt_i) + 1,$$

where SNt_{i+1} stands for the time of arrival to the site of destination at $t+1$, SNt_i for the time of arrival to the site of origin at t_i , and DNt_i for the duration of the visit to the site of origin. If this condition holds, we can be sure that there has been some (session)

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overlapping between the site of origin (A) and destination (B), indicating that A may be a gateway to B. We use the total number of visits to our list of 42 news outlets that can be considered to originate in FB by applying condition 1 and 2 as our measure of the independent variable—i.e., news exposure being referred by FB.

The dichotomous nature of our dependent variable determines the estimation method, which is a logistic regression. As for the controls included in our model (see Appendix I for the description), we consider: gender; age; education; political interest; frequency of newspapers consumption; frequency of news consumption using the TV; total amount of visits to news outlets; and total amount of problems mentioned. While there are not clear expected effects of age on common public agenda due to previous mixed results (Coleman & McCombs, 2007), political interest is a well-known predictor of media use. Those who show a tendency to be highly interested in politics are more likely to develop richer information repertoires (Wolfsfeld, Yarchi, & Samuel-Azran, 2016). They are also more likely to learn about politics (Carpini & Keeter, 1997), to remember or to acquire political information (Bode, 2016) and to develop an expansive public agenda. Political interest is assessed by asking, “How much would you say you are interested in politics: Very much, quite interested, hardly interested, or not at all?”

We have also controlled for the effects of the frequency of news consumption using TV or newspapers.^x We know that news consumption through traditional media is correlated with online news consumption. At the same time, studies show that people’s reliance on different media types might have different effects on their perceptions of salient issues (Althaus & Tewksbury, 2002). Lastly, we include two key controls: the total amount of problems mentioned (agenda capacity) and the total amount of visits to news outlets. Individuals’ agenda capacity is likely to have a positive impact on the public agenda, and, at the same time, it might be related to use of social media if it

increases exposure to different information (Barberá, 2016). The total amount of visits to news outlets might be correlated with the number of visits from FB, and, at the same time, it might affect the public agenda through individuals' general levels of information and sophistication.

The next section presents some descriptive evidence related to the dependent variable. We follow with a multivariate analysis of the effects of FB as news referral on the chances of mentioning the top two MIPs in the public agenda.

Analysis and results

Figure 1 shows the distribution of the top three MIPs and of all MIPs for the whole sample (above), and for above and below the mean FB news consumers (below). The distribution for the whole sample shows that the problems declared are quite concentrated on the top two MIPs mentioned by respondents — corruption and unemployment, which are also the top two MIPs for a representative sample of the Spanish population. This concentration on the top two MIPs diminishes somewhat (with the density of the distribution becoming flatter) when we consider all MIPs mentioned, as the set of problems that people can mention increases.

(Figure 1 about here)

If we now look at these distributions for the populations of interest —i.e., above and below the mean FB news consumers—, we see some differences. The distribution for above the mean FB news consumers tends to be flatter compared to that of below the mean FB news users, which tends to be taller and more concentrated around the top two MIPs. Greater dispersion of the former distribution might also result from having fewer very active FB news consumers' individuals. Yet, there are other differences too. As we can see, in the distribution for above the mean FB news users, several bars stick

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out of the density curve. This indicates that the two populations do not rank problems in the same order, according to the number of mentions. This, in turn, suggests that FB heavy news consumers might have less concentrated and thus more fragmented individual agendas and different priorities concerning the MIPs.

To test whether use of FB to access news affects people's individual agendas, and, in particular, whether it affects the probability of mentioning the top two MIPs (compared to mentioning other MIPs), we ran a logistic regression. Table 2 shows the results of a logistic estimation of the probabilities of mentioning unemployment and corruption (in no particular order) among the top three problems of the nation and (second column) among all the problems mentioned. There is no effect of sex, studies (having a college degree) and ideology on the outcome. The positive significant coefficient for age means that older individuals are more likely to mention the top two MIPs, which are shared by a representative sample of Spaniards. The frequency of news consumption using newspapers has no significant effect, but the frequency of news consumption using television has a positive and significant effect, meaning that the more TV news consumption, the more likely an individual is to mention the two main national problems, according to Spain's public opinion representative surveys.

Political interest, in contrast, has a negative effect on the agenda. Hence, the more interested in politics, the less likely an individual is to mention the top two most important problems—corruption and unemployment—, suggesting that the politically sophisticated have different issue priorities and potentially more diverse agendas than the average citizen. Finally, the total amount of visits to news media outlets has no significant effect and agenda capacity (the total amount of problems mentioned) only has a positive effect for the second measure of public agenda, constructed considering all the problems mentioned.

(Table 1 about here)

As for the main variable of our concern, the significant coefficients (at $p < 0.05$ and $p < 0.1$, respectively) for FB should be read as the effect of getting news following links from this social media versus the effect of other indirect (e.g., Google, Twitter) or direct (legacy and digital-born news media websites) sources. Therefore, all else equal, the more an individual uses FB as a referral for news, the less likely he or she will mention the top two MIPs as perceived by a representative sample of the Spanish population.^{xi} As illustrated by Figure 2, those who have not used FB at all to access news outlets have a 47% probability of mentioning the top two MIPs of our concern. This figure drops to 35% if the individual visited news outlets 17 times with FB as a referral, and to 9% if he or she visited it 73 times, which is the maximum value of this variable previous to its normalization (see Appendix V).

(Figure 2 about here)

If, as our analysis suggests, frequent FB news consumers are less likely to mention the top two MIPs, what are the problems they are more likely to mention? When considering only the first problem, heavy FB news users are significantly more likely to mention politicians, the third MIP for our sample, as a problem, compared to non-heavy FB users (z-value: 1.72; p-value: 0.042). Among the top three MIPs, frequent FB news consumers are significantly more likely to mention immigration (z-value: 1.48; p-value: 0.069) and nationalism (z-value: 1.30; p-value: 0.096) as problems. Finally, considering all problems, frequent FB news users are significantly more likely to mention spending in I+D (z-value: 1.38; p-value: 0.082).

Discussion and conclusions

In this study we have expected the use of FB as a news referral to have a negative effect on the common public agenda via altering the concerns of citizens on the

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country's most important problems. We have defined individual's agreement on the common public agenda as the probability of mentioning the top two MIP as perceived by a representative sample of the Spanish general population. Although, as we will discuss below, this measure has some limitations, it has been useful to capture deviations of frequent FB news users from the top public concerns of the Spanish general population. We have based our expectations on several possible explanations: personal stories and soft news might dominate content sharing in FB, personalization and algorithm curation might drive the news that users are exposed to in social networks, and a parallel (social) news agenda might be emerging as a result of users' new role as secondary editors.

In line with our expectations, we have found that visiting news outlets from FB reduces the probability of mentioning the top two MIPs declared by a representative sample of the Spanish general population. These results are open to several interpretations concerning the impact on the public agenda of FB as a platform for news distribution. A first interpretation suggested by our discussion is that by virtue of being highly personalized spaces, social media might narrow people's public concerns. People might be exposed to the concerns of their immediate circle of peers and friends and not of a wider audience. In turn, this might shape particular and idiosyncratic individual agendas, which might help to explain divergence from the public concerns of a wider public with some of the negative consequences for the public agenda that we have already discussed —alienation from central public concerns, lack of social integration, and social and political fragmentation.

Alternatively, these results might be interpreted as the outcome of more diverse agendas. Frequent FB news users might have more diverse agendas because social networks might be only part of their media repertoires (Dubois & Blank, 2018; Thorson

& Wells, 2015). Those who seek news information in social media might also be heavy news users with a more diverse media repertoire that includes other news sources. Additionally, social media might increase accidental exposure to information, which in turn increases the likelihood of exposure to different and more diverse information (e.g., Barberá, 2014; Brundidge, 2010). Based on these arguments, social media users might have larger and more diverse individual agendas, which would also reduce the probability of overlapping with the general public's perception of the MIPs but with very different consequences for the public agenda. More diverse individual agendas might help to expand and enrich the issues of public concern for the general public and thus aid in the renewal of the public agenda.

Our results suggest that frequent FB news consumers tend to have slightly more fragmented agendas, but offer no hints as which one of these two scenarios is emerging. Some of our evidence suggests a greater diversity of FB users' individual agendas. MIP distributions tend to show slightly more fragmentation in the problems mentioned by heavy (above the mean) FB news consumers, which might in turn imply greater diversity of their individual agendas. Also, heavy FB news consumers are more likely to mention problems of public relevance, some of which poorly informed people would be very unlikely to mention, such as increasing spending in I+D. We performed additional analyses (available upon request) to further investigate the question of agenda diversity. We found that visits to news outlets from FB have no positive significant effect on the raw number of problems that people mention (agenda capacity). While this means that increases in visits to news outlets from FB do not increase the average number of problems mentioned, the lack of significant effect might also be explained by a small N problem — i.e., the low number of participants effectuating high number of news visits from FB.

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Further research should more deeply investigate the question of whether social media platforms for news consumption narrow or expand the set of public concerns for its users. After all, the effects of more fragmented individual agendas on the public agenda will depend ultimately on political learning and the level of public engagement of social media users. Unfortunately, so far, recent research has found that social media tends to reduce political learning (e.g., Gil de Zúñiga et al., 2017; Shehata & Strömbäck, 2018).

This study, however, has several limitations. First, our observed data only account for visits to news outlets from laptops, which is only one of the devices people use to navigate content online. This does not allow for the capture of the full media repertoire of participants. More importantly, it probably underestimates the number of people using FB for news consumption as well as the regularity with which they consume news through this platform, thus limiting the scope of this study. Second, visits to news outlets are observed using domain-level information, and we miss information at the page-level. This does not allow us to identify the type of content (e.g., news, sports or entertainment) people are exposed to in each media outlet. Finally, our measure of the common public agenda clearly has much room for improvement.

Yet, in spite of its limitations, our measure is informative of some degree of overlapping (i.e., concerning the top two MIPs) between two populations: the general population—as measured considering the CIS representative surveys that cover the same time span than our study—and our sample of FB news users. Furthermore, this paper makes a contribution to the extant literature by studying the agenda-setting effects of social media as news referrals and measuring these effects on consumers' individual agendas using the MIPs survey question. We have brought to light evidence that, when FB is used as a news referral, users are less likely to share the top public concerns as

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defined by a representative sample of the Spanish general population. Future studies should further investigate whether consuming news from social media platforms causes users to become more alienated from public concerns or, on the contrary, to set different priorities that might contribute to enriching and expanding the public agenda.

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Footnotes

ⁱ From this perspective, a fragmented audience, with little common agenda grounds or little correspondence with media agenda, might imply a less manipulated—and therefore freer—citizenship (Brubaker, 2008) .

ⁱⁱ 63% of Americans declare getting news from social media according to the Pew Research Center (Gottfried & Shearer, 2016).

ⁱⁱⁱ These processes include personal (i.e., following certain FB pages and “likes”); social (i.e., the selection of information by peers and friends); strategic (i.e., adds targeted at individuals by commercial companies and political actors); journalistic (i.e., the information selected by news organizations), and algorithm curation (i.e., the work of algorithms to select the information and news that people see in their Timeline).

^{iv} To further check for the representativeness of our sample, we followed previous studies (Flaxman, Goel, & Rao, 2016) and analyzed individuals’ online behavior when it comes to navigating news information. We compared the list of the top 20 most visited news sites by our tracked sample with the one provided by Alexa (Alexa Internet, 2014), a global online audience meter, for the Spanish online population. We obtained a strong correlation score of .81. This figure speaks to the representativeness of the news consumption behavior of our pool of participants, as the patterns of news consumption of our sample closely resemble that of the Spanish population.

^v Respondents could skip this and the following questions if they wanted to. In total, 9,789 answers were coded. The average percentage of agreement between coders was 85%.

^{vi} The codebook was developed following the methodology of the Comparative Agendas Project (www.comparativeagendas.net).

^{vii} Both our sample and the CIS sample agree on the top two MIPs, although they differ in the ranking of these problems. In our survey, the issue that is most frequently mentioned when asked about the first and most important problem in Spain is corruption, followed by unemployment. In the CIS sample, the order is reversed. Our sample and the CIS sample also agree on the third and fourth MIPs, although again they differ in the ranking of these problems. These similarities speak in favor of the representativeness of our sample, although participants in our study are, in general, less concerned about micro- and macroeconomics and more about political issues than the average Spaniard. Appendix III displays a systematic comparison between the CIS ranking (April 2015) and our sample.

^{viii} When studying the public agenda, a key initial question is how many problems should be included to measure this phenomenon. The strategy more frequently deployed in the literature is to measure the top two or three most important problems (Wlezien, 2005, McCombs & Zhu, 1995). Also, we know that on average people cannot mention more than 4 to 5 issues (Zhu, 1992) and that there has not been an increase in people's carrying capacity throughout time (McCombs & Zhu, 1995). According to April 2015 CIS barometer, the significant agreement for unemployment and corruption mentioned among the top three problems (82% and 49% respectively) plummets when it comes to politics and politicians in general, which is mentioned by less than a third (27%) of the population among the three MIPs. In our sample 69% mentioned corruption among the top 3 problems and 61% did so with unemployment. The percentage plummets to 24% for the third most mentioned problem among the top 3 problems of the nation (politics and politicians in general). We refer the reader to Appendix III for a comparison using only mentions for the first MIP. So, we have reason to focus on the top two MIPs: given the big difference between the first two and the third MIPs, the latter seems a "minor"

problem in comparison. Besides, we set the threshold at the top two MIPs because few individuals in our sample (12%) fully reproduce the CIS public agenda as measured using the top three MIPs. Considering that only slightly above half of the individuals in our sample use FB as news referral, the variability of both our dependent and independent variables is severely compromised if we use the top three MIPs. However, to increase the robustness of our test we use two different measures of common agenda.

^{ix} In parallel to tracking panelists' online behaviour, we asked them to report the news media they had visited during a part of the study period.

^x We have recoded all the controls to range from 0 to 1.

^{xi} The significant results for the negative effect of FB hold with different model specifications.