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Social distraction? Social media use and political knowledge in two U.S. Presidential elections

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ABSTRACT

With increasing numbers of people using social media to get news and political information, whether social media helps users learn about politics has become an important question. Intrigued by the potential of social media to politically educate people, researchers have begun to explore the effects of social media on political knowledge. However, the findings from these studies have been far from conclusive. Drawing on both cross-sectional and panel data from two recent United States presidential elections, this study examines how political social media use and general social media use influence political knowledge. Overall, the results of the cross-sectional and panel analyses lead to the same conclusions. Both show that political social media use does not have a significant effect on political knowledge, while general social media use has a moderately negative effect on political knowledge. Thus, on balance, the overall impact of social media on political knowledge appears to be negative. Implications and directions for future research are discussed.

1. Introduction

Many democratic theorists have assumed that an informed citizenry is the basis for a well-functioning democracy (Delli Carpini & Keeter, 1996; Gutmann & Thompson, 1996). If citizens are not informed, their decisions cannot reflect their real interests, which may threaten the ideals of the representative democracy. Against this background, media scholars have been interested in how new media forms contribute to citizens' knowledge over time.

Social media is rapidly emerging as an important source of news (Fletcher & Nielsen, 2017). According to a recent Pew survey (2017), about two-thirds (67%) of U.S. residents receive at least some news from social media. Moreover, among Millennials and Generation-X-ers (age 18–51), Facebook serves as the most popular source for political news (Pew, 2015). The popularity of news consumption via social media has triggered research on whether social media contributes to an informed citizenry (e.g., Bode, 2016; Gil de Zúñiga, Weeks, & Ardèvol-Abreu, 2017).

At first glance, the widespread availability of news and political information on social media might be considered ideal for improving citizens' knowledge of current events. Social media news consumption includes not only purposeful consumption, but also incidental exposure to political content while using social media for other purposes (e.g., Bode, 2016; Gil de Zúñiga et al., 2017; Pew, 2014). Considering both purposeful consumption and incidental exposure to news, it seems obvious that social media provides more opportunities for citizens to encounter political information than ever before (Gil de Zúñiga et al., 2017). However, the greater opportunities for learning made possible by social media do not necessarily mean that people actually learn as a result of this use. The majority of studies that have explored the relationship between social media and political knowledge have indeed failed to observe a positive relationship between the two (Baumgartner & Morris, 2010; Dimitrova, Shehata, Strömbäck, & Nord, 2014; Shehata & Strömbäck, 2018; Xenos et al., 2018). Most of these studies have focused on how *political social media use* may influence political knowledge. Yet, given that most people who get news via social media do so while using social media for other purposes (Pew, 2014), we should also examine how non-political social media use in our everyday lives influences political knowledge, beyond how political social media use affects political knowledge. Thus, the current study attempts to fill the gap in the extant literature by analyzing how both political and general social media use affect individual's political knowledge.

Empirically, our analyses build on two survey datasets collected during the 2012 U.S. presidential election (cross-sectional data) and the 2016 U.S. presidential election (two-wave panel data). By using both cross-sectional and panel data, we extend previous methodological limitations and gain potentially valuable insights into the relationship between social media use and political knowledge. Also, by using two

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surveys conducted in two different U.S. presidential election cycles (i.e., the 2012 and 2016 U.S. presidential elections), we are able to test the generalizability of our findings in multiple election contexts.

2. Literature review

2.1. Digital media and political knowledge

Delli Carpini and Keeter (1996) defined political knowledge as "the range of factual information about politics that is stored in long-term memory" (p. 10). Factual political knowledge questions include information regarding current events and public issues. According to Delli Carpini and Keeter (1996), there are three core elements that have a significant impact on one's political knowledge: motivation, ability, and opportunity. Motivation determines whether people are interested in consuming information. Ability explains whether people have enough skills to absorb and comprehend information. Opportunity refers to the availability of political information and encompasses many different factors, an important one of which is the media environment. Different media environments provide different opportunities for individuals to learn about politics (Prior, 2007). While ability and motivation are relatively stable individual characteristics that are fairly consistent over time, different opportunities engendered by the evolving media environment may provide different learning opportunities.

The advent of the Internet has brought about fundamental shifts in how people get information about national politics and public affairs. The Internet has dramatically reduced the cost of information acquisition, enabling people to obtain information more easily and effectively than ever before (Bimber, 2001). However, contrary to early cyber-optimists' hope that the Internet would create a better informed society (e.g., Rheingold, 2000; Spears & Lea, 1994), abundant empirical evidence suggests that digital media use *per se* generally have minimal, if any, positive effects on political knowledge gain (DiMaggio, Hargittai, Neuman, & Robinson, 2001; Johnson & Kaye, 1998; Scheufele & Nisbet, 2002). Findings indicating positive relationships between Internet use and political knowledge have generally resulted from analyses that limited the purpose of Internet use to *political information seeking* or *news consumption*. For example, researchers have found positive relationships between political knowledge and online newspaper use (e.g., Dalrymple & Scheufele, 2007; Dimitrova et al., 2014; Drew & Weaver, 2006; Groshek & Dimitrova, 2011), and online campaign information exposure (Drew & Weaver, 2006; Kenski & Stroud, 2006; Xenos & Moy, 2007). Although drawing on a varied set of sampling frames, these studies have produced results consistent with the idea that using the Internet for political purposes tends to facilitate political learning.

2.2. Social media and political knowledge

Encouraged by evidence consistent with these learning effects, scholars have generally expected social media use to also have a positive relationship with political learning, as long as it is used purposefully for political information seeking or news consumption. People commonly use social media to seek news and political information (Pew, 2017), and social media provide unprecedented opportunities for doing so (Gil de Zúñiga et al., 2017). Social media users can follow a variety of news providers (e.g., CNN Facebook page), journalists, politicians, political parties, opinion leaders, and individuals to get news and political information easily and quickly. These expanding opportunities for news consumption have spurred research on the effect of political social media on political knowledge (e.g., Baumgartner & Morris, 2010; Cacciatore et al., 2018; Dimitrova et al., 2014; Gil de Zúñiga et al., 2017; Groshek & Dimitrova, 2011; Shehata & Strömbäck, 2018). Surprisingly, most of these studies report either non-significant (Baumgartner & Morris, 2010; Dimitrova et al., 2014; Groshek & Dimitrova, 2011) or even negative main effects (Cacciatore et al., 2018; Gil de Zúñiga et al., 2017; Shehata & Strömbäck, 2018). Given the relative dearth of clear patterns of association between social media use and political knowledge, we propose the following research question rather than formulating a clear hypothesis:

RQ1. How does political use of Facebook affect political knowledge?

However, the absence of a positive relationship between political social media use and political knowledge does not mean that people learn nothing from social media. Scholars have long documented that active or purposeful learning is not the only way people can learn (Elenbaas, de Vreese, Schuck, & Boomgaarden, 2014; Kim, Chen, & Gil de Zúniga, 2013; Krugman & Hartley, 1970; Shehata, Hopmann, Nord, & Höijer, 2015; Tewksbury, Weaver, & Maddex, 2001). Individuals also passively learn about politics through incidental exposure. The idea of passive or incidental learning can be traced to Downs (1957), who suggested that political information may sometimes be incidentally obtained as a result of entertainment-seeking behavior; for instance, moviegoers were once shown newsreels before the feature films that brought them to the theater. Krugman and Hartley (1970) recognized the potential for incidental learning through television viewing and argued that viewers often learn even without intending to learn. Baum (2003a, 2003b) further developed these ideas and contended that soft news use (i.e., content combining entertainment and news) tends to facilitate political awareness and knowledge gain among individuals not otherwise inclined to consume political information (see Baum & Jamison, 2006; Baum, 2003a, 2003b). According to Baum (2003a, 2003b), soft news programs, such as talk shows, infotainment programs, and late-night comedies, "piggyback" high-cost political information into low-cost entertainment content. Consequently, even those with marginal political interest may receive at least some exposure to political issues. Moreover, soft news can serve as a "gateway" to political attention and knowledge (Baum, 2003b; Feldman & Young, 2008; Xenos & Becker, 2009).

This well-established line of argumentation on incidental learning has increasingly been applied to social media (e.g., Baumgartner & Morris, 2010; Bode, 2016; Fletcher & Nielsen, 2017; Lee & Kim, 2017; Tang & Lee, 2013; Yoo & Gil de Zúñiga, 2014). Studies by the Pew Research Center (2013, 2014) have suggested that most Facebook users are exposed to news *incidentally* through their social network ties. Social media users tend to be embedded in their online social networks with many weak ties, increasing opportunities for inadvertent exposure to political information during social media use for other purposes (Gil de Zúñiga & Valenzuela, 2011; Tang & Lee, 2013; Yoo & Gil de Zúñiga, 2014). In addition, social media use is often habitual (Vishwanath, 2014), creating opportunities for users to be exposed to political information even when they do not use social media for that specific purpose.

Social media users incidentally encounter news in multiple ways. They can be shown articles from traditional news media (Larsson, 2016; Newman, 2011; Shehata & Strömbäck, 2018) displayed as previews, exposing them to news content to some degree even if they do not click on the links (Fletcher & Nielsen, 2017). In addition, users are often incidentally exposed to user-generated content shared and written by their social network contacts, including comments on political content (Fletcher & Nielsen, 2017). Users can incidentally encounter both types of news (i.e., news from traditional media and user-generated content) within and outside their social networks because, within social media, information is passed based on users' endorsements and recommendations (Klinger & Svensson, 2015; Messing & Westwood, 2014). Social media, thus, provides users with unprecedented opportunities to not only purposefully seek out news but also to be incidentally exposed to it when not using a platform for that specific purpose. Regardless, greater opportunities for exposure to news and political information via social media do not necessarily mean that social media users learn or gain knowledge from this exposure. Indeed, it is quite likely that the opposite may be true, for the following reasons.

First, even with some incidental or habitual exposure to news and political information, most social media users likely lack the desire to learn from such exposure (Gil de Zúñiga et al., 2017). Given that learning often requires deep cognitive processing of content (Eveland, 2002; Eveland, Shah, & Kwak, 2003), the incidental nature of news exposure on social media implies that it might not be conducive to learning.

Second, the information circulating on social media is often unverified and inaccurate, which may produce a negative learning effect (Chang, Kim, Kang, Shim, & Ma, 2017). Recent evidence from the Pew Research Center (2017) shows that a substantial amount of political news on social media is either inaccurate or completely fake. The more serious issue is that about two-thirds of U.S. adults (64%) say fake news causes a great deal of confusion about factual political information, and 22% say that it causes some confusion (Pew, 2017). These reports suggest that fake news has a non-negligible impact, and users have high chances of being deceived or at least confused (Allcott & Gentzkow, 2017). Even if social media users gain some information from incidental exposure, a prevalence of exposure to inaccurate political information, including fake news, may offset incidental learning effects.

Third, social media may foster the notion that its users are politically informed, even if they do not actively seek news content, because it is often pushed via these networks (Gil de Zúñiga et al., 2017; Müller, Schneiders, & Schäfer, 2016). The feeling of being informed can increase users' subjective knowledge without necessarily increasing their actual political knowledge (Gil de Zúñiga et al., 2017; Hall, Ariss, & Todorov, 2007; Müller et al., 2016; Park, 2001). This misperception may discourage them from seeking news elsewhere and paying attention to it, which may negatively affect their learning about politics (Gil de Zúñiga et al., 2017). Thus, we propose the following hypothesis:

H1. General Facebook use will negatively affect political knowledge.

3. Method

3.1. Data

In Study 1, survey data was collected during the final days of the 2012 U.S. presidential election cycle (October 29 through November 2, 2012). Participants were recruited from the Survey Sampling International (SSI), which created a sample of 1149 respondents that closely mirrored census data on key dimensions, such as gender and age. We excluded respondents who took an unreasonable amount of time to complete the survey (less than 8 min or more than 60 min) or who showed unreasonably low response latency for certain items.

In Study 2, the survey was conducted during the 2016 U.S. presidential election by YouGov. The sampling frame was constructed through stratified sampling that was designed to be representative of the U.S. population in terms of gender, age, race, education, party identification, ideology, and political interest. Data for the first wave were collected between September 20 and September 27, 2016 and included 937 respondents. Seven hundred fifty participants completed the second wave (80.04% retention rate), which was collected between November 18 and November 28, 2016. All variables including political knowledge were assessed at both waves 1 and 2 (except demographics).

3.2. Measures

3.2.1. Political knowledge

In both studies, we asked a series of factual knowledge questions about respondents' awareness of issues during the presidential election and their more general knowledge of the U.S. political system and institutional rules. Our aim was to assess participants' levels of political knowledge. In Study 1, we assessed political knowledge based on a set of 20 factual questions about politics, including six items on general political knowledge (e.g., "Which party is generally more supportive of reducing the size and scope of the federal government?") and 14 items on campaign knowledge of issues pertinent to the 2012 presidential election (e.g., "Which presidential candidate has raised concerns about the U.S. Navy having too few ships?"). Correct responses were coded as "1," and incorrect responses were coded as "0." A composite measure of total political knowledge was constructed by adding all 20 knowledge items (Cronbach's $\alpha = 0.81$, $M = 10.52$, $SD = 5.12$). In Study 2, we assessed political knowledge at both Waves 1 and 2. In Wave 1, we asked nine factual questions about politics, including four items of general political knowledge (e.g., "Who determines if a law is unconstitutional?") and five items related to campaign knowledge of issues pertinent to the 2016 presidential election (e.g., "What job or position is now held by Pam Bondi?"). Correct answers to these five items were summed into an additive index (Cronbach's $\alpha = 0.65$, $M = 2.08$, $SD = 1.50$). In Wave 2, we asked 10 factual questions about politics, all of which were composed of campaign knowledge that referred to the 2016 presidential election (e.g., "A late October surprise came when James Comey told Congress [that] the FBI had found new emails that 'may be pertinent' to a previously closed investigation into Hillary Clinton's email use. The messages were found on the laptop of which former congressman?"). More specifically, respondents were asked about issues and events that occurred between Waves 1 and 2; this enabled us to gauge the extent to which respondents gained new political information that was not available during Wave 1 (Shehata et al., 2015; Shehata & Strömbäck, 2018; Strömbäck, 2017). Correct answers to these ten items were summed into an additive index (Cronbach's $\alpha = 0.81$, $M = 4.76$, $SD = 2.74$).

3.2.2. Frequency of Facebook use

Respondents rated the frequency of their Facebook use, on a 7-point scale ranging from "Never" (0) to "Daily" (6) for Study 1 and Study 2 (Study 1: $M = 3.74$, $SD = 1.61$; Study 2 W^1: $M = 3.85$, $SD = 2.46$; Study 2 W^2: $M = 3.90$, $SD = 2.44$). We used the same measure for both studies.

3.2.3. Political use of Facebook

In Study 1, respondents were asked to report whether they have ever used Facebook or other social networking tools to do any of the following: 1) Post links to political stories or articles for others to read (Study 1: Yes = 41.5%; Study 2 W^1: Yes = 36.6%; Study 2 W^2: Yes = 42.6%); 2) Post your own thoughts or comments on politics or social issues (Study 1: Yes = 52.6%; Study 2 W^1: Yes = 38.8%; Study 2 W^2: Yes = 45.5%); 3) Encourage other people to take action on a political or social issue that is important to you (Study 1: Yes = 39.5%; Study 2 W^1: Yes = 26.8%; Study 2 W^2: Yes = 27.5%); 4) Encourage other people to vote (Study 1: Yes = 42.4%; Study 2 W^1: Yes = 32.7%; Study 2 W^2: Yes = 39.6%); 5) Re-post content related to politics or social issues that was originally posted by someone else (Study 1: Yes = 41.4%; Study W^1: Yes = 42.7%; Study W^2: Yes = 43.9%); and 6) "Like" or promote material related to political or social issues that others have posted (Study 1: Yes = 55.2%; Study 2 W^1: Yes = 58.3%; Study 2 W^2: Yes = 59.0%). All questions were measured dichotomously, "No" (0) or "Yes" (1). In Study 2, respondents were asked to report whether they had used social networking tools for political activities in the past month (No = 0, Yes = 1).

3.2.4. Control variables

Additional independent variables included a series of demographic and political variables, such as political interest, ideological conservatism, and measures for gauging attention to news. The demographic variables included age, education, gender, race, and household income (see Table 1). *Political interest* was measured by asking respondents to indicate the level of agreement with the statement "Some people are interested in politics all the time, even when there isn't an election going on. Thinking about yourself, how interested in politics would you say that you are?", on a 5-point scale ranging from "not at all

Table 1
Demographics of respondents.

Demographic	n	%	M	SD
Study1				
Age	1148		45.63	16.97
Education[a]	1148		3	
Gender (female)	1148	50		
Race (nonwhite)	1092	26.1		
Household Income[b]	1143		4	
Study2				
Age	750		46.81	16.57
Education[a]	750		3	
Gender (female)	750	48.4		
Race (nonwhite)	750	34		
Household Income[b]	672		5	

Note: a. The education variable was measured with a 6-point ordinal scale ranging from "less than high school" (1) to "a graduate degree" (6). The numeric value indicates median (instead of mean), which represents "some college".
b. Household income was measured with Income was measured with a 17-point ordinal ranging from "Less than $10,000" (1) to "$150,000 or more" (17). The numeric value indicates median (instead of mean), which represents the $30,000 to $39,999 bracket for Study 1 and the $40,000 to $49,999 bracket for Study 2.

Table 2
Effects of Facebook use on political knowledge.

	2012	2016
Step 1- Demographics		
Age	.20***	-.06
Education	.15***	.14***
Household income	.08*	-.04
Gender	-.06*	-.13***
Race	-.15***	-.16***
ΔR^2	22.7%	26.9%
Step 2- Political variables		
Political interest	.17***	.27***
Ideological conservatism	-.07*	-.10*
Attention to news (W1)	.18***	.02
Political knowledge (W1)	–	.41***
ΔR^2	8.8%	32.1%
Step 3- Facebook use		
General FB use	-.18***	-.11**
Political FB use		
Post links to political stories or articles for others to read	-.04	.01
Post your own thoughts or comments on politics or social issues	.07	-.03
Encourage other people to take action on a political or social issues	-.01	-.07
Encourage other people to vote	.04	.03
Re-post content related to politics or social issues	-.07	.01
"Like" or promote material related to political or social issues	.10*	.19***
ΔR^2	3.4%	2.9%
Total R^2	34.9%	61.9%

Note: Cell entries are standardized regression coefficients.
*$p < .05$; **$p < .01$; ***$p < .001$.

interested" (0) to "extremely interested" (4), (Study 1: $M = 2.27$, $SD = 1.22$; Study 2 W^1: $M = 2.18$, $SD = 1.01$; Study 2 W^2: $M = 2.24$, $SD = 0.95$). *Ideological conservatism* was measured by asking respondents to report their political ideology, on a 5-point scale ranging from "Strong Liberal" (1) to "Strong Conservative" (5), (Study 1: $M = 3.11$, $SD = 1.11$; Study 2: $M = 3.12$, $SD = 0.99$). Lastly, to measure attention to a variety of news, we created an index of *attention to news* based on the attention participants had to five different types of news, which were political news, news about their community, national news, news about international affairs, and entertainment news/ celebrity gossip. Response options were on a 4-point scale ranging from "Not at all" (0) to "A great deal" (3). Responses to these items were averaged to create a composite score. We dropped the item pertaining to entertainment news/celebrity gossip, as that item was only weakly related to other news attention items. Exclusion of this item improved the internal consistency of the scale from alpha values of 0.80–0.87 (Study 1), and 0.73 to 0.84 (Study 2 W^1), and 0.75 to 0.85 (Study 2 W^2) (Study 1: $M = 2.14$, $SD = 0.75$; Study 2 W^1: $M = 3.03$, $SD = 0.75$; Study 2 W^2: $M = 3.07$, $SD = 0.75$).

3.3. Analysis

For Study 1, we specified a series of hierarchical ordinary least squares (OLS) regression models. Demographic variables were entered in the first block, followed by political variables in the second block. Then, Facebook use variables (i.e., political Facebook use and general Facebook use) were entered in the model as the third block, to assess the unique amount of variance accounted for by Facebook use beyond the effects of previous blocks.

For Study 2, we employed an OLS lagged dependent variable regression model, which is also referred to as *conditional change model* (Finkel, 1995). This model accounts for prior values of the dependent variable when predicting current values of the dependent variable with other explanatory variables. By controlling for lagged values of DV, we gain substantial leverage over questions of causality because the model assesses individual-level changes in political knowledge gain as compared to baselines at wave 1. Thus, in the present analysis, we controlled for respondents' political knowledge during Wave 1. The order of entering blocks was same as that used in Study 1. The conceptual model is presented in Fig. 1. The correlations of the variables in the model are presented in Appendix A.

4. Results

4.1. Study 1

RQ1 explored the association between political Facebook use and political knowledge. The results showed that none of the political Facebook use activities were significantly related to political knowledge, after controlling for demographic variables and political variables ($p > .05$). Among all the controls introduced in our analysis, age (older), education (more educated), household income (higher income), gender (men), and race (Whites), political interest, and political ideology (less conservative) were positively related to political knowledge (see Table 1). H1 predicted that general Facebook use would be negatively related to political knowledge. The results indicated that the frequency of Facebook use was moderately negatively associated with political knowledge ($\beta = -0.18$, $p < .001$), after controlling for demographic variables and political variables. The magnitude of this relationship is relatively strong in comparison to other factors. Overall, these results provide no evidence that Facebook use (either for political or general uses) has a positive effect on political knowledge.

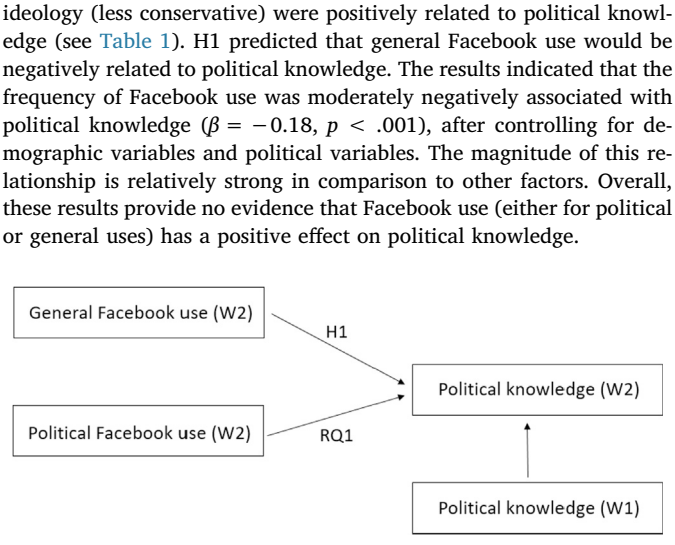

Fig. 1. Conceptual model.

4.2. Study 2

As the findings from the 2012 cross-sectional data do not offer insight into the causal relationship among the variables, panel designs were employed for 2016 election data, in order to provide better answers to questions regarding the causal relationship between Facebook use and political knowledge. Using the same research questions and hypotheses, this study sought to replicate and expand on the findings of Study 1. The results were overall very consistent with those from the 2012 cross-sectional data, with only minor differences.

As expected, knowledge level at Wave 1 was a highly significant predictor of knowledge level at Wave 2 ($B = 0.41$, $p < .001$), indicating the relative stability of political knowledge over time. Gender (male), education (the better educated), and race (Whites) were also significant predictors of knowledge level at wave 2. Political interest (Wave 1) strongly predicted knowledge (Wave 2), such that greater political interest led to greater political knowledge (Wave 2) ($B = 0.27$, $p < .001$).

RQ1 explored the effect of political Facebook use (Wave 2) on political knowledge (Wave 2), controlling for baseline political knowledge (Wave 1). Overall results showed that political Facebook use (Wave 2) did not predict political knowledge (Wave 2). Among the six types of political Facebook use, only one activity (i.e., "Like" or promote material related to political or social issues that others have posted) positively influenced political knowledge (Wave 2). Our null findings are consistent with the results of most of previous research on this scholarship, which showed null or weak negative associations (e.g., Gil de Zúñiga et al., 2017; Shehata & Strömbäck, 2018). H1 predicted that general Facebook use (Wave 2) would negatively affect political knowledge (Wave 2), controlling for baseline political knowledge (Wave 1). This hypothesis was supported. Our results suggest that, while controlling for other relevant factors, frequency of Facebook use (Wave 2) negatively affected political knowledge (Wave 2) ($\beta = -0.11$, $p < .001$).

Overall, the results from our cross-sectional and panel analyses in these two election cycles lead to the same conclusions. The data provide no evidence of a significant effect of political Facebook use on political knowledge, while general Facebook use has a modest negative effect on political knowledge.

5. Discussion

The overall purpose of this study was to investigate: 1) how different types of Facebook use (i.e., political and general Facebook use) influence individual's political knowledge; and 2) whether these findings are consistent across two different U.S. presidential election cycles. We used two different datasets to draw causal inferences with greater confidence. In this section, we discuss the key findings of our study, followed by the limitations and implications of the findings, and suggestions for further research.

5.1. Discussion of key findings

Our findings were consistent across the two datasets. First, we found no evidence suggesting that political Facebook use was significantly related to political knowledge, which accords with previous findings that have failed to demonstrate the association between political social media use and political knowledge (e.g., Baumgartner & Morris, 2010; Dimitrova et al., 2014; Shehata & Strömbäck, 2018). The consistent pattern of insignificant findings in previous studies and this study warrant further investigation of the possible reasons for this insignificant effect. In this regard, recent research by Shehata and Strömbäck (2018) may present some possibilities. Shehata and Strömbäck (2018) noted that social media users are "nested in personalized, issue-specific, and network-dependent streams of news" (p.5), which likely discourages users from learning about the broader political news often provided by traditional news media outlets. In other words, even if users use social media platforms for political purposes, including consuming news, to a substantial degree, such news does not tend to cover a broad range of political issues often found in traditional news media. Social media users exercise a great degree of selectivity when deciding what political information to read and may easily skip information necessary for gaining political knowledge (at least, the set of factual knowledge questions scholars typically use to measure political knowledge).

Perhaps the more interesting finding in this study was that general Facebook use had a modest negative relation to political knowledge. Given how pervasive general Facebook use is, relative to political use, this finding suggests that the overall impact of Facebook on political knowledge was negative. Several possible mechanisms could drive this negative effect. First, Facebook may distract its users from learning politics. Although Facebook users are exposed to a sheer amount of news from social media, most of such exposure is *incidental* when using Facebook for non-informational purposes (Pew, 2014) or using it habitually or routinely (Vishwanath, 2014). As a result, even if users are exposed to news or political information to some extent, they may lack a desire to truly learn from such exposure (Gil de Zúñiga et al., 2017). Given that learning often requires a great amount of cognitive processing (Chaffee & Schleuder, 1986; Eveland, 2002; Eveland et al., 2003), the incidental nature of news exposure indicates that Facebook may not be a good place for learning to occur.

Second, Facebook users are often exposed to unverified and inaccurate information, such as fake news (Allcott & Gentzkow, 2017), which may produce a negative learning effect. In addition, increasing Facebook use may lead to a decrease in traditional news consumption. With the rise of digital media, patterns of news consumption are shifting. The Pew Research Center (2017) recently noted that time spent watching television news has been dramatically declining while consuming news via digital or social media has been increasing rapidly. Given that traditional news media, especially television, have been central in informing the public over the last half century (Neumann, Just, & Crigler, 1992; Prior, 2007; Xenos et al., 2018), this trend of displacement from traditional news media to digital or social media may result in a political knowledge drop among the public.

Finally, Facebook may have a negative effect on knowledge gain, as frequent exposure to news content on the Facebook newsfeed may create the feeling of being informed. Scholars suggested that such feelings can increase users' perceived knowledge without necessarily enhancing their actual knowledge (Hollander, 1995; Park, 2001). Park (2001) noted that "as exposure increases, media audiences may increasingly recognize frequently portrayed events as familiar, without necessarily gaining knowledge" (p.419), which may cause news consumers to perceive themselves as being informed when they may have not actually gained any information. Similarly, Kruger and Dunning (1999) noted that the ignorant often do not recognize their ignorance; thus, they overestimate their abilities, a phenomenon known as the "Dunning-Kruger effect." These psychological mechanisms suggest that frequent exposure to news content may not lead to actual knowledge gain. This circumstance is especially relevant for news posts on Facebook as users increasingly encounter political content when visiting the site—either news articles shared by traditional news media outlets or user-generated content shared by members of the users' unique social networks. This might lead to the misperception that Facebook helps them stay updated, even if they are not actively seeking news elsewhere. Indeed, what may be happening is that users gain only a little knowledge from Facebook, because most of them skim the political content rather than devote much cognitive processing to it. Perhaps even worse, this misunderstanding of knowledge gain may discourage users from seeking news elsewhere or from paying attention to the news in general, negatively affecting their political knowledge.

5.2. Limitations

The current study has several limitations. First, we used a binary measure of whether respondents have experienced using social media for political purposes. The use of a binary response format is not the best way to capture variability in participant responses (e.g., Cook, Heath, Thompson, & Thompson, 2001). This format does not allow the respondents to report their intensity or frequency of usage; instead, they must choose between non-use and use, which may lower true score variance. In this regard, one could argue that political Facebook use indeed has a positive effect on the outcome variable, yet a binary measure may have prevented researchers from detecting a positive relationship. Although a continuous measure would enable researchers to better account for the full spectrum of effects in general, there is no reason to believe these measurement differences affect our ability to capture the general impact of political Facebook use on political knowledge. Given that a majority of respondents reported not having used Facebook for political purposes, we expect that there should be relatively small variation in terms of individuals using Facebook for political purposes. Even if there is any effect, it should be small, which does not affect our conclusion that the overall impact of social media on political knowledge is negative.

Another limitation is that the current analysis leaves an important question unanswered. Contrary to the widespread popular belief that social media makes its users politically informed, what is it that makes social media not only ineffective, but also an often-negative platform for learning about politics? Although this study enables some causal inferences about the effects of social media use on knowledge by using different sets of data, the findings do not tell us what mechanism causes such effects to occur.

5.3. Implications and future research

Our study makes two contributions to the field of social media and political knowledge. First, unlike previous studies focused solely on the relationship between political knowledge and political social media use (e.g., social media use for news or performance of other various political activities on social media), this study examines how political social media use and general social media use influence political knowledge. Users not only receive political information and purposefully engage in political activities on social media, but also are incidentally exposed to such information while using social media for other purposes (e.g., Bode, 2016; Fletcher & Nielsen, 2017; Pew, 2014). This study, therefore, explores the effects of both political and general social media use on political knowledge simultaneously. Future research can look at how other motivations of using social media may influence political learning.

Second, although previous studies mostly rely on cross-sectional data, this study uses both cross-sectional and panel data to allow for a robust examination. Using cross-sectional and panel data together offers clear advantages. In this study, our cross-sectional data allowed for the examination of the average association between social media use and knowledge. It is important to know whether heavy social media use (either political use or general use) is more likely to be advantageous or disadvantageous to political learning, regardless of the directionality of this relationship. However, patterns observed from cross-sectional data are not suitable for drawing causal inferences. Panel data permits detecting changes at the individual level across time, and thus, assessing the temporal nature of the relationship with greater confidence. Together, both approaches enable the exploration of how social media use and knowledge are associated in general and over time. By filling these gaps in the literature, this study contributes to improving the understanding of the role of social media use in political knowledge.

The findings of this study provide a fuller picture of the implications of social media use for political learning by examining how political Facebook use and general Facebook use influence political knowledge. The increasing use of Facebook in general, as well as for political purposes, necessitates a deeper understanding of this relationship. Based on survey data from two recent U.S. presidential elections, we find that political use of Facebook does not help users stay informed about politics, and unfortunately, general Facebook use negatively affects users' learning about current political affairs. Further research is needed to examine what mechanisms drive this non-positive or even negative relationship.

6. Conclusion

The use of Facebook has increased over recent years, which include the use political Facebook use. The present study shows that political social media use does not have a significant effect on political knowledge, while general social media use has a moderately negative effect on political knowledge. These findings suggest that on balance, the overall impact of social media use on political knowledge appears to be negative. As such, this study contributes to a better understanding of social media use's role in political learning.

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Appendix A. Zero-order correlations among the variables in the model for 2012 data

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.Age	–														
2.Education	.17^{c}	–													
3.Household income	.17^{c}	.45^{c}	–												
4.Gender	-.17^{c}	-.14^{c}	-.14^{c}	–											
5.Race	-.28^{c}	-.02	-.05	-.04	–										
6.Political interest	.12^{c}	.21^{c}	.21^{c}	-.17^{c}	.05	–									
7.Ideological conservatism	.21^{c}	-.03	.03	-.09^{b}	-.10^{b}	-.03	–								
8.Attention to news	.29^{c}	.21^{c}	.23^{c}	-.14^{c}	-.02	.66^{c}	.02	–							
9.General Facebook use	-.27^{c}	-.09^{b}	-.15^{c}	.18^{c}	.10^{b}	.09^{b}	-.06	.03	–						
10.Post links to political stories or articles for others to read	-.21^{c}	.09^{b}	.07^{a}	.00	.12^{c}	.39^{c}	-.13^{c}	.28^{c}	.30^{c}	–					
11.Post your own thoughts or comments on politics or social issues	-.17^{c}	.04	.00	.02	.04	.31^{c}	-.09^{b}	.25^{c}	.33^{c}	.60^{c}	–				

12.Encourage other people to take action on a political or social issues	-.14[c]	.05	.04	.04	.09[b]	.32[c]	-.13[c]	.25[c]	.26[c]	.55[c]	.57[c]	–				
13.Encourage other people to vote	-.08[c]	.06	.03	.01	.09[b]	.33[c]	-.05	.27[c]	.25[c]	.48[c]	.49[c]	.58[c]	–			
14.Re-post content related to politics or social issues	-.12[c]	.08[a]	.06	.04	.02	.33[c]	-.11[b]	.27[c]	.29[c]	.64[c]	.58[c]	.52[c]	.46[c]	–		
15.“Like” or promote material related to political or social issues	-.12[c]	.05	-.01	.09[b]	.00	.28[c]	-.05	.21[c]	.31[c]	.53[c]	.57[c]	.49[c]	.46[c]	.61[c]	–	
16.Political knowledge	.40[c]	.32[c]	.30[c]	-.22[c]	-.18[c]	.41[c]	-.01	.49[c]	-.21[c]	.09[b]	.11[b]	.10[b]	.12[c]	.10[b]	.12[c]	

Note. Cell entries are two-tailed zero-order correlation coefficients. For dichotomous variables, Pearson's point-biserial correlations were used.
Superscript a = p < .05, Superscript b = p < .01, Superscript c = p < .001.

Appendix B. Zero-order correlations among the variables in the model for 2016 data

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.Age	–															
2.Education	.03	–														
3.Household income	.08[a]	.43[c]	–													
4.Gender	.00	-.04	-.12[b]	–												
5.Race	-.20[c]	-.16[c]	-.08[a]	.00	–											
6.Political interest	.23[c]	.31[c]	.26[c]	-.17[c]	-.17[c]	–										
7.Ideological conservatism	.13[b]	.00	.10[a]	-.11[b]	-.19[c]	.09[a]	–									
8.Attention to news (W1)	.30[c]	.26[c]	.29[c]	-.11[b]	-.06	.72[c]	.13[b]	–								
9.Political knowledge (W1)	.25[c]	.37[c]	.39[c]	-.21[c]	-.11[b]	.63[c]	.05	.61[c]	–							
10.General Facebook use	-.08[a]	.08[a]	.03	.14[c]	-.06	.07	-.03	.03	.05	–						
11.Post links to political stories or articles for others to read	.05	.10[b]	.09[a]	-.08[a]	-.03	.32	-.02	.37[c]	.33[c]	.19[c]	–					
12.Post your own thoughts or comments on politics or social issues	.06	.14[c]	.11[a]	-.14[c]	-.01	.26[c]	-.06	.34[c]	.32[c]	.12[b]	.68[c]	–				
13.Encourage other people to take action on a political or social issues	.03	.07	.01	-.11[b]	-.01	.28[c]	-.14[b]	.23[c]	.22[c]	.06	.55[c]	.53[c]	–			
14.Encourage other people to vote	.12[b]	.19[c]	.13[b]	-.06	.04	.33[c]	-.02	.33[c]	.31[c]	.11[b]	.53[c]	.49[c]	.48[c]	–		
15.Re-post content related to politics or social issues	.09[a]	.09[a]	.12[b]	-.01	.01	.29[c]	-.02	.33[c]	.28[c]	.23[c]	.74[c]	.66[c]	.46[c]	.45[c]	–	
16.“Like” or promote material related to political or social issues	.02	.10[b]	.08	.08[a]	.03	.32[c]	-.08[a]	.33[c]	.29[c]	.21[c]	.57[c]	.51[c]	.36[c]	.44[c]	.61[c]	–
17.Political knowledge (W2)	.17[c]	.37[c]	.33[c]	-.24[c]	-.18[c]	.63[c]	-.01	.59[c]	.73[a]	-.02	.34[c]	.34[c]	.22[c]	.30[c]	.30[c]	.38[c]

Note. Cell entries are two-tailed zero-order correlation coefficients. For dichotomous variables, Pearson's point-biserial correlations were used.
Superscript a = p < .05, Superscript b = p < .01, Superscript c = p < .001.

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