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Why Don't We Learn from Social Media? Studying Effects of and Mechanisms behind Social Media News Use on General Surveillance Political Knowledge

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Abstract

Does exposure to news affect what people know about politics? This old question attracted new scholarly interest as the political information environment is changing rapidly. In particular, since citizens have new channels at their disposal, such as Twitter and Facebook, which increasingly complement or even replace traditional channels of information. This study investigates to what extent citizens have knowledge about daily politics and to what extent news on social media can provide this knowledge. It does so by means of a large online survey in Belgium (Flanders), in which we measured what people know about current political events, their so-called general surveillance knowledge. Our findings demonstrate that unlike following news via traditional media channels, citizens do not gain more political knowledge from following news on social media. We even find a negative association between following the news on Facebook and political knowledge. We further investigate why this is the case. Our data demonstrate that this lack of learning on social media is not due to a narrow, personalized news diet, as is often suggested. Rather, we find evidence that following news via social media increases a feeling of information overload, which decreases what people actually learn, especially for citizens who combine news via social media with other news sources.

Key words: political knowledge, social media, filter bubbles, information overload

Introduction

Political knowledge plays a key role in democratic theories. Although there is disagreement on how much and what type of knowledge people need to act as informed citizens, there is consensus that a minimal knowledge of political events is necessary for citizens to remain politically involved (Delli Carpini & Keeter, 1997). Moreover, democratic theory prescribes that the political decisions citizens make and the political actions they undertake, should at least to some extent be based on informed thinking (Bode, 2016). An important way by which citizens can become more informed about politics is by following the (political) news. Numerous studies have demonstrated that citizens who consume more news have more *factual* knowledge about political institutions and actors and are better able to position political candidates and parties on different ideological dimensions (Chaffee & Kanihan, 1997; Dejaeghere & van Erkel, 2017; Drew & Weaver, 2006).

In recent years, however, the media landscape has changed significantly. In the high-choice media environment of today citizens increasingly have different means at their disposal to retrieve information (Beam, Hutchens, & Hmielowski, 2016; Van Aelst et al., 2017). Although the majority of citizens still use traditional channels such as newspapers, either online or offline, and television to follow the news, social network sites (SNSs) such as Twitter and Facebook increasingly play a role in informing citizens about the news, complementing or even replacing traditional news channels (Cacciatore et al. 2018; Shaerer & Gottfried, 2017). This raises the important question to what extent citizens also get more knowledge about daily politics from news via social media.

To date, few studies - mostly conducted in the United States (but see Shehata & Strömbäck, 2018 and Boukes, 2019) - have investigated the relationship between social media news consumption and political knowledge and evidence is still somewhat mixed. Nevertheless, the majority of these studies suggests that, unlike traditional media, citizens do *not* gain more

political knowledge from following news on social media. The aim of this paper is to investigate whether we find a similar (lack of) effect of using social media for news consumption on political knowledge outside the US. Moreover, we make a first attempt to delve deeper into the question of *why*, in contrast to traditional media, following the news via social media does not lead to knowledge gains. We propose and test two potential explanations. First, the personalized and filtered nature of SNSs, where news content is tailored towards the specific interests of the consumers, may prevent citizens from learning about a wide arrange of topics. Second, citizens may receive so much information on SNSs that they are not able to process all this information anymore or that they simply lose attention and therefore do not recall the information, so-called information overload (Eppler & Mengis, 2004). We test these effects and mechanisms using a survey in Belgium, in which we asked citizens questions about recent political news events and about their offline and online news consumption. We will first analyze the contribution of different traditional and new media channels to knowledge separately, and next compare different groups of news users following a news repertoire approach.

Static versus Surveillance Political Knowledge

Before we delve into the relationship between following (political) news via social media and political knowledge, it is first necessary to conceptualize the latter. Political knowledge is often described as a cornerstone for political behavior and is important both in its own regard as well as in influencing other types of political behavior and attitudes (Barabas et al., 2014; Mondak, 2001). Delli Carpini and Keeter define political knowledge as “*the range of factual information about politics that is stored in long term memory*” (Delli Carpini & Keeter, 1997, p. 10). Concretely, it is conceptualized as the knowledge citizens have about the basic institutional arrangements of a political system; the extent to which they know the *rules of the game*. In surveys this is often operationalized by asking citizens a number of multiple-choice questions

about institutional arrangements, such as the number of MP's in parliament, or which parties make up the government coalition. As these rules are expected to remain mostly constant over time, there is little need to update this information once it is acquired (Jerit, Barabas & Bolsen, 2006). It is therefore no surprise that education is the strongest and most robust predictor of this type of political knowledge (Barabas et al., 2014).

Next to the more static type of political knowledge, citizens should also be informed about developments as they are happening, the day-to-day politics. Barabas et al. (2014) label this *surveillance* political knowledge, as it is about the monitoring of more short term developments. They further distinguish between two types of surveillance political knowledge: policy-specific and general surveillance political knowledge. The first refers to knowledge on specific policies within certain domains, such as the direction of the immigration or unemployment rate, or knowledge about concrete policy positions of politicians and political parties (Dejaeghere & van Erkel, 2017; Van der Meer, Walter, & Van Aelst, 2016; Vegetti, Fazekas, & Méder, 2017). General surveillance political knowledge, on the other hand, refers to news about actors or recent political events (Barabas et al., 2014), such as knowledge about the fact that a certain minister was under fire, political scandals or the emergence of an international conflict. In short, it is knowledge about current political news events that are featured prominently in the public and political debate. In this study we will focus on this general type of surveillance political knowledge.

Why is general surveillance knowledge important? Although there is disagreement on how much and what type of knowledge people need to act as informed citizens, there is consensus that a minimal knowledge of political events is necessary to remain politically involved. Even scholars that claim that it is not possible, nor necessary, that citizens should have a full overview of politics in all its particulars, are convinced that a notion of what is happening in the political world remains essential. For instance, the influential concept of the “monitorial citizen”,

developed by Schudson (1998), argues that citizens do not need to follow every news story, but still have to scan the information to know when there is something at stake. The general idea is that citizens need this type of information to judge issues and hold politicians accountable, and that the media is an important, but far from perfect, provider of this information (Strömbäck, 2005).

Moreover, in contrast to the static form of political knowledge, surveillance political knowledge needs to be constantly updated. Therefore, this study focuses on surveillance political knowledge, as it is expected that this type of knowledge depends more on one's media exposure than static political knowledge (Jerit, Barabas & Bolsen, 2006). In addition, social media might be especially beneficial for surveillance political knowledge, as they focus heavily on current events, and much less on providing political or institutional background information. In other words, if there is a positive learning effect from social media, general surveillance political knowledge can be considered a most likely case.

The Effects of News Consumption via Traditional and Social Media on Political Knowledge

The easiest way to retrieve information on recent political events and developments is from the (daily) news. Studies by Barabas et al. (2014) and Jerit et al. (2006) demonstrate that on aggregate the public scores better on knowledge questions about topics that were covered more extensively in the media. Others have investigated the relationship between news exposure and political knowledge at the individual level, focusing on traditional media. They show that reading the newspaper and watching news on television is positively related to political knowledge, both its static form (e.g. Vettehen, Hagemann & van Snippenburg, 2004), as well as surveillance political knowledge (Chaffee & Kanihan, 1997). Citizens who watch more

television news or read the newspaper more frequently are, for instance, better able to position parties on different issues (Chaffee, Zhao & Leshner 1994; Drew & Weaver 2006; Zhao & Chaffee 1995) and have more knowledge about current affairs (Strömbäck, 2017). Barabas et al. (2014) and Jerit et al. (2006) do find, however, that the role of information is more important for surveillance political knowledge than for static political knowledge.

Since the 2000s studies have also looked at the online environment, investigating whether more frequent use of online news websites increases political knowledge. The findings of these studies are quite consistent and demonstrate that watching news via online news media is not that different from using traditional media channels. This result has been replicated multiple times, demonstrating positive effects for newspaper websites, but also for respondents who more frequently visited candidate websites during the campaign (Bimber & Davis, 2003; Dimitrova et al., 2014; Drew & Weaver, 2006).

Recent years have seen the rise of new media platforms and social network sites (SNSs) such as Facebook and Twitter increasingly complement or even replace traditional news media channels. According to the Reuters Digital News Reports a growing number of citizens across the globe are using social media to follow the news. Of these SNSs, Facebook seems to be the most important platform for news gathering. In 2018 about 36% of the population in twelve democracies indicated that they got news from Facebook in the last week (Newman et al., 2018). Also in Belgium (Flanders), Facebook is an important channel for citizens to follow news (39%), whereas Twitter is somewhat less popular than in other countries.

However, news via social media is fundamentally different from news via newspapers, television, or even online websites which we consider as being part of traditional or mainstream media, because they are, in particular in Belgium, mainly online versions of newspapers and the TV broadcasters (Newman, et al., 2018). When citizens consume news via traditional media, including the majority of news websites, they receive content which has been selected and

produced by professional news organizations. This news covers a diverse mix of political and current affair topics and provides the consumer with a general overview of what is going on in politics and society (Shehata & Strömbäck, 2018). News via SNSs differs in several ways. First, it is not limited to news produced by professional news organizations, but also consists of information shared by known others, so-called user-generated content (Bode, 2016). While a majority of news shared on social media comes from sources linked to traditional media (Newman, 2011), other content is provided by users themselves or by alternative media. Second, whereas people actively search for news content in the traditional media, on social media they may also incidentally encounter news while they are online for other purposes (Bode, 2016). Third, especially on Facebook, equations based on previous likes and one's social network determine which news appears on your timeline. In other words, news on SNSs is much more personalized and filtered compared to news from television or newspapers that has to appeal to a broader general audience (Klinger & Svensson, 2015). This means that different users receive information on different topics, based on one's interests.

Due to the different nature from other media channels, it is unclear what effect following news via social media has on political knowledge. On the one hand, we may expect similar positive effects as traditional media, with SNSs simply being an additional platform through which political information can reach citizens. The positive effect may be even stronger for SNSs because of incidental exposure; citizens who are on SNSs for other purposes may inadvertently encounter news stories and learn from this (Bode, 2016). In this sense, social media may especially benefit citizens who would otherwise not get into contact with the news, and help to decrease the knowledge gap. In addition, citizens may be more receptive of information retrieved via SNSs as it often comes from friends and family. Previous research indicates that information coming from trusted others is seen as more credible and more likely to be recalled (Bode, 2016; Huckfeldt et al., 1995). Nevertheless, studies that demonstrate more positive

effects on political knowledge are exceptional. Gottfried et al. (2017), for instance, find that social media users knew more about what happened during the 2012 US presidential campaign, but their findings are limited to using social media while following political debates. Edgerly, Thorson and Wells (2018) also find that, at the aggregate level, news that is more shared on Facebook is more likely to be known by young citizens. Yet, at the individual level they no longer find any association between following the news via Facebook and political knowledge.

The majority of the recent studies that have investigated the effect of following the news via SNSs on (surveillance) political knowledge, however, is not supporting the positive expectation. Shehata and Strömbäck (2018), for instance, show that consuming news via social media news does not contribute to political learning, neither during nor outside election times. Also Bode (2016) and Oeldorf-Hirsch (2018) find no significant relationship between Facebook use and political knowledge. Groshek and Dimitrova (2011) demonstrate that whereas the use of online news does result in more political knowledge, following candidates on social media does not. Several studies even find traces of a negative relationship between social media use and political knowledge (Cacciatore et al., 2018; Lee & Xenos, 2019; Shehata & Strömbäck, 2018). Cacciatore et al. (2018) show that in particular following the news on Facebook, more than Facebook use in general, is significantly related to less political knowledge. Also Boukes (2019) finds a negative relation between Facebook use and political knowledge, but his study shows traces of a positive relationship with Twitter use. In sum, evidence suggests that, unlike traditional media, citizens do not become more knowledgeable from following the news via social media such as Facebook. Yet, to date no study has investigated *why* citizens learn from the traditional media but not from news from social media. In the next section we discuss two potential explanations.

Personalized News and Information Overload

One theoretical argument that is often brought forward to explain why citizens do not become more knowledgeable from news from social media is because of the personalized nature of SNSs. Which content and news appears on one's timeline is fully determined by a combination of one's social network and own previous likes. These algorithms can create filter bubbles of news which are fully tailored towards the issues and topics one already is interested in (Klinger & Svensson, 2015). Consequently, unlike users of traditional media who are exposed to a wide diversity of political and current affair topics, following the news via social media results in a much more personalized and issue specific news diet (Shehata & Strömbäck, 2018). Although this does not prevent users from gaining political knowledge *per se*, as they may become more knowledgeable on the topics that fall within their range of interests, it does prevent them from getting knowledge on a *wide arrange* of political news facts. In the end, this makes them less likely to learn about general daily political facts. We label this the *personalized news hypothesis*.

There is a second reason why a personalized news environment may result in less political knowledge, compared to the use of traditional media. Filter bubbles and personalized newsfeeds may also result in “echo chambers” with regard to the political leaning of the information we receive. On social media one may encounter especially information with which one agrees (Sunstein, 2017). This could result in less knowledge, as previous studies have demonstrated that agreeable information is less systematically processed and therefore less likely to be remembered (Cacciatore et al., 2018; Edwards & Smith, 1996).

Next to the personalized news hypothesis, we develop a second hypothesis for why citizens may not become more knowledgeable from following news on social media. For this we look at the concept of *information overload*. Information overload refers to the situation where individuals receive so much information that they are no longer able to cognitively process and

make sense of it (Eppler & Mengis, 2004; Pentina & Tarafdar, 2014). The consequence is that they may feel psychologically strained (Eppler & Mengis, 2004), have attention problems (Jackson, 2009), and become more ineffective in processing information (Klingberg, 2008). Numerous studies have investigated how information overload can decrease quality of decision making in work-place environments (e.g. Meyer, 1998), or even when buying consumer products (e.g. Jacoby, Speller & Berning, 1974). Within media research the concept has not received much investigation yet, although recent studies are changing this, showing that a high news consumption can result in a feeling of information overload (e.g. Chen & Chen, 2019; Holton & Chyi, 2012; Pentina & Tarafdar, 2014).

We argue that information overload may be an important mechanism to explain why, compared to traditional media, citizens learn less from news on social media or why there may even be a negative relationship. Especially on SNSs such as Facebook, citizens are exposed to an ever-increasing amount of information (Pentina & Tarafdar, 2014). Much more than in traditional media, social media users receive a constant stream of news stories, photos and videos that constantly updates itself. Moreover, SNS users do not only receive updates about (political) news, but at the same time receive updates about the statuses of their social network and of events. Due to these factors, we can expect that in this “avalanche” of information, following the news via social media is much more likely to result in information overload than following the news via traditional media and even online news websites. Given that information overload causes users to be more easily distracted, and less capable to process information and store it in their memory, we can expect that this ultimately results in less political knowledge. Furthermore, we know that people nowadays no longer rely on one medium or outlet, but often combine different channels and platforms (Lee & Yang, 2014; Yuan, 2011). Using a broader range of sources has the potential to increase the knowledge of citizens, but alternatively could also further strengthen the feeling of information overload and hinder the acquisition of

knowledge from the news. Following a news repertoire approach, we will test for the combination of news sources on knowledge.

In the result section we first study the relationship between following the news via different media platforms and general surveillance political knowledge. Since we find that social media news use does not result in more political knowledge, we investigate which of the two mechanisms described above, the personalized news hypothesis versus the information overload hypothesis, is more likely to be responsible.

Data and Methods

To investigate the relationship between social media news use and general surveillance political knowledge, we conducted a survey in Flanders, the Dutch-speaking part of Belgium. The Flemish media landscape is, both online and offline, still dominated by traditional media and a public broadcaster that has kept a central position in the information environment (Newman, et al., 2018). This leads to the overall expectation that, in this context, people still have sufficient quality news sources at their disposal and the role of social media as a (unique) source of information about current events will be relatively limited. In addition, there might be a spillover effect from these traditional media outlets to social media, as all of them present their news content on social media platforms such as Facebook (Welbers & Opgenhaffen, 2018).

The survey was conducted using the online panel of SSI/Dynata and consisted of two waves; one wave in the first half of April (April 2-15), and another wave in the beginning of June (June 5-14). To increase the representativeness of the sample, quotas were used for gender, age and education.¹ 2179 respondents completed the first wave of which 1059 respondents (48.6%) also

¹ Note, however, that in the end, due to a higher attrition rate between the two waves among respondents below 30, our final sample is not fully representative on age and on average slightly older. To test whether this potentially

completed the second wave. In the analyses we only include respondents who completed both waves.

The dependent variable in this study is general surveillance political knowledge. In order to measure this, we asked citizens in the second wave six multiple-choice questions about political news events that were covered extensively in the news the weeks before the survey. We aimed for a high variety in topics and events. For that reason, our questions deal with national news (4 questions), and foreign news (2 questions). We included questions that were directly related to party politics and public policy, but also questions more generally linked to societal issues. Answers to these questions were coded correct if the answer of the respondent was right, and incorrect if the answer was wrong or the respondent answered ‘don’t know’. Table 1 provides an overview of the six questions, the percentage of correct answers and the coverage of these items in the traditional news (newspapers) and on Facebook. The table demonstrates that the selected items not only received coverage in newspapers, but were also posted as news articles – and shared by users – on Facebook. Although there is more variation in attention for the different items on Facebook than on traditional media, these data demonstrate that people that follow the news via Facebook had the opportunity to be exposed to these news facts.

[Table 1]

As Table 1 shows, there is quite some variation between the questions regarding the percentage of correct responses.² We therefore use a Mokkenscale to construct a single surveillance political knowledge variable (Mokken, 1971).³ The Loevinger’s items H are almost all above

affects the results we interacted the main effects with age, but we found no different effects for different age groups.

² Given that some items were more challenging than others, we also used a jack-knife procedure -each time leaving out one of the political knowledge items- to check whether results remain robust when dropping an item. This was the case, indicating that our results are not driven by one single item.

³ A principal component analysis assumes that all items have the same difficulty. Given that this is not the case for our knowledge items, a Mokkenscale procedure that takes this difference in difficulty into account is recommended. Items can be included in the scale when the Loevinger’s H is above .40. We refer to Mokken (1971) for the technical details.

0.40 with the exception of one item on the Green party, which scales less well and was therefore omitted. The other items form a sufficient scale with a Loevinger's H above 0.40. Hence, we construct a single additive general surveillance political knowledge scale, running from 0 to 5.

In order to measure our main independent variable, media consumption, we asked respondents for six media channels how frequently they used them in the past month to follow 'news on politics and current affairs' (wave 2): radio, television, newspapers, online news websites, Twitter, and Facebook. We used the following answer categories: 'never', 'less than once a week', '1 to 2 times a week', '3 to 4 times a week', '(almost) daily', 'multiple times a day'. Each of the six channels were added to the model as separate independent variables.

However, for a more in-depth analysis, and to explore whether there is a difference between those respondents who rely mostly on Facebook for their news consumption and those who combine Facebook news with other traditional news sources, we also look at news repertoires and combined the use of the different news channels to create four groups: users with a low news diet, users with a traditional news diet, Facebook reliant news users, and those who combine news on Facebook with several other traditional news sources. In order to operationalize these groups, we asked respondents whether they (sometimes) use one or more of the following 25 specific news sources: 8 newspapers, 8 television news and current affairs programs and 9 news websites. Respondents were categorized as Facebook reliant when they use Facebook for news more than one or two days a week *and* use less than four of the 25 sources. This implies that so-called 'Facebook reliant users' (8%) still occasionally use other outlets or sources to follow the news.⁴ Respondents who use Facebook more than one or two

⁴ We mainly opted for this categorization in order to have a sufficient large percentage of Facebook reliant users (7%) in our analysis. Moreover, since most respondents are likely to over report on how many news sources they use (due to the social desirability related to self-reporting (Araujo et al. 2017)) the actual number of sources used will most likely be lower for most of these respondents. We also realize that the number of traditional news sources does not necessarily say anything about the attention respondents give to these sources. Therefore, to be more certain about the validity of the categorization, we checked whether Facebook reliant users and users with a low

days a week for news *and* use five or more other news sources were categorized as combining Facebook and traditional news (34%). Respondents who use Facebook one or two days a week or less, but use four or more ‘traditional’ news sources were coded as having a traditional news diet (42%), whereas those who use Facebook one or two days a week or less *and* use less than five other news sources were coded as having a low news diet (15%).

To test the personalized news hypothesis, we presented respondents who use social media for news consumption three statements about the extent to which they encounter news on SNSs in the first wave: 1) *On social media I often encounter news from media that I normally don’t use*, 2) *On social media I often encounter news that I am not interested in* and 3) *On social media I rarely encounter political news with which I disagree*. For each statement they could indicate whether they agree or not on a five-point scale, running from fully disagree (0) to fully agree (4). A factor analysis shows that these three items all load on one single dimension, although the third item loads less strong on this dimension. Based on the three items an additive scale of *personalized news environment* was created, in which all items were coded in the same direction so that a higher score indicates a more personalized SNSs environment (Cronbach’s alpha = 0.78).⁵

We also developed a measure for information overload, based on the well-established and often used scale of Williamson and Eaker (2012). We selected four items from their extensive information overload scale where citizens had to indicate on a five-point scale whether they fully disagreed (0) to fully agreed (4) (wave 1⁶). These four statements are: 1) *I regularly feel overwhelmed by too much information these days*, 2) *There is so much information available*

news diet score significantly lower on our items that measure the frequency with which they use traditional news channels (TV, radio, newspapers and online news websites). A regression (appendix A) shows that this is the case.
⁵ Given the lower factor loading of the third item, we also conducted each analysis with a scale based solely on the first two items. In the end, the results remain similar with this alternative scale.

⁶ We use a measure of information overload from wave 1 because of item availability. However, given the strong correlation between the type and amount of media use in the first and second wave, we do not expect this to strongly impact the results.

on topics of interest to me that I sometimes have difficulties to determine what is important and what is not, 3) I am being confronted by an avalanche of personal messages (via email, text messages, chat, social media, etc.), 4) When I search for information on a topic of interest to me, I usually get too much rather than too little information. A principal component shows that the four items load on one single dimension, with each item having a loading above .7. Moreover, the additive information overload scale, which runs from 0 (no overload) to 16 (full overload), is reliable with a Cronbach's alpha of 0.76 and approaches a normal distribution (see appendix B).

Next to the independent variables we add age, gender, education, and political interest as control variables. Previous research demonstrate that they strongly influence both news use and political knowledge (Barabas et al., 2014; Delli Carpini & Keeters, 1997; Mondak & Anderson, 2004). All respondents with a missing value on one or more of the variables are omitted beforehand in order to have a comparable sample across models, leaving us with 993 respondents in the analyses. For the analyses we use OLS regressions.⁷ Table 2 provides an overview of the descriptives for the main dependent and independent variables.

[Table 2]

Results

Before delving into the relationship between surveillance political knowledge and media consumption, we first look at these variables separately. Figure 1 provides a descriptive overview on how people scored on the surveillance political knowledge measure. In general

⁷ We tested several other model specifications. Given the somewhat skewed distribution of our dependent variable we ran models with a log transformation of political knowledge and we tested a Poisson model. Both alternative model specifications yielded similar results as the linear regressions. For reasons of interpretability we report the latter.

our respondents scored quite well, with an average of three correct answers and 38% of the respondents that answered four or more questions correctly.

[Figure 1]

When we look at news consumption, we find that overall citizens read or watch the news quite frequently (Table 3). For their news consumption, traditional channels are still the go-to channels. Television is the most frequently used channel for news, with about two-third of the respondents in our sample indicating that they use this channel almost daily or even more than once a day to watch the news. However, also newspapers, radio and online news websites are important platforms to receive news from. Table 3 also supports the idea that SNSs have become important channels for news exposure. When comparing Twitter and Facebook, it is especially the latter SNS that is used for news consumption. For the general public, Twitter is much less important with only 8% of the respondents indicating that they use Twitter at least weekly for news consumption, compared to about 43% of the respondents that use Facebook at least weekly to follow the news.

[Table 3 here]

In Model 1 (Table 4) we regress political knowledge on the usage of the different news channels, controlling for socio-demographic characteristics and political interest. The model shows that both following the news via traditional channels, with the exception of radio, and via news websites is associated with a higher score on the surveillance political knowledge battery. Respondents that use news websites multiple times a day score 0.3 points higher on the political knowledge scale compared to citizens never using them. For television and newspapers the effect is slightly stronger (+0.4). The picture is different for SNSs: Model 1 shows no relationship for Twitter and even a negative association between Facebook and political knowledge. In other words, respondents who indicate that they use Facebook as a channel to

follow the news more often, have less political knowledge. On average, they score about 0.4 points lower on political knowledge than those respondents that do not use Facebook to follow the news. This supports the more pessimistic view of other studies about the role of Facebook in providing citizens with political information, making clear that news on Facebook does not provide more knowledge and is even related to slightly *less* knowledge.⁸

[Table 4 here]

The question is *why* respondents who use Facebook to follow the news do not seem to gain more political knowledge. Earlier we presented two possible explanations; citizens may get more personalized news on social media, or they may receive so much information that they feel overloaded. We first look at the personalized news hypothesis. If the hypothesis holds then respondents who use Facebook more often for news consumption should be more likely to be in a filter bubble *and* those respondents in a filter bubble should have less knowledge. However, neither of these conditions hold. Model 2 adds the additive measure of personalized news and demonstrates that there is no effect of the personalized news environment measure on political knowledge. We also find no evidence that those who use Facebook more often for news consumption are more likely to be in a personalized news environment. On the contrary, Table 5 shows that heavy Facebook news use and our measure of a personalized news environment may even be *negatively* related.⁹

[Table 5 here]

⁸ Due to the runtime of our survey (June 5-14), it is possible that early survey participants may have a better recall of the answers to the questions than those who completed the survey in the last few days. When we compare the two groups (early: June 5-10; late: June 11-14), we indeed notice that the early survey participants score slightly higher on political knowledge than the late participants (early:3.07, late:2.82). However, this difference does not drive the results as they remain similar when controlling for the date of the completion of the survey. Moreover, the negative effect of Facebook news holds for both early and late survey participants.

⁹ Also if we purely look at the descriptives of the personalized news environment variable (Appendix C), the idea that people live in filter bubbles should be nuanced.

Alternatively, we can test the personalized news hypothesis by adding an interaction between the item measuring how frequent citizens use Facebook for their news consumption and the extent to which respondents indicate that they are in a more personalized information environment (Model 3, Table 4). If the personalized news thesis holds, we should find that especially for respondents who indicate that the news they receive on Facebook is very homogenous, there is a negative association between Facebook and political knowledge. However, this interaction effect is not significant. Taking all together, there is no evidence for the personalized news hypothesis, going against the theoretical argument that filter bubbles prevent people from learning from Facebook.

Next, we turn to the information overload hypothesis. Also here we can test for mediation. If the hypothesis holds then respondents who indicate to experience overload should have less knowledge *and* those who use Facebook more frequently for news consumption should be more likely to experience overload. Model 4 (Table 4) and Table 6 respectively test whether information overload is related to less political knowledge and whether Facebook news use leads to a higher feeling of information overload. Both relationships are supported. Model 4 shows a negative effect of information overload on political knowledge. Thus, the more respondents feel overloaded, the less they score on the political knowledge battery. The model in Table 6 demonstrates that of the different news channels *only* Twitter and Facebook are associated with higher feelings of information overload. Thus, the more time one spends on Twitter and Facebook for news the more one experiences overload. This supports the information overload hypothesis.¹⁰ This is further confirmed by a Sobel-Goodman of this mediation, which is significant ($p=.045$).

¹⁰ Note that these results also hold when we use the media frequency measures from wave 1.

We should note, however, that the information overload hypothesis only *partly* explains why respondents who use Facebook to follow the news do not seem to gain more political knowledge. After including information overload in Model 4, the strength of the negative effect of Facebook decreases by about 8%, but there is still a significant effect left. This means that next to information overload, there are still other mechanisms behind the lack of learning on social media.

[Table 6 here]

As a final analysis, and to explore the information overload hypothesis in more detail, Table 7 presents regressions where we compare traditional news users (reference category) with users with a low news diet, Facebook reliant news users, and those who combine Facebook with traditional media on their political knowledge (Model 1 and 2). Interestingly, the findings suggest that different mechanisms are at play between Facebook reliant users and users who combine Facebook with other traditional news sources. For this last group information overload almost fully explains why they score lower on political knowledge. Model 1 in Table 7 shows that this group scores significantly lower than traditional news users on political knowledge, but this significant effect disappears when controlling for information overload (Model 2). This, together with model 3, which shows that it is especially this group that experiences information overload, further strengthens the claim that those users who combine Facebook with several other traditional news channels are more likely to experience information overload and thus learn less from the news. However, respondents who rely mostly on Facebook for their news consumption do not experience more information overload than traditional news users (Model 3). Moreover, model 1 and 2 demonstrate that for this group there is a direct negative relation with political knowledge that is unaffected when controlling for information overload. This suggests that this group rather does not receive enough factual information about current (political) events via Facebook.

[Table 7 here]

Conclusion and Discussion

To what extent news do social media contribute to knowledge about daily politics? In the current media landscape where traditional channels of information are increasingly being replaced or complemented by social network sites, this has become an ever more relevant question. Our findings demonstrate that unlike following the news via traditional media channels, citizens do *not* gain more political knowledge from following news via social media. We even find a negative association between following the news on Facebook and political knowledge. We posited two rivalry explanations for this finding. The personalized news thesis suggests that because of the filtered media environment on SNSs, citizens only receive news about topics in which they are already interested. The information overload hypothesis, however, argues that citizens receive so much information on social media that they feel overwhelmed and therefore become less capable to process information.

We find no empirical support for the personalized news thesis. There is no evidence that citizens are in a more selective information environment and therefore learn less on social media. This suggests that concerns about filter bubbles on social media are less warranted than often suggested (see also Zuiderveen Borgesius et al., 2016). We do find, however, support for the information overload hypothesis. Our findings demonstrate that citizens who are more on Facebook and Twitter, and indicate to use these sources more frequently as news source, are substantially more overloaded, particularly when they combine this with other news sources. This higher feeling of information overload subsequently results in less political knowledge.

However, the information overload thesis holds mostly for users that combine Facebook news with other traditional news sources. This suggests that for the group that almost *exclusively* uses

Facebook for their news consumption there are still other mechanisms behind the lack of learning from social media. One potential explanation is that users who mainly rely on Facebook for their news consumption simply do not receive enough (hard) news. The fact that they see some news headlines posted by news organizations on their timeline may give an impression that one follows the news and provide a feeling that one is informed, but in the end does not really lead to knowledge accumulation. In this sense, it creates a “false heuristic inference”, where one may have a feeling of following the news without actually doing so (Müller, Schneiders, & Schäfer, 2016: 439). This may even prevent users to search for additional political information, or avoid traditional news programs, as one is convinced of already being informed (Boukes, 2019). Future studies should delve deeper into this explanation, for instance by following the actual personalized news feeds of respondents and/or by conducting experiments.

An experimental approach might also be beneficial to study the relationship between the attributes of social media and knowledge acquisition (Eveland, 2003). Does a platform such as Facebook has certain characteristics that hinders learning? Or do Facebook users simply lack the necessary motivation to delve into the content when scrolling through their timeline? The finding that online news websites perform as well as traditional newspapers suggest that it is rather the content and motivation that makes a difference, and less the attributes of the medium. However, the fact that we cannot distinguish between them is clearly a shortcoming of this study.

Another shortcoming of this study is that we rely fully on respondents’ self-report for our measures of online and offline media consumption and information acquisition. However, from previous research we know that citizens often over report their news use due to overestimation and social desirability bias (Araujo et al., 2017). Nevertheless, we expect over reporting is present, but not too problematic for our findings, as we have no reason to assume that it is

related to political knowledge. New methods such as tracking news consumption with apps on smartphones and/or using a daily diary method could be employed in the future to solve these problems of self-reporting (Ohme et al., 2016). This also holds for our measurement of the personalized news environment, which is based on self-reporting as well. Future studies should find ways to track the (news)content that appears on respondents' social media feed.

Taking all together, our results correspond with a number of recent studies from the US and other European countries that are more pessimistic about the information potential of social network sites (Bode, 2016; Cacciatore et al., 2018; Shehata & Strömbäck, 2018). This implies that even in a country dominated by relative strong established media sources, that also spread a substantial share of their news content via their social media platforms, overall people do not learn about current events via social media. However, we should also nuance this pessimistic view in two ways. First, it might be that social media are not contributing to political learning, but do have other potential beneficial political effects. For instance, the study of Oeldorf-Hirsch (2018) shows that via social media citizens interact with news content (sharing, liking, commenting) and that this triggers "deeper thought about the content" (2018, p. 240). If we relate this back to the idea of the monitorial citizen we might expect social media to be a useful extra tool to engage with specific news content that is more opinionated, or really matters for the individual. More research, however, is needed to know in what cases this actually happens and what it means in terms of political knowledge acquisition. Second, although SNSs tend to have a negative effect on surveillance political knowledge, at the same time we find that the group that relies solely on social media for their news consumption remains very small in a democratic corporatist country such as Belgium (Flanders). Most people that use social media to follow the news, still also rely on multiple traditional media channels to know what is happening in the (political) world. This is in clear contrast with countries, such as the US, where traditional quality news media reach a much smaller part of the population. In that respect, there

is also some reason for concern, as in our study younger people are overrepresented in the groups of social media reliant users. We therefore believe that in a fast changing media environment it is imperative that scholars remain attentive to how and what people learn about political events.

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Data Availability Statement

The data described in this article are openly available in the Open Science Framework at <https://doi.org/10.7910/DVN/D0COF1>

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Tables

Table 1: Overview of the political knowledge items, their coverage and the Mokken scale analysis.

	% correct answers	Item H	Newspaper articles	News articles on Facebook (number of shares)
<i>Which two politicians were recently by appointed by the king as informateurs to form a federal government? [National politics]</i>	83.1%	0.53	162	28 (518)
<i>Goedele Liekens [note: A Flemish celebrity) was elected in the Federal parliament? For which party? [National politics]</i>	68.7%	0.44	60	13 (177)
<i>Who was leading the investigation on the Russian interference in the past US elections? [International politics]</i>	40.7%	0.54	71	15 (18)
<i>During the campaign politicians spoke a lot about a minimum amount for pensions. What was this amount? [National politics]</i>	87.9%	0.50	74	13 (146)
<i>How did Groen [Note: the green party] score at the elections of May 26 2019 in comparison to the 2014 elections? [National politics]</i>	62.8%	0.33	84	50 (1055)
<i>In the Netherlands the PvdA (Labour party) won the European elections. Who was the list puller for this party in the European elections? [European elections].</i>	24.1%	0.58	54	13 (74)

Note: Newspaper articles: articles that appeared in 10 Flemish newspapers (incl. online versions) obtained via Gopress. News articles on Facebook: articles posted on Facebook by 18 different media outlets including digital only platforms, online version of newspapers and the news websites of the two main TV broadcasters. Data obtained via Crowdtangle. Between brackets: the total number of times these articles were shared by users.

Table 2: Descriptives

	Mean (S.D)
<i>Political knowledge</i>	3.04(1.36)
<i>Information overload</i>	8.46(3.16)
<i>Personalized news environment</i>	5.16(1.92)
<i>Media channels</i>	
- Radio	3.81(1.73)
- Television	4.43(1.33)
- Newspapers	3.52(1.68)
- Online news sites	3.44(1.72)
- Twitter	1.34(0.99)
- Facebook	2.69(1.95)

Table 3: Frequencies of news use for different media channels (N=993)

	Radio	TV	Newspapers	Online news websites	Twitter	Facebook
Never	16.3%	6.1%	19.6%	21.9%	85.3%	49.6%
Less than once a week	11.4%	5.0%	12.6%	12.5%	6.2%	8.1%
1 to 2 times a week	12.4%	10.3%	13.8%	13.4%	2.7%	7.2%
3 to 4 times a week	11.2%	10.5%	12.9%	15.1%	1.8%	6.9%
(Almost) daily	32.5%	54.2%	32.6%	26.9%	2.5%	16.1%
More than once a day	16.2%	13.9%	8.5%	10.3%	1.4%	12.3%

Table 4: OLS regression

Political knowledge	Model 1 b(SE)	Model 2 b(SE)	Model 3 b(SE)	Model 4 b(SE)
Radio	-.009(.02)	-.019(.03)	-.018(.03)	-.007(.02)
TV	.082(.03)**	.105(.04)**	.105(.04)**	.086(.02)**
Newspapers	.082(.02)**	.083(.03)**	.083(.03)**	.082(.02)**
News websites	.062(.02)**	.069(.03)*	.070(.03)*	.063(.02)**
Twitter	-.059(.04)	-.064(.04)	-.063(.04)	-.052(.04)
Facebook	-.075(.02)**	-.075(.02)**	-.037(.06)	-.069(.02)**
Female	-.479(.07)**	-.525(.08)**	-.525(.08)**	-.461(.07)**
Age	.016(.00)**	.016(.00)**	.016(.00)**	.017(.00)**
<i>Level of education</i> (ref=Low)				
- Middle	.276(.11)*	.249(.13)*	.245(.13)*	.270(.11)*
- High	.482(.11)**	.504(.13)**	.496(.13)**	.476(.11)**
Political interest	.175(.01)**	.159(.02)**	.159(.02)**	.173(.01)**
Personalized news environment scale		-.032(.02)	-.010(.04)	
Facebook*Personalized news environment scale			-.008(.01)	
Information overload				-.033(.01)**
Constant	.463(.22)**	.684(.28)**	.577(.32)**	.665(.23)**
N	993	779	779	993
Adjusted R²	.37	.35	.35	.38

*p<.05 **p<.01

Table 5: Explaining personalized news environment

	Personalized news environment b(SE)
Radio	.073(.04)
TV	-.075(.06)
Newspapers	-.081(.05)
News websites	.021(.05)
Twitter	.052(.07)
Facebook	-.217(.04)**
Female	-.013(.14)
Age	-.011(.01)*
<i>Level of education (ref=Low)</i>	
- Middle	-.348(.21)
- High	-.093(.21)
Constant	6.787(.41)
N	779
Adjusted R²	.05

*p<.05 **p<.01

Table 6: Explaining information overload

	Information overload b(SE)
Radio	.037(.06)
TV	.118(.09)
Newspapers	-.017(.07)
News websites	.029(.07)
Twitter	.225(.11)*
Facebook	.158(.06)**
Female	.550(.21)**
Age	.022(.01)**
<i>Level of education (ref=Low)</i>	
- Middle	-.193(.32)
- High	-.194(.32)
Political interest	-.053(.04)
Constant	6.052(.64)
N	993
Adjusted R²	.03

*p<.05 **p<.01

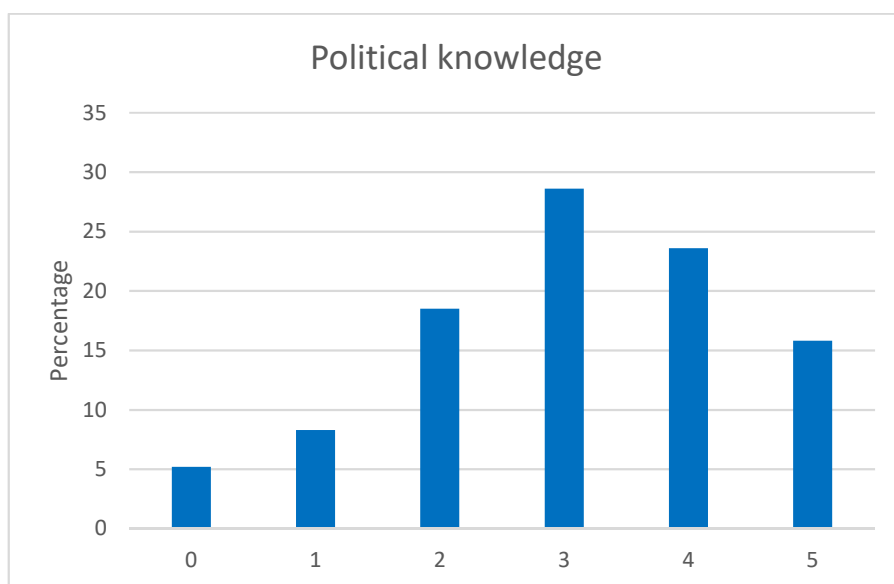
Table 7: Facebook only versus using Facebook in combination with other news sources

	Model 1 Political knowledge b(SE)	Model 2 Political knowledge b(SE)	Model 3 Information overload b(SE)
<i>Newsgroups</i> (Ref: Traditional news diet)			
- Low news diet	-.336(.11)**	-.376(.11)**	-1.064(.33)**
- Facebook reliant (- 4 other sources)	-.707(.14)**	-.705(.14)**	.053(.40)
- Facebook + traditional (+ 4 other sources)	-.162(.08)*	-.142(.08)	.531(.24)*
Information overload		-.037(.01)**	
N	993	993	993
Adjusted R²	.36	.37	.03

*Controlling for gender, age, education and political interest; *p<.05 **p<.01*

Figure list

Figure 1: Overview of political knowledge



Supplementary material

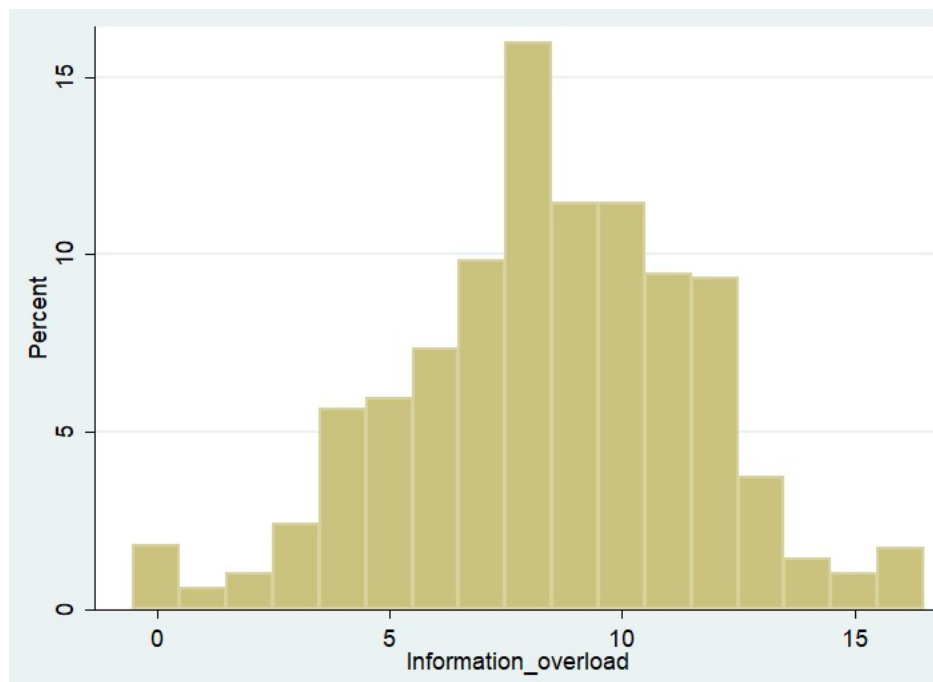
Appendix A: Validation of the four news groups

Traditional news use	Model 1 b(SE)
<i>Newsgroups</i> (Ref: Traditional news diet)	
- Low news diet	-2.735(.38)**
- Facebook reliant (- 4 other sources)	-1.036(.48)*
- Facebook + traditional (+ 4 other sources)	2.034(.28)**
Female	-.340(.25)
Age	.037(.01)**
<i>Level of education</i> (ref=Low)	
- Middle	.741(.38)*
- High	1.076(.38)**
Political interest	.431(.05)**
Constant	5.830(.73)**
N	993
Adjusted R²	.29

*p<.05 **p<.01

Note: The dependent variable *traditional news use* is constructed by taking the sum of the four items that measure the frequency in which respondent use radio, television, newspapers and online newspapers for their news consumption. On this variable, respondents can score between 0 (if they never use any of these channels for news) and 20 (if they use each of the four channels more than once a day).

Appendix B: Information overload



Appendix C: Statements on social media as a source of (diverse) information (n=780)

<i>On social media ...</i>	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
1: ... I usually encounter messages from news media I usually don't use	11.2%	21.2%	32.3%	30.5%	4.9%
2: ... I usually encounter news messages in which I am not interested	5.6%	8.4%	26.8%	43.3%	15.9%
3: ... I rarely encounter political news messages with which I disagree	15.6%	22.8%	42.8%	14.7%	4.0%