Political News in the News Feed: Learning Politics from Social Media

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Although literature about the relationship between social media and political behaviors has expanded in recent years, little is known about the roles of social media as a source of political information. To fill this gap, this article considers the question of whether and to what extent learning political information occurs via Facebook and Twitter. Theory suggests that social media may play a significant role in the learning of political information within the modern media environment. Making use of a combination of experimental and survey-based studies, the data suggest that the potential for users to learn political information from social media exists but is not always realized within the general population.

INTRODUCTION

Social media, as a venue in which people share content with one another, allows for a new means of transmission of political information. "With the advent of Web 2.0 technologies, citizens can increasingly provide political information and commentary to other citizens, loosening the monopoly on such communication previously enjoyed by a limited field

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of 'professional communicators''' (Moy, Xenos, & Hussain, 2013). In the wake of this changing environment, where citizens ''increasingly provide political information'' via social media, scholars are still catching up. A growing literature documents the relationship between use of social media and a variety of political behaviors, online and offline (Baumgartner & Morris, 2010; Bode, 2012; Bond et al., 2012; Pasek, more, & Romer, 2009), but less is known about the means by which users come to exhibit these behaviors. This project addresses that gap by considering the extent to which users may learn political information from their use of social media.

Although earlier work suggested filtering was a major inhibitor of exposure to political information (Pariser, 2012; Prior, 2007), newer research has established that exposure to political information does take place within social media, much like the sources that came before it, such as news websites and more traditional media (Bode, 2012b). Despite knowing this, it is unclear whether such exposure facilitates *learning* of political infor- mation at all. Moreover, learning from such information is likely contingent on the degree of control users exert over their networks, their perceptions of the information to which they are exposed, and the interest they have in politics. This piece addresses these issues by considering to what extent and under what circumstances users exposed to information, and especially political information, within the social media environment may learn from it and to what extent such learning may manifest in political knowledge gains within the broader population. Using a mixed-methods approach, combin- ing both experimental and observational data, it reveals that learning politics from social media is possible, but not always likely.

THEORY AND LITERATURE

Political theorists have long emphasized the need for an informed electorate (Breyer, 2005; Habermas, 1962; Hamilton, Madison, & Jay, 1961). ''A basic tenet of democratic theory is that voters' choices must be based on informed thinking about political issues,'' and informed thinking comes from access and exposure to political information, which then results in political knowl- edge gains (Bode, Edgerly, Sayre, Vraga, & Shah, 2013, p. 7). Thus it is important to consider both the process by which information is gained (learning from political information) and the outcome of such information (gains in political knowledge).

We know that users of most traditional types of media—including newspapers, broadcast television, and cable news—do experience political knowledge gains as a result of their media use (Chaffee & Kanihan, 1997). These knowledge gains are also experienced as a result of exposure to

political information via digital media, including exposure to online campaign information (Kenski & Stroud, 2006), and especially online news sites (Dimitrova, Shehata, Strömbäck, & Nord, 2014). Use of social networking sites may also result in gains in civic participation (Pasek, more, & Romer, 2009; Zhang, Johnson, Seltzer, & Bichard, 2010), social capital formation (Valenzuela, Park, & Kee, 2009), and offline political participation (Bode, 2012a; Bode, Vraga, Borah, & Shah, 2014), but it is unclear whether learning political information is the means by which these gains occur.

A fundamental question, then, is whether users of social media learn from the political information to which they are exposed in that medium. Although this study relies on theory generated from research examining more traditional media, it is worth noting that part of the importance of this study is derived from the fact that we do not know whether these theories will apply to social media. Social media is fundamentally different from other media in that it consists of information shared by known others, much of which is user generated, rather than generated from an institution like the American media. Moreover, people often seek out information in other media (e.g., tuning in to a nightly newscast), whereas social media use is primarily driven by maintaining social ties, with information obtained only incidentally to that primary goal (Kim, Chen, & Gil de Zuniga, 2013). Theoretically, then, compared to traditional media, learning may be amplified, be depressed, or occur as it does in other informational exchanges.

On one hand, users of social media may be less likely to learn in this context. Perhaps social media offers little new information, or the information it does offer is passed over in favor of more personal information on friends and family. On the other hand, social media users are encountering specialized information that they have opted into by creating a network of known others, and therefore may be of greater interest.

It is also important to note that social ties play a major role in informing the public with regard to politics. Offline social networks play a role in dissemination of information (Ellison & Fudenberg, 1995), and information that comes from trusted others is deemed more credible and is more likely to be taken seriously (Huckfeldt, Beck, Dalton, & Levine, 1995, p. 1027). This has particular implications for social media, which are specifically founded on the importance of social ties. For this reason, *I expect that those exposed to political information via social media will learn from it* (H1), that is, they should recall information to which they are exposed at a rate higher than false-positives from individuals exposed to nonpolitical stories. I further expect that *users of social media will show higher levels of political knowledge than non-users, as evidenced by scores on a battery of factual questions on current political events* (H2).

The distinction between these two outcomes is shorter term recall after immediate exposure to political information and longer term recall in the form of increased political knowledge.

A related question is whether subjects are more or less likely to learn from political information as compared to other nonpolitical information within the context of social media. Investigating this question gives additional information as to how users learn political information from social media and sheds light on the question of how much learning relative to other types of information is taking place, and I therefore ask: *Do subjects learn more from political or non-political information within social media?* (RQ1).

We might gain further insight regarding the learning taking place within the realm of social media by considering what factors help explain a tendency to recall political information. One such factor might be interest in the subject discussed, as we know people spend more time and cognitive ability on things that interest them (Schiefele, 1991). *Therefore interest in the subject should increase recall of the information* (H3a). In addition, a post's ability to offer new information on the subject might also increase learning—to some extent we might ignore information with which we are already familiar, whereas novel information is more likely to "stick" (Kahneman, 1973). *Novelty should therefore increase recall of the information* (H3b). Finally, the extent to which the information is trusted, whether because of its source, its context, or the nature of the information itself, is likely to affect the extent to which it may be recalled at a later time (Heesacker, Petty, & Cacioppo, 1983; Huckfeldt, Beck, Dalton, & Levine, 1995). *Therefore trust should increase recall of information* (H3c).

It is also likely that certain subgroups will be affected differently by exposure to political information, and this study therefore considers who has the most to gain from social media use in terms of political knowledge.

Political Interest

Political interest plays a fundamental role in promoting political knowledge, via multiple mechanisms. First, those highest in political interest are most strongly motivated to seek out political information, and thus political interest (most often operationalized as "following politics") is strongly correlated with political knowledge (David, 2009; Delli–Carpini & Keeter, 1996). Not only are they more likely to seek information, they are also more likely to remember or to acquire it. Through processes of selective exposure (Zaller, 1992), those most interested in politics should be most likely to learn political information, and those least interested should be least likely to learn it. For this reason, I expect that *those higher in political interest should be more likely to learn political information to which they are exposed via social media*

(H4a), *but those lowest in political interest will exhibit the greatest gains in overall political knowledge from exposure to political information via social media* (H4b), given that they are likely starting from a lower level to begin with.[1]

Media Consumption

Because so much of learning political information relies on intentionality, consumption of mass media plays a significant role as well. Those who consume more political information from mass media, including television, newspapers (Chaffee & Kanihan, 1997; Delli–Carpini & Keeter, 1996; Martinelli & Chaffee, 1995), and newer media such as the Internet (Xenos & Moy, 2007), experience substantial gains in political information measures.

This exacerbates the knowledge gap: Those most interested in politics consume more media and gain additional political knowledge, whereas those less interested seek out less and fail to gain knowledge (Zaller, 1992). This knowledge gap is also growing as a result of the ''high choice'' media environment (Prior, 2007). As the media environment fractures and allows users greater choice in what they consume, those least interested may opt out almost entirely, whereas those most interested can saturate themselves with specialized political media.

However, social media presents a potential solution to the knowledge gap. Because political information is consumed as a ''by-product'' of using social media (Baum, 2002; Baum & Jamison, 2006), it has the potential to reach the least politically sophisticated, who are likely low in political interest and political media exposure (Campbell, 2000; Zaller, 1992). Social media offers a way to reach them with political information *incidentally*, thus allowing them to potentially ''catch up'' in terms of political knowledge.

Scholarship in the 1960s and 1970s acknowledged the potential for incidental learning to occur through television viewing (Blumler & McQuail, 1969). Krugman and Hartley (1970) determined that this passive learning—learning without motivation—is ''typically effortless, responsive to animated stimuli, amenable to artificial aid to relaxation, and characterized by an absence of resistance to what is learned'' (p. 184). Social media, much like television, provides ''animated stimuli'' and a relaxing environment,

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[1]The difference in expectations is due to the difference in outcomes of interest. H4a predicts a positive relationship because the outcome is learning from new information to which one is exposed. H4b predicts a negative relationship because the outcome is broader political knowledge gains—less politically interested people will have less knowledge to begin with, thus allowing for greater gains than those who are more politically interested and therefore more politically knowledgeable to start with.

in which political information mixes with updates about pets and babies. It is quite possible that users might similarly respond to social media, and the political information contained therein, with passive learning styles similar to that of early television use. This may result in what Krugman referred to as "learning without involvement," or what Hartley called "un–anchored learning" (Krugman, 1965, p. 352). This concept has been extended in various ways, including to political advertising (Atkin & Heald, 1976; Brians & Wattenberg, 1996), political entertainment (Feldman & Young, 2008; Xenos & Becker, 2009), and so-called soft news content (Baum, 2002; Baum & Jamison, 2006). Notable is the "absence of resistance to what is learned," that is, users are actually less likely to put up barriers to absorbing the information to which they are exposed in these environments—barriers that often play a major role in more purposive consumption of more traditional outlets of political information (Krugman, 1965). In general, passive learning results in greater and more diverse learning gains than active learning, because users are more accepting of the information to which they are exposed. Social media has the potential to operate in this way, lowering barriers to political learning and thereby increasing political knowledge among less attentive citizens.

In the online world, there is mixed evidence as to whether incidental exposure to information occurs, and in what way. On one hand, selective exposure is clearly facilitated by the nature of the Internet, with users customizing their online experience to fulfill personal uses and gratifications (Garrett, 2009; Stroud, 2008). On the other hand, there is growing evidence that users may encounter and learn from information they do not explicitly seek online (Tewksbury, Weaver, & Maddex, 2001). However, the question remains as to whether such incidental learning may take place in other areas of the Internet, as the Internet itself changes.

In addition, we still have very limited knowledge of incidental exposure to *political* information online. After the 2004 election, 51% of Internet users reported encountering news or information about the elections when going online for other purposes (Pew, 2004). Despite the fact that more than half of Internet users report exposure to political information online when not seeking it out, we have little idea of what effects this might have.

Again, social media may well operate in this low-involvement model, acting as a source of "by-product learning," and offering a way to reach the less politically interested with political information without them seeking it out, thus allowing them to gain in political knowledge as a result (Prior, 2007). More politically sophisticated users, on the other hand, will experience a ceiling effect (Zaller, 1992), unlikely to make significant gains in political knowledge from their social media use, given that they tend to be quite knowledgeable from the outset. For this reason I expect that *users*

*lowest in media use should be most likely to experience gains in political
knowledge as a consequence of social media use* (H5).

Social Media Control

The final element to consider is the extent to which social media users play
an active role in curating the information to which they are exposed in this
medium. The primary concern after the dawn of social media was that it
would further allow citizens to avoid political information, as did cable
television before it (Prior, 2007; Sunstein, 2007).

Indeed, in high-control media environments (satellite television, persona-
lized websites, RSS feeds), users can control the information to which they
are exposed almost entirely, resulting in a tendency to engage in active learn-
ing. In low-control environments, on the other hand (1950s television,
broadcast commercials), users have very little control over the information
to which they are exposed, and thus tend to be exposed to a much greater
variety of information. Notably, users tend to be more accepting of
information in low-control environments, where exposure is incidental
and learning tends to be passive, which might suggest that knowledge gains
from social media could be substantial (Krugman & Hartley, 1970).

For social media, however, control is not high or low, but rather *partial*
(Bode, 2012b). In social media, users often choose to use the media itself for
nonpolitical purposes. However, once they have opted into a particular
medium and its corresponding network, they may be exposed to infor-
mation they did not seek out or care to see (including political information).
In this way, social media resembles a low-control environment. However,
social media allows greater customizability than do most low-control envir-
onments. For instance, on a social network site, if another user is sharing
information you do not care to see, you can simply remove that user from
your network (generally referred to as "unfriending"), or choose not to see
their postings ("hiding" their posts). However, there are often reasons why
social media users would refrain from customizing incoming content to
this extent. Friends and family you might choose to connect with for
noninformational reasons, for instance, may occasionally post information
you would rather not see. Even though your underlying preference may be
against exposure to such information, you may feel compelled for social
reasons to retain these people within your network, thus continuing your
exposure to information you would never seek out yourself.

This hybrid environment likely functions somewhere between the
extremes of selective exposure and incidental exposure. Key in social media
is the fact that control exerted by any given user may substantially change
the type and quantity of information to which they are exposed, and we

might expect this to be particularly true for political information. This, in addition to unique networks for every person, means that the social media experience is unique for each user and must be measured accordingly.

Users in low-control environments have fewer barriers in place keeping them from absorbing information, and learning is therefore eased (Krugman & Hartley, 1970). Users of high-control media environments are filtering out content they do not want to see (political content), so users exerting more control will see less political content within their social media stream on a daily basis; therefore, what political content they do see will be more novel and more likely to be retained (Kahneman, 1973). Given that this is a new measure that has not been considered by the literature prior to this study, I offer a research question rather than a directional hypothesis. Thus, *is control exerted over a social media environment related to recall of political information exposure via social media?* (RQ2).

To test the hypotheses and research questions just posited, two studies were conducted. The first focuses on the *process* of learning political information from exposure to it via social media and uses an experimental design to isolate these *learning* effects. The second emphasizes the *outcome* of such learning—considering any gains in political knowledge that may be experienced as a result of social media use in the general population. It employs survey data in order to consider potential gains in *political knowledge*. By including both an experimental study and an observational study, we maximize leverage on answering the questions of interest. Experiments are valuable in creating internally valid conditions, allowing researchers to isolate effects independent of other factors, whereas observational studies are useful in the opposite way: They allow observation of a phenomenon in its natural setting, absent the artificiality of an experiment (Kellstedt & Whitten, 2009). By pairing the two, we can better understand how and when people learn politics from social media.

A SIMPLE TEST OF LEARNING: EXPERIMENTAL EVIDENCE (STUDY 1)

Scholars from different disciplines, eras, and methodological backgrounds have come at the question of learning from a multitude of angles (see, e.g., Hilgard, 1948; Neisser, 1988). It is a difficult question that is perhaps best served by employing various methods and tests to see whether a pattern of results might emerge. Along those lines, the remainder of this article offers multiple tests for whether learning of political information occurs from exposure via social media, as well as what factors impact such learning.

The most straightforward approach to the question of whether such learning occurs is basic recall of information. Recall of information has long been used as an indicator of learning (Alexander, Jetton, & Kulikowich, 1995; Chesebro & McCroskey, 2000; Eagle & Leiter, 1964; Grossberg & Stone, 1986; Schiefele & Krapp, 1996). Indeed, the whole of the modern American education system functions on the premise that students' ability to recall information is a reasonable measure of learning. Applying that concept to this study, if we know that social media users are exposed to a particular piece of political information, and they can later recall that information, this suggests that learning of political information can take place within social media, constituting confirmation of H1.

Methods

To isolate a particular instance of exposure, respondents were experimentally exposed to a simulated Facebook News Feed. An experiment has the advantage of removing the actual usage level of social media, which varies dramatically from person to person. Although such use is important for some understandings of learning, the first question to consider is simply whether information to which users are exposed within the realm of social media has the ability to "stick" in their minds, to be recalled at a later time. This is a necessary condition in order to have pieces of information available from which to draw conclusions or create attitudes (Zaller, 1992). Because I am interested in the question of political information specifically, the experiment included both a control group (in which users were exposed to a non-political story) and a treatment group (in which users were exposed to a political story) to distinguish learning *in general* from learning political information specifically.

The simulated News Feed to which respondents were exposed featured 12 typical Facebook entries—status updates, news stories, video links, picture postings—with names and photos blurred so as not to indirectly influence any perceptions of content (see the appendix for images of the simulated News Feeds.). For the control group, the News Feed included a story with a link to CNN.com offering video of the flooding in Mississippi that occurred in May 2011.[2] The treatment group included the same postings

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[2]The headline reads, "Record flooding to linger in Mississippi city" and is posted with an accompanying comment, stating, "Check out this video of Mississippi flooding. Worth watching." Details under the headline read, "The flood-swollen Mississippi River held at historic levels at Vicksburg early Thursday—a status it's not expected to relinquish for days."

in the same order, but in place of the flooding story it included a link to CNN.com offering video of a speech by President Obama.[3] In both treatment and control groups, the stories are reported to have been posted 2 hours ago.

The Obama story was chosen as a treatment for several reasons. First, although President Obama is by no means a nonpolarizing figure, it is likely that given his leadership role, partisans from both sides of the aisle and non-partisans alike would acknowledge the importance of presidential speech. Moreover, as the president he is an acknowledged political elite, and thus any speech he gives is inherently political, whereas the control story has no political references and thus is not political information. Both stories were also chosen to be legitimately current events at the time of the fielding of the experiment, and thus more likely to offer new information to respondents, increasing the likelihood that tests would reveal genuine experimental effects rather than previously held knowledge.

Respondents were obtained from a panel recruited by SurveyMonkey consisting of a sample of American adults that generally represents the demographic breakdown of the nation.[4] The experiment was fielded online over a period of 5 days, from June 2 to June 6, 2011. There were 904 respondents who began the survey, resulting in 721 completed questionnaires, representing a completion rate of 79.8%. The overall sample is 65.6% female, is 76.1% White, and has a mean age of 42, with 57.3% holding at least a bachelor's degree. There are 34.9% of subjects who identify as moderate, with 24.7% identifying as liberal and 40.3% as conservative. On a scale from 1 to 10, the average political interest reported is 5.57. Respondents answered a series of questions and were then randomly assigned to the control or treatment stimulus based on the day of the month on which they were born (randomization was effective; statistics are available upon request from the author). Respondents were shown the simulated News Feed appropriate to their assignment and asked to browse it as they would their own News Feed. All questions relating to the stimulus asked respondents,

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[3]The headline reads, "Obama to lay out post–Arab Spring vision" and is accompanied by the simulated poster's comment of "Check out Obama's speech on the Middle East. Worth watching." Details under the headline read, "In the wake of the Arab Spring protests across the Middle East and North Africa, President Barack Obama will pledge U.S. economic assistance to Egypt and Tunisia on Thursday in a speech highlighting his administration's revised policies toward the changing region."

[4]This is an online opt-in panel, so it is slightly less reliable than the gold standard of a truly nationally representative sample, though still a reasonable choice (Hill, Lo, Vavreck, & Zaller, 2007). For this reason, there is the possibility that respondents opting into the panel are different than respondents who choose not to respond. Because it is being used for an experiment rather than a survey, this is of less concern.

TABLE 1
Recall of Information by Condition

	Recall Flooding	Don't Recall Flooding	Don't Know	Recall Obama	Don't Recall Obama	Don't Know
Exposed to flooding	241	99	21	29	308	24
Exposed to Obama	33	299	28	289	64	7

Note. Each horizontal half of the table includes the same group of respondents for each row. All respondents were asked about both stories and are therefore ''counted'' twice in the table. Differences between treatment and control groups in recall of the story to which they are actually exposed are significant at $p < .01$ ($\chi^2 = 381.94$). $N = 721$.

''Please answer the questions as if the content came from your own NewsFeed.''

Results

Recall.   The most basic test of learning is simple recall—the ability to retrieve information at some point after one is exposed to it (Neisser, 1988). Although recall is not necessarily indicative of longer term learning, it is a common proxy for learning used in mass communication studies of learning from media sources (Neuman, 1976). Two questions are of particular interest—first, whether users recall information to which they are exposed at all, and second, whether recall depends upon the type of information to which users are exposed. Results of initial explorations into these questions are reported in Table 1.

First consider the baseline condition—being exposed to a neutral news story. In this case, respondents were exposed to a link to a CNN.com video regarding flooding in Mississippi. A large percentage of respondents exposed to the baseline condition were able to accurately recall exposure to such a story,[5] with 67% reporting basic recall of the story. An additional 33 respondents who were *not* exposed to the baseline condition reported remembering the story, for a false positive rate of 9.2%. Thus the overwhelming majority (88%) of respondents reporting having seen the story were actually exposed to it, suggesting respondents are not reporting having seen a story simply for social desirability reasons. The baseline condition

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[5]Measured with the question, ''Do you remember seeing a post involving flooding in Mississippi?'' (yes/no/don't know).

TABLE 2
Detailed Recall of Information by Condition

	No Recall	Some Recall	Detailed Recall
Exposed to flooding	167 (46.3%)	194 (53.7%)	74 (20.5%)
Exposed to Obama	189 (52.5%)	171 (47.5%)	101 (28.1%)
Total	356	365	175

Note. All differences between conditions are significant, $p < .05$. "Detailed recall" is a subcategory of "some recall.".

thus suggests that people at least have the potential to learn from information to which they are exposed in social media.

A further test considers whether recall rates varied depending on the type of information to which respondents were exposed (RQ1). Of those exposed to the treatment condition (political),[6] 80.3% reported recalling the story to which they were exposed. Respondents exposed to the political story were much more likely (13 percentage points) to report viewing it than were those exposed to the nonpolitical story able to report viewing it—a statistically significant difference ($\chi^2 = 381.94$, $p < .01$). This suggests that political information may be more memorable and thus more likely to be retained. However, it is worth noting that this is a short-term effect and may not persist in terms of actual knowledge gains.

Recall of details.   The ability to offer additional detail about a story is a further indication of learning. Thus respondents were asked to provide any details they remembered from the post in question, using a free response field ("What do you remember about that story? Please list any words or phrases reflecting the story you remember seeing involving President Obama/flooding in Mississippi").

As can be seen in Table 2, although basic recall was greater among those exposed to the political story, fewer people exposed to the political story were able to offer additional detail about the story, by a relatively large margin. This might suggest that details of political stories are less memorable than other types of stories. However, among those who *did* offer further detail, a greater number who were exposed to the political story were able to offer a great deal of detail, as compared to those exposed to the nonpolitical story. Of users exposed to the political story, 28.1% were able to offer substantial detail, as opposed to 20.5% of respondents in the group exposed

[6]Measured with the question, "Do you remember seeing a post involving President Obama?" (yes/no/don't know).

to the nonpolitical story ($F = 16.54$, $p < .001$). This finding suggests that those who do pay attention to a political story may actually learn more than they would learn from a nonpolitical story under the same circumstances. Both initial tests support H1, that users of social media will learn from political information to which they are exposed in that medium. Indeed, they may retain *more* political information than other types of information.

The dynamics of learning from social media. We might further expect that certain characteristics may promote or inhibit recalling a political story. To explore this possibility, the sample is restricted to only those exposed to the political story.

To test the predictions related to perceptions of the information affecting learning outcomes (H3a, H3b, H3c), respondents were asked about their perceptions of the information to which they were exposed, in terms of their interest,[7] its novelty,[8] and their trust in it.[9]

One additional important characteristic to consider is the amount of control a user chooses to exert over his or her social media use (RQ2).[10] Those that report hiding disagreeable political content more often are exerting greater control over the social media content they see, and in everyday life should therefore see less political content on average. Of course, *most* information is likely obtained outside of social media for most users. However, the act of hiding political information within social media likely correlates with a general inclination to avoid politics in general, which may make exposure to political information even outside of social media less likely for these users (Eliasoph, 1998). For the purposes of this experiment, that suggests such information would actually be more novel, and promote learning (whereas outside the experimental context we would expect exerting such control to decrease knowledge gains).

In addition, general political interest is likely to affect whether a respondent recalls a political story. People naturally remember more information

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[7]"How interested were you in the story involving X?" 0 (*not at all interested*) to 4 (*very interested*). Obama: $M = 1.48$, $SD = 1.32$; Flooding: $M = 2.10$, $SD = 1.24$.

[8]"Did the story include information you hadn't seen about that issue before?" 0 (*The story did not have any new information*) to 4 (*I hadn't seen anything about that issue before*) Obama: $M = 2.21$, $SD = 1.66$; Flooding: $M = 1.94$, $SD = 1.66$.

[9]"To what extent did you trust the information in the post involving X?" 0 (*I did not trust the information at all*) to 4 (*I trusted the information quite a lot*). Obama: $M = 1.77$, $SD = 1.09$; Flooding: $M = 2.13$, $SD = 0.91$.

[10]"In the past 12 months, how often have you used the 'hide' function when a Facebook friend posts disagreeable political content?" 0 (*not at all*) to 4 (*very frequently*); $M = 0.65$, $SD = 1.03$. It is worth noting that the mean for this measure is quite low—most social media users are not doing much filtering of political content. However, there is meaningful variation, with 34.3% of users engaging in control at least occasionally.

TABLE 3
Factors Influencing Recall of Political Information via Social Media

	Odds Ratio	SE	p
Gender (male)	12.29	1.30	.05*
White	1.04	1.05	.97
Education	1.43	0.23	.12
Ideology (liberal)	1.59	0.35	.18
Political interest	1.02	0.22	.94
Social media control	1.19	0.48	.73
Postinterest	0.88	0.41	.76
Postnovelty	0.87	0.31	.65
Posttrust	3.06	0.56	.04*

Note. Logistic regression, $N = 273$ (only those exposed to the political story), Pseudo $R^2 = 0.25$. Odds ratios reported. $^*p < .05$.

when it is in line with their interests, so the politically interested would be more likely to recall a political story than the politically uninterested (Schiefele 1991, H4a).[11]

To assess the extent to which these factors influence the recall of political information, I estimate a logistic regression with recall as the dependent variable, and interest, novelty, trust, social media control, and political interest as key independent variables, with basic controls included (Table 3).

As shown in Table 3, neither interest in nor novelty of the story seem to increase recall of political information (H3a and H3b are not supported). However, in the case of the degree to which respondents trust the information to which they are exposed, those who trusted the information more were much more likely to recall it. This is consistent with the literature (Heesacker, Petty, & Cacioppo, 1983; Huckfeldt, Beck, Dalton, & Levine, 1995) and supports H3c.

Neither political interest nor control exerted over social media shows any ability to predict whether respondents exposed to the political story were able to recall it (H4a was not confirmed and RQ2 is tentatively answered—control is not related to recall). This suggests that information encountered on social media may influence even the politically uninterested—not only those who are already high in political interest and thus already likely to seek out political information themselves. It further indicates that those who exert stronger control over their social media information streams for political reasons are no more or less likely to recall political stories. Even those who choose to opt out of unpleasant political

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[11]Two measures—"I closely follow political issues" and "I am interested in political strategy"— were averaged to create a measure of political interest (1–10, $M = 5.57$, $SD = 2.49$, $r = .90$).

information within social media still have the ability to recall political information at equal rates to their peers who exert less control (though, of course, they are less likely to be exposed to such information).

However, these findings are only suggestive, particularly given that the explanatory power of the model is relatively low (pseudo-$R^2 = 0.25$). Although these are all likely predictors of propensity to recall, future research should expand this model to include other potential variables that might relate to learning, including the extent to which recall is driven by the type of social media used, the nature of that use, and primacy and recency effects, and additional tests of learning should be employed to go beyond simple recall.

TESTING FOR GENERAL LEARNING FROM SOCIAL MEDIA (STUDY 2)

Experiments allow us the virtue of isolating individual factors so as to understand the clear effects they have on outcomes; in the case of this project, we can see if and when people learn information they received moments before, and have the benefit of knowing the origin and nature of that information. However, experiments suffer from artificiality—in the real world, users of social media do not get only a few snippets of information at a time from people they only "pretend" to know. Rather, they may view hundreds of posts in a single day, from users ranging from strangers and brands to dear friends and family. Moreover, recall in this context may be as much a proxy for "the story caught my eye" as it is a true measure of learning. Thus in addition to the knowledge gained experimentally, it is useful to examine political knowledge gains that might take place from social media use in the general population.

Methods

To do this, it is necessary to compare between users and nonusers of social media. If social media users are indeed learning political information, as the experimental results just detailed seem to suggest, then such learning should result in political knowledge gains. Although we cannot measure political learning on a widespread basis in the general population, we can measure general political knowledge. If social media users demonstrate higher political knowledge than similarly situated nonusers, we might conclude that significant political learning takes place within the realm of social media (constituting confirmation of H2).

However, it is not possible to simply compare users and nonusers, because we might expect those two subpopulations to differ along other

dimensions as well. That is, we might be conflating the tendency to use social media itself with any learning that might take place there. If, for instance, those people who tend to be more social and create ties with many others are the ones most likely to join social media and are more likely to be high in political knowledge, it might appear that social media users are learning from their use of social media when in reality they were simply high in political knowledge to begin with.

To remedy this issue, I employ matching, a technique to create a quasi-experimental design using observational data, in which a population is divided into two groups based on a particular break variable—in this case, use of social media. The motivation behind this technique is to think of two balanced subpopulations as treatment and control groups, as in the case of a controlled randomized experiment. Assuming that only one condition of the matching variable—treatment or control (social media user or non–social media user)—is observed for each respondent, a causal effect may be interpreted for the difference between treatment and control groups (Sekhon, 2011). Matching helps to distinguish the treatment and control groups in a more meaningful way, by conditioning on observed covariates expected to be related to the likelihood of treatment (Sekhon, 2009). Observations in the treatment and control groups are not exactly alike, but they are comparable, thus mitigating the concern that differences in an outcome variable between the two groups are due to factors other than membership in the treatment group.

Genetic matching is a specific technique in which the balance of observed covariates between the treated and control groups is maximized through an iterative process (Diamond & Sekhon, 2013; Sekhon, 2011), using an evolutionary search algorithm to determine the optimal weight to give to each covariate while matching (Mebane & Sekhon, 1998). It is nonparametric and more flexible than other methods (notably it does not require a propensity score), and consistently achieves better balance than other methods, reducing bias even where other methods may increase bias, and thus improving causal inference (Sekhon, 2011).

To test the effects of online social media use on political knowledge, users and nonusers of Facebook and Twitter are matched on a variety of factors that have been shown to predict social media use. The factors on which I match include demographic characteristics such as income, age, number of children, marital status, race, ethnicity, gender, and education; political variables including ideology, habits of political talk, political interest, and political participation; and communication variables including community ties and news use (Hargittai, 2007). Facebook and Twitter are chosen because they are the most used social media platforms in the United States (Pew Internet & American Life Project, 2013).

TABLE 4
Causal Inference from Genetic Matching

	Estimate	SE	p	N
Facebook				
Full sample	0.06	0.12	.62	604
Low political interest	−0.01	0.28	.95	172
High political interest	−0.19	0.18	.30	299
Low media use	0.10	0.25	.70	163
High media use	0.01	0.18	.98	269
Twitter				
Full sample	0.06	0.03	.03*	217
Low political interest	0.02	0.04	.59	90
High political interest	0.01	0.04	.71	74
Low media use	0.06	0.04	.12	84
High media use	0.03	0.04	.36	61

Note. Reported total sample sizes include only matched observations. Each independent variable is dichotomous. Each row represents a separate ordinary least squares regression. Regression coefficients reported.

The data come from the pretest of the data just described, and the *R* packages Matching and MatchIt are used to conduct the matching, check for balance, and interpret causal results.[12] After matching and checking balance, interpretation of causal results is quite straightforward. Each group in Table 4 represents a dichotomous variable, reflecting inclusion in that group or exclusion from that group (Facebook use or non-Facebook use, or Twitter use/nonuse only within high media users, to use the first and last rows as examples). A binary regression is performed using each of those variables, predicting the outcome of political knowledge (regression coefficients are reported in Table 4). This shows us what effect inclusion in a group has on political knowledge.

The outcome variable of interest, political knowledge of current events, is composed of a series of 14 questions in two groups, in which respondents were asked to identify (a) all of the people from a list of seven who had announced a candidacy for president of the United States at the time of the data collection, and (b) all of the countries from a list of seven that had been involved in the Arab Spring in the spring of 2011. Responses were coded 1 for correctly identifying a member of each group or correctly identifying a nonmember, for a total score for each measure of up to 7. The two

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[12]Complete match balance results available upon request.

measures were then averaged to produce a variable reflecting political current events knowledge ($M = 4.41$, $SD = .98$, $r = .55$).[13]

Results

I first matched on the covariates just indicated for the full sample of respondents (see Table 4). If learning from social media takes place, the expectation would be that users of Facebook would have higher current events political knowledge than nonusers to which they are matched (H2). As can be seen in the first row of Table 4, however, this expectation is not confirmed. The estimated causal effect of using Facebook on current events political knowledge is far from statistically significant, suggesting that perhaps learning of political events does not take place as a result of this particular type of social media use.

However, it is possible that effects are not seen for all social media users but rather for a particular type of user. Work on knowledge gaps, for instance, might lead us to believe that the least politically sophisticated are those most likely to be affected by new information, such as that to which they might be exposed on Facebook (Zaller, 1992). To test this possibility, I restricted the sample to only those in the lowest third of political interest, a typical indicator for political sophistication (overall $M = 5.57$, $SD = 2.49$, lowest third $= 4.5$ or less on a scale of 1 to 10). As can be seen in the second row of Table 4, however, the expected relationship is not borne out. The estimated causal effect of Facebook use again fails to reach statistical significance, suggesting no difference between the politically uninterested who use Facebook and those who do not (H4b is unsupported).

Finally, it is possible that Facebook creates a source of information particularly useful to those who choose not to expose themselves to other information streams. In a high-choice media environment, we might expect that those users who opt out of most information streams provided by the mass media would demonstrate the greatest difference in political knowledge as a result of Facebook use, having the most to gain. To test this possibility, I restricted the sample to only those in the lowest third of overall media use (overall media use $M = 2.16$, $SD = 1.36$; lowest third $= 1.4$ or less on a scale of 1 to

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[13]Because the main data used in this article did not speak to Twitter, the data used for the Twitter analysis come from survey data of an undergraduate student population, conducted in the spring of 2010 ($N = 676$). The political knowledge measure, rather than identification of presidential candidates and countries participating in the Arab Spring, is composed of respondents identifying party positions on major issues (tax cuts, Pledge to America), identifying parties in power in each house of Congress, and identifying whether certain elections would be held locally that year (senator and governor). Within that sample, 14.7% of respondents used Twitter.

7). Although the coefficients are in the expected direction, once again there appears to be no statistically significant effect of Facebook use on political knowledge, even among the lowest users of media use (H5 is unsupported).

The second case—that of Twitter use—shows more promise. As can be seen in the second half of Table 4, there is a relatively small but statistically significant difference between the average political knowledge of users and nonusers of Twitter. This suggests that users of Twitter gain in political knowledge by virtue of their use of that medium (supporting H2). For the more nuanced breakdown, however, in political interest and media use, the numbers are in the expected direction but fail to reach statistical significance (gains seem to be strongest among those lowest in media use and political interest, although we lack statistical confidence). Thus in both cases (Facebook and Twitter), neither H4b nor H5 were confirmed.

CONCLUSIONS

This study represents a fundamental step in determining if and when users learn from social media use. We can definitively say that the *opportunity* for learning from political information to which social media users are exposed is a real one. Recall was achieved for the vast majority of experimental subjects exposed to political information, and a significant subpopulation (28.1%) was able to recall the political information in detail. This is despite the fact that this was a single exposure (whereas many stories may appear repeatedly in social media) in an artificial network—not the network including a user's own friends and acquaintances. As Chaffee and Kanihan (1997) put it, "Even though attention may be low at a given time, a long series of daily exposures can cumulate so that significant knowledge is acquired" (p. 422). This suggests that social media use is an important new flow of political information in American politics, and to understand how citizens form opinions, adjust attitudes, and motivate behaviors, we must also understand what political information they are exposed to via social media and what they learn from it.

Further, learning—or at least short-term recall offering the potential for learning—seems to occur more easily for political information than nonpolitical information within the realm of social media, and this difference is not related to political interest or novelty of information, suggesting the relationship between user attributes and learning of political information may be more complicated than expected. Future experiments should consider which characteristics of a story posted within social media, and of its poster, make it most memorable.

All of this evidence suggests that social media users experience passive learning, characteristic of a low-choice media environment, when exposed

to political information via social media (Krugman, 1965). As expected, passive learning occurs when users have fewer barriers to absorbing information and are exposed to it incidentally. This suggests that social media, despite its customizability, acts as a low-choice media environment. This has important theoretical implications for how we conceptualize and study social media as an information delivery platform. This should lead scholars aiming to understand social media as a means of political information acquisition toward theories of accidental exposure and passive learning (Baum, 2002; Krugman, 1965; Tewksbury, Weaver, & Maddex, 2001) more than selective exposure and media choice (Prior, 2007; Stroud, 2008).

This also has interesting theoretical implications for the knowledge gap. In high-choice media environments, users who are not interested in politics are easily able to opt out of the political information environment. Those most able to persuade with new knowledge are therefore least likely to be exposed to political information in the first place (Zaller, 1992). This results in a large gap between those most interested and those least interested in politics, which has been growing as media choice has increased (Prior, 2007). This study suggests that social media is one mechanism by which the knowledge gap might be overcome—users are exposed to political information incidentally while doing other things and are able to gain political knowledge as a result (at least in the short term).

However, one notable piece of information leads in a different direction. The observational data suggested that, in general, social media users were no more likely to be politically informed than their nonusing counterparts. Although the numbers are in the right direction, this is true even among low media users (those less likely to have other flows of information available) and among the politically uninterested, for whom political information exposure on social media might be a novelty. These findings suggest that users absorb less information from social media than other lines of analysis suggest, which cautions against drawing too broad a conclusion from this work.

Several explanations are possible for the general lack of effects discovered through genetic matching. First, the data available did not have ideal numbers to match on. That is, the distribution between users and nonusers of Facebook was quite poor, with the overwhelming majority (84%) reporting Facebook use and an overwhelming minority (15%) reporting Twitter use. This makes it more of a struggle to match between users and nonusers, and may result in nonusers being oversampled in order to provide sufficient matches for users. Essentially, this becomes a question of power—the total sample size for matched cases becomes quite small, especially as samples are divided. Unfortunately, Facebook use is quite common in the general population (67% of American adults are users; Pew Internet & American Life Project, 2013), and Twitter use quite uncommon (19% of American Internet

users use Twitter; Pew Internet & American Life Project, 2013) so this problem is likely to occur in other data sets as well. Still, future research should attempt to create data sets in which there is more equal distribution between users and nonusers, or consider other types of social media for which use is more evenly distributed in the population.

In addition to simple power issues, one explanation of the disconnect between the experimental and survey findings is one of exposure; experimental respondents were offered 12 postings to peruse, whereas an average Facebook user is likely to look through dozens of postings in a given browsing session. Thus any of the 12 stories is likely to be more memorable, given the setting, than it might be in everyday use. On the other hand, in the real world there is the potential for repeated exposure—seeing the same posting or postings on the same topic multiple times in a single day or over the course of multiple days. Several friends might post about a popular issue, like raising money for ALS research or an upcoming election. This type of repeated exposure may therefore result in large gains in political knowledge *for specific issues,* which gain salience within social media (Cacioppo & Petty, 1989; Chaffee & Kanihan, 1997). The issues examined here—candidates running for president and countries participating in the Arab Spring—are not likely to be among those issues most mentioned in social media. Future research might focus on what types of issues or events are most likely to be high salience within social media and reconsider knowledge gains on those specific items. It is also worth noting that only two issues are considered in this study, and future research should expand lines of inquiry to examine what types of issues are most memorable and why.

Given these limitations, the results are not conclusive. Again, future research should endeavor to determine the more nuanced pathways from social media exposure to learning political information, and how learning political information in this manner may or may not lead to gains in political knowledge writ large.

However, the evidence that suggests learning can and sometimes does take place via social media has serious implications for the way we understand information flows in the modern media environment. It seems that people are learning from political information within social media, at least to the extent that future research should consider social media an important *potential* source of political information. Future work should also consider the implications for those who learn more or less political information from social media, in terms of political attitude formation and political behaviors.

As the seminal work on political knowledge puts it, "Political learning is a lifelong activity, one that is shaped by many important social, economic, cultural—and idiosyncratic—influences" (Delli–Carpini & Keeter, 1996). Evidence suggests that social media may be a new social and cultural

force to complicate our understanding of the process of lifelong political learning.

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APPENDIX

Newsfeed Images

Non–political: **Political:**