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Ohme, J.

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# Mobile but Not Mobilized? Differential Gains from Mobile News Consumption for Citizens' Political Knowledge and Campaign Participation

Jakob Ohme

Amsterdam School of Communication Research, University of Amsterdam, Amsterdam, The Netherlands


## ABSTRACT

Especially during election times, news is an indispensable means for citizens to make informed political decisions. The ubiquitous information access of mobile devices creates the potential for increasing news use among citizens in general and specifically during campaign time. However, little is known about the outcomes of this new way of accessing news, although research suggests that less attention and involvement are dedicated to news accessed on a mobile phone. This study therefore applies the differential gains perspective to mobile news use during the 2015 Danish national election campaign. We utilize a pre- and post-election panel survey and a smartphone-based media diary study among Danish voters ( $n = 1108$ ) to test whether *news app use* and *mobile browsing* affect political knowledge and campaign participation differently than other types of campaign news exposure. Results suggest equal gains for citizens' political knowledge, but differential gains for mobilizing effects of mobile news use.

## KEYWORDS

Mobile news; social media news; news effects; political knowledge; campaign participation

The emergence of new media has always sparked questions about how such a development will influence citizens' political behavior and civic life (e.g. Newton 1999; Shah et al., 2005). Recently, mobile devices have become integral to citizens' everyday communication (Ling and Donner 2013). The rise of mobile media therefore presents a next step in the quest to understand the implications of specific types of media use on civic engagement (McLeod, Kosicki, and Pan 1991). People more often than ever before get their "daily fix" of news on their smartphones, be it through a mobile browser, a social media app or a dedicated news app (Stroud, Peacock, and Curry 2019; Westlund 2015; Wolf & Schauber, 2015). In Denmark, the country in which the study is conducted, 67% of the adult population access news on their smartphones, while only 56% do so on a laptop or desktop computer (Levy et al. 2018). So far, research has tried to understand how mobile access to news changes media

**CONTACT** Jakob Ohme  [j.ohme@uva.nl](mailto:j.ohme@uva.nl)

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exposure patterns in citizens' everyday lives (Chan-Olmsted, Rim, and Zerba 2013; Damme et al. 2015). However, the phenomenon of consuming news on a mobile has received less attention in connection to key democratic variables. It is therefore important to investigate what implications this new way of receiving political information has for citizens' knowledge and levels of participation as a basis for a functioning democratic society.

Research so far has found that people attend news differently on mobile devices, i.e. spend less time with it, show higher cognitive effort, and scroll more quickly through it (Al Ghamdi et al. 2016; Chae and Kim 2004; Dunaway et al. 2018). In addition, a great number of studies has explored the effects of digital news use on campaign engagement (e.g. Baumgartner and Morris 2010; Dimitrova et al. 2014; Holt et al. 2013). The present study combines the two strands of research and asks whether news consumption on mobile devices leads to differential democratic gains, such as different levels of political knowledge and participation as an outcome of exposure to political news on a mobile. We apply the "mix of attributes" approach by Eveland (2003) to digital news media use and extend it to the use of mobile devices as means of attending political information. First, such an approach helps to pinpoint expectations of differing media effects stemming from the content or form of mass media that convey the information (McLeod, Kosicki, and Pan 1991). Second, it contributes to our understanding of mobile media attributes that potentially lead to different effects of such exposure. The study focuses on two specific forms of mobile news use, *news app use* and *mobile news browsing*. It compares their effectiveness in influencing people's campaign knowledge and participation to other means of news use during the 2015 Danish national election campaign.

To this end, national online survey data from a two-wave panel study of Danish adults ( $n = 1,108$ ) conducted during the 2015 national election are analyzed. In addition, a unique eleven-wave smartphone-based media diary is used to measure short-term news exposure on mobile and social media. This approach makes several contributions: (1) We explore different effects of mobile news use in conjunction with other digital (i.e. news websites, social media news) and non-digital news sources (TV, Print, Radio) based on a unique data set. (2) We examine differential democratic gains for people who attend to news to a greater or a lesser extent on their mobile device and the study is thereby one of the first that specifically focuses on the outcomes of mobile news use. (3) Here, the study makes an important distinction between *news app use* and *mobile news browsing* effects. With especially the latter being on the rise, the study sheds light on potential consequences of phenomena closely related to mobile news use, such as information snacking on a mobile (Nelson and Lei 2018; Sveningsson 2015).

### **Attributes of digital and mobile news use**

News media play an important role in informing the electorate about relevant political topics, evaluations of the incumbent government and political alternatives (Colwell Quarles 1979; Strömbäck, 2005). Although smartphones have outnumbered desktop computers and laptops as the main device to access news in countries like the US, the UK, or Denmark (Levy et al. 2018), how citizens learn about political developments

and subsequently act upon information they receive on their mobile phones is yet an open question. For a better understanding, first, it is necessary to elaborate on theoretically-derived reasons as to *why* accessing news on mobile devices would produce different media effects before, second, investigating *whether* this is indeed the case.

Depending on exposure circumstances, news processing may differ and be subsequently responsible for varying effects of political information use between individuals (Scheufele 2002; Yamamoto and Nah 2018). With respect to political engagement, the question whether people learn differently from news is especially relevant (Eveland & Scheufele, 2000). Prior's (2007) conditional learning model suggests that a higher media choice leads people to select information they have an initial preference for, such as political information or entertainment (see also Delli Carpini & Keeter, 1996) and in today's digital media environment that asks for constant choices, the mechanism of conditional learning should have nothing but increased. While the model mostly talks about outcomes of increased information *supply*, mobile availability shifts the focus to effects of news *access*.

Previous research has discussed the affordances of mobile communication extensively (Ling, 2017; Damme et al. 2015; Shim et al. 2015; Westlund 2015). A recent study by Nelson (2019) furthermore finds that news brands used on desktop PCs and mobile devices differ little, suggesting that news content that is received on different devices is to a large extent similar. Hence, to understand whether mobile news use is changing the informational fundamentals of a society, a clear elaboration of characteristics that can explain different effects of mobile news use is necessary. One way forward here is to apply the "mix of attributes" approach by Eveland (2003) to mobile news use. In short, this approach sets out to "link the attributes [such as *interactivity, structure, or control*] of a new medium to its potential effects" (p. 397). It helps to define whether a new medium presents variation in already existing attributes or if new attributes are necessary to understand media effects. Hence, a theoretical link between attributes and effects can be built (McLeod, Kosicki, and Pan 1991). In our case, it may furthermore help to extract peculiarities of mobile media by disentangling an overlap of attributes with other digital media.

Based on previous research, two types of accessing mobile news use can be distinguished: (i) through a dedicated news app, or (ii) through browsing other digital news outlets on a mobile device (Nelson and Lei 2018; Westlund 2015). Especially in the latter case, the mobility of news access interacts with different types of digital platform that supply news, for example, by attending news from social media platforms on a smartphone. Hence, studying mobile media effects needs to be completed in conjunction with digital platforms that enable news access in the first place. In a first step, we therefore define attributes of *news website use* and *social media news use*, before moving onto the specific attributes of *mobile news app use* and *mobile news browsing*. In a second step, we explore the role of potential interactions for media effects research. We take the six initially suggested attributes (interactivity, structure, control, channel, textuality, and content) by Eveland (2003) as a starting point to differentiate attributes for digital and specifically mobile news media use.

In the early days, news websites were only moderately interactive but due to comment sections have increased their level of interactivity. In comparison, social media platforms still show higher levels of interactivity due to the networked communication

structure of these online communities (Klinger & Svensson, 2015). As a sub-attribute of interactivity, social recommendation (in form of “likes,” suggestions, and usage statistics) is particularly strong for social media news use, and more common than on news websites (Messing and Westwood 2014). News websites follow a linear structure and the placement of a news item on the website signals a certain general importance to users. Their newsfeed function makes news use on social media platforms use a strongly linear experience as well. But instead of signaling *general* importance, the fully algorithm driven build-up of social media pages signals a greater *personal* importance. The use of hyperlinks, however, can interrupt his linear structure for both types of news use (Eveland 2003), whereas following links to external news sources by clicking on posts is especially common on social media (Ju, Jeong, and Chyi 2014). Users have a high control over the pace and sequence of exposure on both news websites and social media. Control over the type and amount of content is higher on news websites, where at least the homepage presents a prefixed amount of content that makes it easier for users to orient themselves to the visual space from which they can select information. This orientation is harder on social media platforms with their (seemingly) infinite stream of information. Hence, content control is lower on social media compared to news websites. Both, news websites and social media platforms rely on visual and audio channels (or a combination of both) for conveying information to users. The initially text-driven nature of news websites is more and more replaced by audio and especially video content. Social media platforms follow this trend, with visual content platforms like Snapchat or Instagram being on the rise.

Mobile news use, in turn, is defined as accessing information about political or public affairs on a mobile device. The component of mobile access makes it necessary to think about a number of specific attributes that can explain different effects of mobile news use. Based on previous research, four of those attributes were identified by the current study: *perception*, *location*, *time*, and *proximity* of usage (see Table 1 for an overview). Perception is changed by smaller screen sizes as a necessity for portability of mobile devices. Mobile optimization of websites may adjust digital news to these new realities, but still alter readability and visibility of information (Searles, Feezell, and Rose 2019). Small font sizes and touch screens increase the difficulty of searching for and receiving information. This leads to processing news with fewer resources (Napoli & Obar, 2014), less time spent with information and ease of reading (Al Ghamdi et al. 2016; Dunaway 2019), and higher cognitive effort for extracting information from a mobile device, compared to a desktop PC (Chae and Kim 2004; Dunaway and Soroka 2019). In sum, mobile devices can present obstacles for the extraction of information and thereby make effects of news use conditional on the *perception* of information.

Second, mobile access affects the *location of news usage*. For example, 42% of people access news on public transport. Such usage in public spaces presents signals that interfere with news exposure and potentially distract people. Moreover, when on the go, the on-off usage of mobile devices can result in lower news attention and makes following up on news less likely. In turn, 46% of people also mention their bed or the bathroom as places of smartphone news exposure (Newman et al. 2017). Although understudied, the location of usage may help or hinder how and what type of information people extract from news and make conditional effects more likely.

**Table 1.** Attributes of mobile news use.

Attribute	Exposure conditions	Conditional effects through ...
<i>Perception of content</i>	<ul style="list-style-type: none"> <li>• Smaller screens</li> <li>• Smaller font sizes</li> </ul>	<ul style="list-style-type: none"> <li>• Information processing with fewer resources</li> <li>• Higher cognitive effort for information extraction</li> <li>• Less seeking of and following up on content</li> </ul>
<i>Location of usage</i>	<ul style="list-style-type: none"> <li>• Interfering signals in public spaces</li> <li>• Exposure in between locations (e.g. public transport)</li> <li>• Exposure in quiet locations (i.e. bed, bathroom)</li> </ul>	<ul style="list-style-type: none"> <li>• Lower attention levels <ul style="list-style-type: none"> <li>• Less following up on content</li> <li>• Distraction</li> </ul> </li> <li>• Higher levels of attention <ul style="list-style-type: none"> <li>• More following up on content</li> <li>• Highly focused usage</li> </ul> </li> </ul>
<i>Time of usage</i>	<ul style="list-style-type: none"> <li>• New times for exposure (i.e. waiting, “second screening”)</li> <li>• Increase in convenience of access and variation in content</li> </ul>	<ul style="list-style-type: none"> <li>• Low news use intention <ul style="list-style-type: none"> <li>• News snacking or skimming</li> <li>• Inadvertent exposure</li> </ul> </li> <li>• High news use intention <ul style="list-style-type: none"> <li>• “Save” news for tranquil times</li> </ul> </li> </ul>
<i>Proximity of usage</i>	<ul style="list-style-type: none"> <li>• Immediacy of exposure</li> <li>• Notifications about information send anywhere, anytime to most personal device</li> </ul>	<ul style="list-style-type: none"> <li>• Signaling importance through interruption <ul style="list-style-type: none"> <li>• More following up on content</li> </ul> </li> <li>• Perceived level of feeling informed through “breaking news” notifications <ul style="list-style-type: none"> <li>• Less variety of exposure and following up on content</li> </ul> </li> </ul>

Third, mobile access creates new *times* for news usage, such as while waiting or commuting. News access during these times is also possible without mobile technology, but smartphones especially increase the convenience and variation (e.g. with audio-visual content) of news access on the go. The higher timely variation makes the intention of attending to public affairs a determining factor for exploring differences in effects. “Saving” news for more tranquil times (e.g. via the “save” button on Facebook) increases the possibilities of attending news on a mobile with high news use motivations. Mobile users, for example, were found to spend more time engaging with long-form than short-format news stories on social media (Matsa, 2016). In contrast, “news snacking” as a phenomenon that describes a behavior of skimming through news with the intention of passing time has grown in importance as well (Sveningson, 2015). Using mobile devices intentionally to receive news may therefore exert stronger effects on people than seeing news only as a by-product when grazing information on their smartphone or tablet (Forgette, 2018). The importance of intentions in the study of media effects (see Chan-Olmsted, Rim, and Zerba 2013; Corkindale and Howard Chen 2008) underlines that different times of usage enabled through mobile media can play a more important role when examining conditional effects of news use.

Lastly, the close *proximity* of mobile devices to their users (Ling and Donner 2013) increases the relatedness of users to their devices and the immediacy of news exposure by seeking news anywhere, anytime, as well as being reached by news directly, for example via push messages. If push-messages of news apps have been enabled

deliberately, they interrupt people in a desired manner and make them stop what they are doing (Costera Meijer and Kormelink 2015). This way of signaling importance and drawing users' attention to a recent event may affect how people interpret news. In case of not following up on these breaking news stories, a lack of additional information, in turn, can lead to superficial levels of information. Usage proximity and the reliance on breaking mobile news may again conditionalize effects.

## **Mobile news use and political campaign engagement**

The above-mentioned attributes of mobile news use have the potential to result in different effects of news use on democratic key variables, such as political knowledge and campaign participation, which are the two main dependent variables in this study. We utilize the 2015 Danish national election campaign as a test case to explore how informing oneself about an upcoming election through different media affects how much people know about campaign topics and how strongly they engage in campaign activities.

News media have the task to inform prospective voters (Chaffee, Zhao, and Leshner 1994) and mobilize their engagement with an upcoming campaign (Dimitrova et al. 2014). Extant research has established a positive relationship between news media use and political knowledge, both for traditional (e.g. Chaffee, Zhao, and Leshner 1994; Wei and Lo 2008) as well as digital types of news use (e.g. Kenski & Stround, 2006; Mossberger, Tolbert, and McNeal 2008). Furthermore, studies could establish a positive relationship between exposure to both political media content offline (e.g. McLeod, Scheufele, and Moy 1999) as well as digital media use and campaign participation (Holt et al. 2013; Kahne, Lee, and Feezell, 2013; Ohme 2019).

Indication for differential effects between news website use and social media use is found by Dimitrova and colleagues (2014), whereas news website use during campaign time predicts knowledge gains while social media use does not. On the contrary, the authors find that especially the use of social media during campaign time mobilizes campaign participation, while news website use is less effective. So far, it remains an open question whether these differential effects are also true for the use of campaign news on mobile devices, both via dedicated news apps and mobile browsing of digital platforms.

### **News app use**

In Denmark, 67% of people access news on their smartphone, but only 51% do so via a dedicated news app<sup>1</sup> (Levy et al. 2018), raising the question of whether these two modes of exposure can also result in different mobile news use effects. Mobile news apps are platforms on mobile devices that distribute news updates, bundle them, and present them in mobile-optimized ways (Westlund 2015). Based on the findings that people can learn from news website use, these small differences in attributes in comparison to news apps suggests that this positive relationship also applies to news apps.

Downloading an app is a dedicated act and with the exception of push messages, users have to deliberately open the app to be exposed to its content. It is unlikely that receiving campaign news from a mobile app is a pure flow-by product, suggesting a certain news use preferences of app users. In Denmark, only 20% of news app users report not being interested in politics compared to 30% of people who browse news on their smartphone<sup>2</sup> (Levy et al. 2018). The average time of consuming news in an app is up to 20 times higher than the time spent on a mobile news site (Nelson and Lei 2018) and people spend more than twice as much time when attending news through an app compared to browsing news on a mobile (Knight Foundation 2016). Although results have to be interpreted against the higher number of news sites available compared to apps, these numbers establish a higher dedication to news by app users, compared to people who browse news on their mobile. Returning to the attributes of mobile news use, this higher dedication somewhat minimizes the influence ubiquitous news use may have. Especially the intention to use news via apps as a consequence of more flexible usage times seems to be more strongly driven by an information need. In this case, news app use should be positively related to learning about campaign issues, based on the argument of conditional learning (Delli Caprini & Keeter, 1996; Prior, 2007). Stroud, Peacock, and Curry (2019) found first indications for this: People who had turned on the notification function of a news app were holding – in some instances – higher levels of political knowledge than users who disabled news app push-messages. However, the obstacles of perceiving news on a small screen, the interfering signals at different usage locations and the brevity of push messages sent by news apps are potential reasons that may limit knowledge gains through news app use.

Social endorsements and the possibility of sharing and commenting on news can help citizens to evaluate information against a social utility and thereby act as drivers of political actions (Chaffee and McLeod 1973; Messing and Westwood 2014; Sülflow, Schäfer, & Winter, 2018). The self-contained nature of news apps includes fewer social cues than, for example, social media platforms, being a potential reason for limited mobilizing effects of news app use. In differing contexts, however, Martin (2015) finds positive effects of mobile campaign news use for mobile campaign donation and Yamamoto, Kushin, and Dalisay (2014) in this regard find that using partisan news apps increases political offline participation during a campaign. We therefore predict:

*H1: Receiving campaign information on a dedicated news app positively predicts a) political knowledge and b) campaign participation.*

### **Mobile news browsing**

Turning to effects of mobile news browsing, the interplay between the access through mobile devices and the supply of news by different digital platforms needs to be taken into account. Based on the digital media attributes discussed above, news websites and social media news usage can affect political knowledge and campaign participation differently (Dimitrova et al. 2014; Ohme, de Vreese, & Albaek, 2018). In the following, we explore how attributes of mobile news access can conditionalize such direct effects.

The obstacles that the perception of news on mobile devices present to political learning and mobilization are largely similar for news websites and social media



platforms. A smaller screen can challenge the extraction of information (Dunaway 2019) and make it difficult to observe certain parts of news messages, such as social recommendations, which have the potential to increase political engagement of citizens. Dunaway et al. (2018) furthermore find smartphone and tablet users to be less likely to notice links in news articles, relative to desktop computer users. This pattern, moreover, may prevent following up on news via links in mobile devices.

Mobile news browsing in different locations may present users with interfering signals such as chatter and noise and changing visual stimuli. Such a distraction can result in low attention to news; instead of increasing political knowledge, mobile news browsing on news websites and social media platforms can result in a less informed impression of a topic (Costera Meijer 2007). Shorter usage episodes of mobile news browsing (Nelson and Lei 2018; Knight Foundation 2016) and extensive scrolling in social media news feeds on a mobile (Oulasvirta, Rattenbury, Ra, & Raita 2012) can compromise information uptake even further. Here, the tactile experience of swiping over a screen may make scrolling an enjoyable experience. In times when people “snack” on news on social media just to pass time on a mobile, the interplay of news-feed set-up and low news use motivation is likely dampening information retrieval during such a process. However, news checking as a major habit on mobile phones has been discussed as increasing levels of incidental news exposure (Molyneux 2018). Attending news items in high frequency increases the likelihood of coming across (political) information that people find interesting and engage with (Mothes & Ohme, 2019). Valeriani and Vaccari (2016) find that higher levels of accidental exposure to news is positively connected to online participation and that citizens with low political interest benefit more from it. These interplays suggest the possibility of conditional outcomes for political knowledge and campaign participation when browsing news mainly on a mobile. Especially screen size, location and intention of usage can challenge the beneficial effects research has established for the use of news websites and social media news. We therefore predict:

*H2a: People with high levels of mobile internet use gain less political knowledge by using news websites than people with low levels of mobile internet use.*

*H2b: People with high levels of mobile internet use gain less political knowledge by using social media news than people with low levels of mobile internet use.*

*H3a: People with high levels of mobile internet use become less mobilized in their campaign participation by using news websites than people with low levels of mobile internet use.*

*H3b: People with high levels of mobile internet use become less mobilized in their campaign participation by using social media news than people with low levels of mobile internet use.*

## Method

To analyze the relationship between news use and campaign engagement, we rely on data from a pre- and post-election online panel survey and an eleven-wave smartphone diary study conducted around the Danish national election campaign in 2015. In Denmark, which belongs to the democratic corporative media system (Hallin & Mancini, 2004), news media play an important role in informing the public about

political developments – and they display a great variety. The Danish media environment is characterized by two strong public service broadcasters (DR and TV 2) as well as five national newspapers (*Politiken*, *Berlingske*, *Jyllands Posten*, *BT*, and *Ekstra Bladet*) and a number of local and regional newspapers. All major outlets offer a dedicated news app to their audiences. With more than one third of citizens accessing news media in 2014 via social media platforms and almost 50 percent via mobile devices, Denmark can be described as a frontrunner of digital developments (Newman et al., 2017; Danish Ministry of Culture, 2017). Due to its high level of news consumption, a very confined election campaign time of exactly three weeks, high internet coverage and a large number of people using smartphones (both at 96%; Danmarks Statistik 2016), Denmark is a well-chosen case to examine the impact of mobile news use on citizens' campaign engagement.

### **Sample**

The sample consists of 1,108 respondents. All respondents took part in the pre- and post-election survey and at least four mobile diary surveys. The latter were fielded eleven times during the three-week election campaign period, i.e. every other day, and asked about their campaign news use. This diary approach of measuring news exposure on a two-day basis throughout the whole campaign time differs from other studies that let respondents estimate their news exposure retrospectively in a cross-sectional survey. Respondents participated via a specific app or their mobile browser. Invitations to participate were sent via push or text messages at the end of every second campaign day and respondents were asked to indicate the sources of their campaign news exposure throughout the day. With this repeated exposure measure that is tied to current news items, we argue that we can arrive at a comprehensive assessment of campaign news use, thereby tackling known issues of self-reported exposure measures, such as recall bias resulting from short-term exposure (Slater, 2004; Ohme, Albaek, & de Vreese, 2016).

Respondents were recruited using a pollster's database and national register data. Three different groups were included: a *general* population sample, a sample of *elderly* people and a *youth* sample. The general and the elderly samples were recruited from the pollster's database with representative characteristics for the Danish population. The sampling strategy relied on a light quota on age and gender. In the general population sample, 10,315 were invited to take the online survey of which 45% ( $n = 4641$ ) did. Sixty per cent of the elderly agreed to participate ( $n = 1831$ ). For the youth sample 13,700 persons aged 17-21 years old at wave one were randomly sampled, using national register address data,<sup>3</sup> 19% ( $n = 2653$ ) participated. In total, 9,125 ( $4641 + 1831 + 2653$ ) participated.

The pre-election wave, which was the third wave of the longitudinal study, included 2,946 respondents from the national sample (attrition rate from wave 1 ( $n = 4641$ ): 36%). The elderly sample included 1,369 respondents (attrition rate from wave 1 ( $n = 1831$ ): 23%) and the youth sample 1,051 (attrition rate from wave 1 ( $n = 2653$ ): 61%). In the post-election wave conducted after Election Day, 2,680 respondents in the general sample, 1,292 respondents in the elderly sample and 769 respondents in

youth sample were retained (overall retention rate 88%). Of the respondents participating in pre- and post-election wave, 1,349 (28%) participated in the mobile election diary study. Out of these, 82% participated at least four times in the mobile diary leading to a final sample of 1,108.<sup>4</sup>

## Measures

*Campaign news use* was assessed by asking respondents every other day during campaign time whether they had heard first about one major campaign news item from that specific day either on *television*, on the *radio*, in a *printed newspaper*, on a *news website* (e.g. *Politiken.dk*), on *social media* (e.g. by a post by *Danmarks Radio's* Facebook page that links to an video on their website), or via a specific *news app* (e.g. in the *Berlingske* app itself or a news aggregator app, such as *Apple News*).<sup>5</sup> They furthermore had the option to indicate that they had not heard about the news story at all. Respondents were asked to indicate where they *first* had heard about the news by choosing a single option. Although they may have heard about it on other channels later on, our repeated diary measure helps to secure a sufficient assessment of sources from which they have come across campaign news. Based on pretest analysis, the diary survey was sent out every other day at 9:45 pm and could only be answered until midnight (Ohme, de Vreese, & Albaek, 2017). This procedure ensured that the news exposure questions were answered on the very same day. The variables for each specific media channel were dichotomized (yes/no) and summed to an index ranging from 0-11. To account for the diary structure of the data with varying participation days among respondents, a relative exposure measurement was calculated on an individual data level. To ensure a sufficient variety in assessing their campaign news exposure, only respondents who had participated at least four times in the diary surveys were included in the analysis, whereas they could take maximally eleven surveys. The frequency of exposure to each media channel was divided by the days each respondent had participated in the diary survey. This results in a relative measurement ranging from 0 to 1, with 1 indicating exposure to the information from the relevant channel on all days the respondent had participated. With this, we can account for the varying days of participation in the diary study and still arrive at a measure that is comparable across participants. Respondents reported having heard about campaign news most often on television and least often via a mobile news app (see [Table 2](#)).

*Mobile Internet Use* was measured by asking, "How much time do you use your mobile phone to access the Internet compared to other devices?" The comparative element in this question is necessary to put mobile Internet use in perspective compared with the total amount of time spent online. It functions as a proxy measure that helps to indicate the likelihood that digital news exposure took place on a mobile device. Respondents indicated the percentage of their online time spent on their mobile phone by using a slider in intervals of ten ( $M = 43\%$ ,  $SD = 27\%$ ,  $Min = 10\%$ ,  $Max = 100\%$ ). Given that only respondents who participated in the mobile diary study are part of our sample, no respondent reported zero percent of mobile internet usage. To distinguish between levels of high and low mobile internet use, a median split was applied, setting the cut-off point between high and low usage at 40%.

**Table 2.** Frequencies of relative campaign news exposure by media channel.

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>N</i>
Television	.35	.26	0	1.00	939
Radio	.12	.18	0	1.00	939
Printed newspaper	.03	.08	0	.67	939
News website	.06	.12	0	1.00	939
Social media	.06	.11	0	.75	939
Mobile news app	.02	.07	0	.83	939

### Political knowledge

In order to measure this concept, respondents were asked four question in both the pre- and post-election wave, which covered similar topic areas and had a comparable level of difficulty, but asked for different content. Questions asked about campaign-related topics (*Which party did not run in the national election?*) as well as other current political affairs (*Which country has started negotiations on its future relationship with the EU?*). Responses were dichotomized (correct/not correct) and variables were summed into an index ( $M_{post} = 3.34$ ,  $SD_{post} = .83$ ,  $Min_{post} = 0$ ,  $Max_{post} = 4$ ). *Previous political knowledge* was measured the same way during the pre-election wave ( $M_{pre} = 2.9$ ,  $SD_{pre} = 1.1$ ,  $Min_{pre} = 0$ ,  $Max_{pre} = 4$ ).

### Campaign participation

We asked respondents about participation in 12 different activities (see Appendix A) conducted offline, online, and on social media (Dimitrova et al. 2014; Shah et al. 2007). Activities were campaign specific, hence, respondents were asked in the pre-election wave about their intention to participate (0: Not likely at all – 10: Very likely; *Cronbach's*  $\alpha = .88$ ,  $M_{pre} = 39$ ,  $SD_{pre} = 22$ ,  $Min_{pre} = 0$ ,  $Max_{pre} = 120$ ) and in the post-election wave whether they had participated in any of these activities over the course of the campaign (0: Not participated/1: Participated; *Cronbach's*  $\alpha = .74$ ,  $M_{post} = 3.3$ ,  $SD_{post} = 2.1$ ,  $Min_{post} = 0$ ,  $Max_{post} = 12$ ).

### Controls

Age ( $M = 45$ ,  $SD = 18$ ,  $Min = 18$ ,  $Max = 80$ ), gender (57% female), formal education, and political interest ( $M_{pre} = 6.7$ ,  $SD_{pre} = 2.4$ ,  $Min_{pre} = 0$ ,  $Max_{pre} = 10$ ) were added as control variables to the model.

In sum, the main dependent variables of the study, political knowledge and campaign participation at t2 were measured in the post-election survey; the main independent variables of campaign media use were measured by the mobile diary study and the control and lagged dependent variables (at t1) were measured in the pre-election wave.

## Results

Before turning to the multivariate analysis, we look at the frequencies of different campaign media usage patterns. Table 2 shows that people most often heard about campaign news on television and radio, followed by news websites and social media. To be more precise, on 35% of the days they participated in the diary study, people report to have heard about campaign news via television, and only on 2% of days via

**Table 3.** Predicting political knowledge and campaign participation.

	Political knowledge at t2		Campaign participation at t2	
	(1)	(2)	(3)	(4)
Female	-.034 (.051)	-.004 (.050)	.043 (.131)	.014 (.101)
Age	-.137*** (.002)	-.163*** (.002)	-.132*** (.004)	-.046 (.003)
Education	.135*** (.014)	.095** (.013)	.011 (.035)	.007 (.027)
Political interest	.199*** (.012)	.142*** (.012)	.381*** (.032)	.041 (.027)
Television	.251*** (.126)	.196*** (.126)	.077* (.326)	-.007 (.251)
Radio	.201*** (.163)	.166*** (.161)	.046 (.421)	-.030 (.324)
Printed newspaper	.076* (.347)	.064* (.340)	-.000 (.896)	-.001 (.685)
News websites	.120*** (.224)	.091** (.222)	.037 (.580)	.000 (.444)
Social media news	.158*** (.255)	.127*** (.252)	.231*** (.658)	.110*** (.512)
Mobile news app	.107*** (.359)	.085** (.353)	.003 (.927)	.006 (.708)
Political knowledge at t1 (LDV)		.234*** (.026)		
Intended campaign participation at t1				.686*** (.003)
<i>N</i>	939	939	939	939
Adj. <i>R</i> <sup>2</sup>	.175	.211	.208	.537

Standardized beta coefficients; Standard errors in parentheses.

+*p* < 0.10.

\**p* < 0.05.

\*\**p* < 0.01.

\*\*\**p* < 0.001.

a dedicated news app. This is not to say that news app use during campaign time was generally as low; however, our questions asked where they had heard about a specific news story. The fact that only a single option could be selected may therefore explain the minor role news apps played in citizens' campaign media diet. When looking at difference between mobile media use patterns, we do find indication that people who use news apps are slightly more active during the campaign than people who report not having used a news app. In turn, their activity level in single campaign activities does not strongly vary between users with low compared to high mobile internet use (see [Appendix A](#)).

Turning to the question of differential gains from mobile news use during campaign time, we conducted multiple OLS regression analyses, first predicting political knowledge. People with higher education and political interest also scored higher on political knowledge, while older people were less knowledgeable. H1a predicted that receiving campaign information on a dedicated news app will increase people's political knowledge and indeed, we discover such a positive relationship between news app use and political knowledge. However, comparing the standardized coefficients of different media types, we see that news app use contributes less to political learning, while especially television, radio and social media exposure prove more effective here ([Table 3](#), Model 1). Adding a lagged dependent variable to our model (i.e. political knowledge from the pre-election wave at t1) allows us to explain the effect the independent variables had on change in the dependent variable over the course of the campaign. In this more demanding analysis ([Table 3](#), Model 2), we find the exact same pattern, though with smaller effect sizes. Hence, we can establish that news app use is a positive predictor of political knowledge in campaign time, whereas this type of campaign media use contributes less to it than other news sources.

When looking at factors predicting campaign participation, we see that older people were less likely to engage actively in the campaign, while political interest was a

**Table 4.** Indirect effects on political knowledge.

	Political knowledge at t2			
	(1)	(2)	(3)	(4)
Female	-.026 (.052)	.003 (.051)	-.026 (.052)	.003 (.051)
Age	-.147*** (.002)	-.172*** (.002)	-.147*** (.002)	-.172*** (.002)
Education	.135*** (.014)	.095** (.013)	.136*** (.014)	.096** (.013)
Political interest	.197*** (.012)	.141*** (.012)	.197*** (.012)	.140*** (.012)
Television	.251*** (.126)	.196*** (.127)	.253*** (.126)	.198*** (.126)
Radio	.200*** (.163)	.165*** (.161)	.201*** (.163)	.167*** (.161)
Printed newspaper	.075* (.347)	.063* (.340)	.075* (.347)	.064* (.340)
News websites	.107* (.279)	.076 <sup>+</sup> (.274)	.121*** (.224)	.091** (.222)
Social media news	.161*** (.255)	.129*** (.252)	.179*** (.364)	.156*** (.357)
Mobile news app	.112*** (.362)	.089** (.356)	.112*** (.361)	.090** (.356)
Mobile internet use (high)	-.053 (.057)	-.051 (.056)	-.037 (.059)	-.030 (.058)
News websites*	.022 (.403)	.025 (.394)		
Mobile internet use (high)				
Social media news*			-.026 (.462)	-.029 (.452)
Mobile internet use (high)				
Political knowledge at t1		.234*** (.026)		.235*** (.026)
N	939	939	939	939
Adj. R <sup>2</sup>	.175	.211	.175	.211

Note: different number of cases due to item non-response; standardized beta coefficients; standard errors in parentheses.

<sup>+</sup> $p < 0.10$ .

\* $p < 0.05$ .

\*\* $p < 0.01$ .

\*\*\* $p < 0.001$ .

positive predictor. H1b predicted that receiving campaign information on a dedicated news app will increase people's levels of campaign participation. Similar to most ways of receiving campaign news via media, higher levels of news app use were not related to active campaign participation (Table 3, Model 3), nor could news app use explain a change between intended and actual campaign participation. Only social media news use was a positive predictor of campaign participation, even after controlling for intended campaign participation (Model 4). Hence, news app use did not affect campaign participation and H1b needs to be rejected.

In a second step, it was of interest whether mobile browsing of digital news affects campaign engagement differently. Therefore, we tested whether effects of campaign news use online and social media platforms were moderated by people's levels of mobile internet use. To this end, we conducted OLS regression analyses that included interaction terms for news website as well as social media news use and the level of mobile internet use (Table 4). H2a predicted that people with higher levels of mobile internet usage would learn less from their usage of news websites throughout campaign time; H2b expected the same relationship for social media use. However, there were no significant differences between people with high and low mobile internet usage in terms of how much they learned from their use of news websites and social media news during campaign time. Looking at the sign of the effect sizes, we find some indication that people with high mobile internet use seem to benefit more from news website use compared to people with low usage, while heavy users of mobile internet learn less from social media news use. However, these differences only apply to our sample but do not reach statistical significance. H2, thus, needs to be rejected: People with high levels of mobile internet use do not learn less when using news

**Table 5.** Indirect effects on campaign participation.

	Campaign participation at t2			
	(1)	(2)	(3)	(4)
Female	.045 (.132)	.014 (.101)	.046 (.131)	.015 (.100)
Age	-.155*** (.004)	-.066* (.003)	-.153*** (.004)	-.065* (.003)
Education	.011 (.035)	.007 (.026)	.011 (.034)	.007 (.026)
Political interest	.369*** (.031)	.029 (.027)	.368*** (.031)	.030 (.027)
Television	.088* (.324)	.002 (.248)	.091* (.322)	.004 (.247)
Radio	.057 (.417)	-.019 (.319)	.062 <sup>+</sup> (.416)	-.016 (.319)
Printed newspaper	-.008 (.888)	-.009 (.676)	-.007 (.884)	-.008 (.674)
News websites	.069 <sup>+</sup> (.713)	.022 (.543)	.052 (.572)	.015 (.437)
Social media news	.246*** (.653)	.125*** (.505)	.347*** (.928)	.182*** (.719)
Mobile news app	.006 (.926)	.007 (.704)	.006 (.921)	.007 (.702)
Mobile internet use ( <i>high</i> )	.002 (.147)	.010 (.112)	.040 (.150)	.033 (.114)
News websites* Mobile internet use ( <i>high</i> )	-.029 (1.032)	-.011 (.785)		
Social media news* Mobile internet use ( <i>high</i> )			-.143** (1.177)	-.081* (.898)
Intended campaign participation at t1		.689*** (.003)		.685*** (.003)
N	939	939	939	939
Adj. R <sup>2</sup>	.212	.545	.219	.547

Note: different number of cases due to item non-response; standardized beta coefficients; standard errors in parentheses.

<sup>+</sup> $p < 0.10$ .

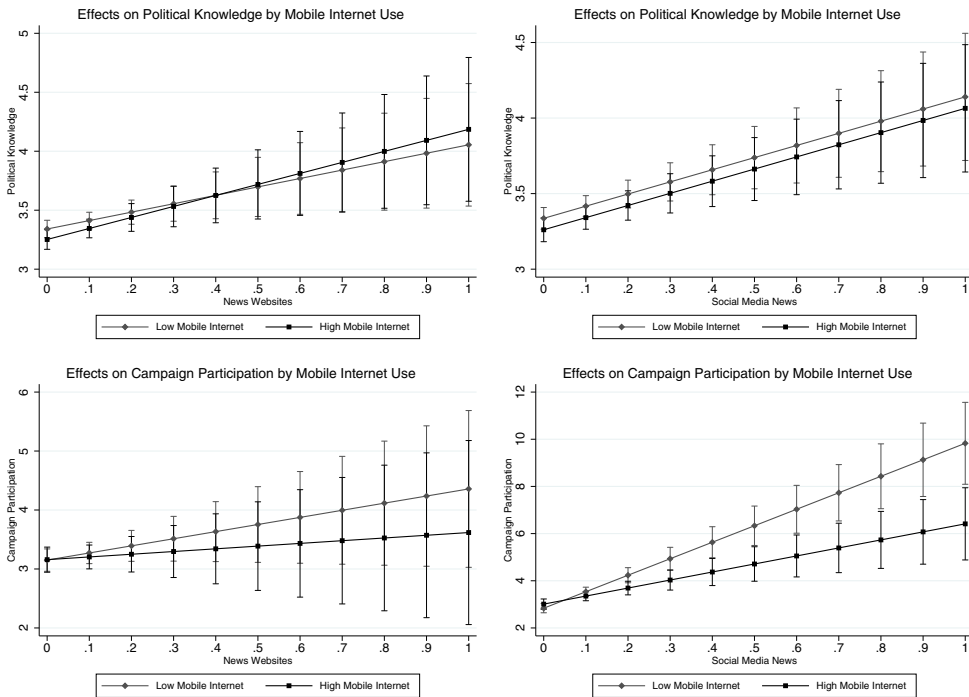
\* $p < 0.05$ .

\*\* $p < 0.01$ .

\*\*\* $p < 0.001$ .

websites and social media news compared to people who are using internet on their smartphone less.

Lastly, we examine if people benefit differently from using campaign news on digital channels when it comes to their levels of campaign participation, depending on how often they are online on their smartphone. H3 predicts lower levels of mobilization through a) news website and b) social media news usage for people who exhibit higher levels of mobile internet use. We again conducted regression analyses with interaction terms to examine moderation effects of mobile internet use on the relationship between online and social media news use and campaign participation. For news website use, we do not find indirect effects of mobile internet use on citizens' campaign participation. Interaction terms in both models, with and without the lagged dependent variable, show negative coefficients, suggesting a smaller mobilizing effect for people who are online more often with their smartphone, but differences are not statistically significant (Table 5, Models 1 and 2). H3a, thus, needs to be rejected: there is no difference in how strongly news website use affects campaign participation for people with different levels of mobile internet usage. When it comes to differences for social media news use, however, we find a significant difference for people with higher compared to lower levels of mobile internet use (Table 5, Model 3). As shown in Figure 1, people who receive campaign news on social media and exhibit high mobile internet usage benefit significantly less from it in their campaign participation. In turn, people who report limited use of the internet on their smartphone become more strongly mobilized through their social media campaign news. The significant difference is robust, even when we include intended campaign



**Figure 1.** Relationship between media exposure and campaign engagement by mobile internet use.

participation in the models (Table 5, Model 4). To scrutinize this result, we calculated the interaction effect by using the continuous measure of mobile internet use and find the same negative and significant interaction effect ( $\beta = -.046$ ,  $p = .009$ ). H3b therefore receives support: Lower gains from social media news use for campaign participation exist for people with higher levels of mobile internet use compared to lower levels of mobile internet usage.

## Discussion

People increasingly receive news on mobile devices, either via dedicated news apps or through browsing news websites or social media on their mobile. So far, the democratic implications of this new way of accessing political information has received little scholarly attention. This study therefore investigates whether receiving campaign information on mobile devices has differences in effects for citizens' political knowledge and campaign participation, compared to other means of accessing news. We apply and extend the "mix of attributes" approach by Eveland (2003) to mobile news use and distinguish between effects of news app use and mobile news browsing as two different ways of mobile news consumption.

Only two percent of our respondents heard about important campaign information first via a dedicated news app, while TV news and radio broadcasts still played a greater role in informing the electorate. This supports the thesis that only a smaller share of news audiences engage with information on a news app (Nelson and Lei



2018) but results need to be interpreted against the timeframe of the study: in the meantime, news apps have become more popular than they were in 2015 (Levy et al. 2018). We find that citizens learn through their consumption of campaign news via a specific news app, which supports the theoretical argument of conditional learning made by Prior (2007): people with a high preference for news benefit from the increased supply of information. News apps increase the buffet of information sources even more; people who choose to be informed via these mobile platforms can also learn from them. However, we also find that the effects of learning from news consumption via apps are smaller than from other news sources, such as TV, print newspapers or online websites. This indicates that the perception and situational factors of mobile news use (i.e. time and space) may challenge the mechanism that leads from information exposure to learning. For campaign participation, news app use did not play a crucial role in mobilizing citizens to, for example, attend political events, take a vote advice application or share campaign content on social media. It is an open question why news app users benefit relatively little from their dedicated use of news on a mobile, since studies suggest that this group of news app users is more politically interested (Levy et al. 2018) and spends more time with news than people who simply browse news on a mobile (Nelson and Lei 2018). The finding furthermore contradicts previous research that establishes a positive relationship between news app use and participation, though in different contexts (Martin 2015; Yamamoto, Kushin, and Dalisay 2015). It is possible that the self-contained structure of news apps helps people keep up to date but does not motivate them to the same extent, like, for example, social media use influences people to become politically active. The lack of social connectivity as well as social endorsements by peers (Bennett and Segerberg 2012; Messing and Westwood 2014) may be reasons why campaign participation is not positively affected by news app use. But, although gains are not equally strong as for other ways of using news, news app use can still be seen as a valuable part in citizens' campaign news diet that helps them to become more politically knowledgeable.

Accessing news websites or social media news on a mobile device is another way of staying up to date with campaign developments. Mobile browsing is common among a greater share of the audiences, and how much people benefit from this type of mobile news use may therefore have more far-reaching consequences. Due to variances in perception, location, time, and proximity of news use, we explored whether accessing news websites and social media platforms on a mobile leads to differential gains in political knowledge and participation. People become more knowledgeable from news website and social media news use, regardless of whether they show high or low levels of mobile internet use. However, we find indications of differential gains when it comes to citizens' campaign participation. Here, people who spend a greater share of their online time on a mobile device are less mobilized by their social media news use than the group that uses the mobile internet less. This finding sheds new light on the field of digital media effects, where ample research has found mobilizing effects of digital and especially social media news use on political participation of citizens, both during election campaign times (e.g. Baumgartner and Morris 2010; Dimitrova et al. 2014; Holt et al. 2013) and non-election times (e.g. Gil de Zúñiga, Jung, and Valenzuela 2012; Tang and Lee 2013; Vaccari et al. 2015). Our study now

adds that this positive relationship between social media use and political participation may be conditional on the mobile access mode to this information. Research points to the fact that the social environment of news use can be a main driver for why people become active about the news they consume. Against the background that certain news elements receive less attention on a mobile (Dunaway et al. 2018), it is conceivable that mobile browsing on social media results in less attention to social cues, be it because of screen size, less attention due to exposure in stimulus-rich surroundings or simply because the time span for engagement with an information item is shorter (Nelson and Lei 2018). Although mobile news browsing can also lead to in-depth engagement (Matsa, 2016), e.g. due to inadvertent exposure or saving news for later, our study suggests that the opposite may be more likely: the ubiquitous access to information on a mobile device may weaken the positive effects digital media use can have on citizens' political engagement.

### **Limitations**

The contributions of the study notwithstanding, there are noteworthy limitations. First, we assessed political knowledge by asking people about current affairs knowledge. The rather straightforward questions, hence, were more focused on an event-type of knowledge, rather than background knowledge. Future research should therefore assess effects of mobile news consumption on different types, such as episodic and thematic knowledge. Second, our assessment of campaign media exposure asked about the media channel through which people had accessed specific campaign news on that same day. Here the smartphone-based media diary created a unique opportunity for receiving a comprehensive, day-to-day assessment about the exposure frequency to actual news, rather than asking about general news consumptions patterns retrospectively. While this approach can come closer to actual exposure patterns, it may underestimate certain types of campaign news use. For example, their publication rhythm disadvantages print news compared to online or broadcast news to be the place where people had heard about campaign news first. Hence, people may have indicated little campaign news exposure via newspapers, although the possibility exists that in general, they used printed newspapers more often. However, in terms of digital and especially mobile news media exposure, only smaller skews are imaginable. In addition, differentiating between high and low mobile internet use must be seen as a proxy for the level to which people engage in mobile browsing of digital news. Future research should therefore assess the extent to which people receive online news on a mobile device more carefully. This will allow for more differentiated explanations about how strongly the level of smartphone use moderates the effects of news use on political engagement. The straightforward approach used in our study can therefore only be a first attempt to grasp effects of mobile browsing on news websites and social media platforms. Fourth, using panel data and an innovative smartphone-based survey mode relies on the frequent participation of respondents and therefore comes at the expense of panel attrition. Our study sample deviates slightly from the original sample in our project with representative characteristics for the Danish population. The respondents have a slightly higher political interest and education

and are thereby marginally older than respondents in the main sample. We found no deviances for gender and social media use. Nevertheless, the results of this study have to be read against these deviations. Lastly, the study focuses more strongly on the channels of news exposure rather than the content, for example, journalistic news content, campaign information from political actors or news from partisan news sources. Our approach does not allow us to differentiate between these types of content; hence, future research should extend the investigation to the area of content differences resulting from mobile device use.

This study provides a framework that can help understand *why* accessing news on a mobile device may produce differential effects for knowledge and participation and tests, and *whether* this is the case. We find support for the possibility that effects of mobile news use are either similar or smaller compared to other, non-mobile ways of accessing news. Future research has to scrutinize this framework by separately testing which attributes of mobile media use are responsible for differential effects. Moreover, we need to be aware that the variety of mobile news access goes beyond apps and browsing. Social media platforms, for example, are mostly accessed via their own apps. A more fine-grained distinction between mobile access modes is therefore necessary to investigate when the interplay of attributes produces differential effects and when this is not the case. While chances of ubiquitous news access via smartphones seem obvious, this study shows that it is equally important to keep an eye on the less beneficial outcomes. It is good news that the differential mobile gains thesis does not receive strong support: people can learn about politics from being exposed to news on their smartphone. But it is worrisome that differential gains may be a reality when it comes to the political participation of citizens. It remains to be seen and tested more elaborately whether the future of media effects means that citizens are mobile – but not mobilized.

## Notes

1. Own calculation based on data from Levy et al. (2018).
2. Own calculation based on data from Levy et al. (2018).
3. Of the 13,700 people, 1,700 were also recruited via the pollster's database
4. Goodness of fit tests were used to test for sample differences between the original sample ( $N=9125$ ) and study participants ( $n=1108$ ) regarding gender ( $p=.126$ ) income ( $>0.78$ ,  $p<.001$ ,  $\text{Min}=1$ ,  $\text{Max}=18$ ), age ( $>2.6$  years,  $p<.001$ ), political interest ( $>0.6$ ,  $p<.001$ ,  $\text{Min}=0$ ,  $\text{Max}=10$ ), mobile Internet use ( $>5.8\%$ ,  $p<.001$ ) and social media use ( $p=.929$ ).
5. The daily news item was determined by the researchers based on their assessment what the main campaign topic of the day was

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## Appendix A: Measurements campaign participation

Items (percentages)	News app users	No news app users	Low mobile internet use	High mobile internet use	Total
<i>Shared information about the election on social media</i>	26.5	19.7	22.0	18.2	<b>20.3</b>
<i>Tried to convince others that they should vote for a particular party or a particular candidate</i>	30.3	23.8	25.1	23.4	<b>24.3</b>
<i>Volunteered for a political party or candidate (e.g. hanging up posters, handing out campaign materials)</i>	6.3	4.6	5.0	4.4	<b>4.7</b>
<i>Contacted a politician personally to discuss the election</i>	7.5	3.3	3.6	3.7	<b>3.7</b>
<i>On social media or elsewhere on the internet taken the initiative to discuss the election (e.g. by creating a group)</i>	17.7	8.7	9.3	9.6	<b>9.4</b>
<i>Expressed your support for a party or candidate (e.g. by writing or comment on posts or changing profile information)</i>	21.5	17.0	19.1	15.3	<b>17.4</b>
<i>Contacted a politician vial email or social media to discuss election</i>	6.3	4.6	5.0	4.4	<b>4.7</b>
<i>Made others aware that you will vote</i>	24.0	26.2	26.3	25.7	<b>26.0</b>
<i>Taken a vote advice application</i>	74.6	70.3	68.0	74.0	<b>70.7</b>
<i>Talked with friends, family, and colleagues about the election</i>	87.3	85.1	82.9	88.1	<b>85.3</b>
<i>Attended public meetings, discussions, debates and lectures on the election</i>	10.1	7.9	7.7	8.5	<b>8.0</b>
<i>Visited a website or social media page of a politician, a political party or an interest group for election information</i>	49.3	44.8	43.4	47.5	<b>45.2</b>