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Online Incidental Exposure to News Can Minimize Interest-Based Political Knowledge Gaps: Evidence from Two U.S. Elections

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Abstract

Concerns persist over the potential for the fragmented media environment to promote motivation-based political knowledge gaps between those who are interested in politics and those who are not. Yet, there is also evidence that the Internet can provide opportunities for individuals to incidentally encounter and learn from news, which may decrease these knowledge gaps. The current study tests this possibility using two, two-wave panel surveys of adults in the United States conducted during the 2012 and 2016 presidential elections. Across two distinct electoral contexts, we find evidence that incidental exposure to online news and political information promotes learning about presidential candidates' policy positions over the course of the campaign. In addition, the data suggest the *least* politically interested benefit the most from this incidental exposure, as they see the largest gains in political knowledge. These findings indicate that opportunities to learn via incidental exposure have the potential to reduce motivation-based knowledge gaps.

Keywords

incidental exposure, social media, political knowledge, knowledge gaps, political interest, news exposure

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As the Internet has become widely adopted, there is debate about whether the unprecedented choice afforded by new communication technology amplifies or reduces political inequality. Of particular concern have been preference-based gaps in news exposure that emerge when individuals opt out of news in favor of more entertainment-oriented content like sports, movies, or streaming services that better reflect their interests (Prior 2007; Van Aelst et al. 2017). Some argue that individuals interested in politics will seek news content, further bolstering their well-established base of political knowledge, while those who lack interest in politics will choose entertainment or non-political content and ultimately learn little about politics. Yet, there has also been recognition that the contemporary media environment is characterized by flows of information in which individuals can unintentionally encounter news even if they are not motivated to actively seek it (Thorson and Wells 2016). Such opportunities to be *incidentally exposed* to news and political information via other online activities may help those who lack interest in politics gain political knowledge (Tewksbury et al. 2001).

At the heart of this debate lies a long-standing theoretical question: Can the *opportunity* to encounter political information offered by media help those with little *motivation* to learn about politics become more politically knowledgeable? This question has been examined in previous media eras using the Opportunity, Motivation, and Ability (OMA) framework (Delli Carpini and Keeter 1996; Luskin 1990; Shehata et al. 2015) but has gained new theoretical significance as opportunities to consume news have become increasingly influenced by social and technological factors independent of individual motivation. It remains unclear whether gaps in knowledge about politics can be reduced through incidental exposure to political information online.

The present study examines the role that motivation and opportunity play in political learning in the context of online incidental exposure. We use two, two-wave panel surveys with diverse samples of adults in the United States, collected in 2012 and 2016 during two presidential elections. We leverage these datasets to determine whether opportunities to encounter political information via online incidental exposure help build political knowledge over time. Furthermore, we examine whether this type of opportunity to learn is particularly beneficial for those who are not motivated to actively seek political content.

OMA to Learn about Politics

Political learning is typically the product of three ingredients: opportunity, motivation, and ability (Luskin 1990). Opportunity refers to individuals' access and exposure to news and political content. Motivation describes individuals' interest in seeking or attending to political content. Finally, ability is conceptualized as the skills that allow individuals to obtain, comprehend, and understand political information (Delli Carpini and Keeter 1996; Luskin 1990; Strömbäck et al. 2013). Crucially, these factors are theoretically distinct but often highly related. While each of the three factors is correlated with socioeconomic status and cognitive capacity (Luskin 1990), motivation and ability are individual-level characteristics. Opportunity, on the contrary, is influenced both by the individual and the media environment.

Past research on how the fragmented modern media environment affects individuals has tended to foreground the interplay between *motivation* and *opportunity*. The emphasis on these factors has two origins. First, motivation has long been considered a crucial determinant of learning from the media. Numerous studies conducted prior to the widespread adoption of the Internet examined how media use had differential effects on learning for motivated individuals (i.e., interested, educated) compared with those with low motivation (e.g., Baum 2002; Neuman et al. 1992; Prior 2007). Second, as media systems transitioned from low choice to high choice, opportunities to access news and political information expanded, including unintentional exposure to this content. On its face, this increased opportunity to learn about politics has the potential to help cultivate a more knowledgeable citizenry (Delli Carpini and Keeter 1996). Yet, scholars have come to different conclusions about whether this newfound abundance of opportunity fosters political learning, particularly among those who lack motivation to learn.

One prominent argument contends that the high-choice media environment *exacerbates* motivation-based knowledge gaps between those who are interested in politics and those who are not. According to Prior (2005, 2007), the volume of media options increases the likelihood that individuals will self-select into content that interests them. This means that people who are not interested in news or politics will likely opt into non-political content, like movies, sports, or entertainment. Because these individuals are avoiding news by attending to other content, they have fewer opportunities to learn and subsequently know less about politics. The politically interested, however, will select news over entertainment-oriented content and benefit from that exposure by learning more about politics.

This perspective makes an important theoretical assumption. In emphasizing the "high-choice" nature of the media environment, this argument suggests motivation creates opportunity—Those who are motivated (i.e., politically interested) have more opportunities for political learning by seeking news, while those who are unmotivated have fewer opportunities to learn because they seek news less frequently (Bennett and Iyengar 2008; Prior 2007). However, this assumption is complicated by the abundance of "opportunity" in the contemporary media environment.

The Nature of "Opportunity" in the Contemporary Media Environment

The perspective outlined above adopts the view that political information is a vital but costly resource. It often takes some internal motivation for people to spend their limited resources (e.g., time, money) seeking political information (Downs 1957). Educated and interested individuals tend to seek more news and accrue higher levels of political knowledge (Delli Carpini and Keeter 1996). From this point of view, individual motivations like political interest create opportunities for political learning through *intentional exposure* to news. Classic examples of intentional exposure include purchasing and reading a print newspaper or actively choosing to visit a news site online.

In addition to the type of costly information-seeking that is often associated with the cultivation of political knowledge, mass media systems offer alternative, low-cost

sources of political information. So-called "accidental data" come to individuals in the course of their daily lives with little effort (Downs 1957). As an example, Downs described a 1950s movie theater audience exposed to a newsreel shown before the movie. This line of thinking suggests that opportunities to learn about politics can also be provided by *incidental exposure* to news and politics, which does not require individual motivation.

To put these arguments into the context of the OMA framework, intentional exposure is a form of opportunity that often requires motivation, while incidental exposure is a form of opportunity that can occur without motivation. This distinction is at the heart of an alternative perspective on the relationship between Internet use and political knowledge. This perspective suggests that an abundance of opportunities to be incidentally exposed to news and politics online may *reduce*, rather than exacerbate, motivation-based gaps in political knowledge.

Incidental Exposure as a Route to Political Knowledge

Incidental exposure is exposure to news or political information that occurs when using media for other purposes (Fletcher and Nielsen 2018; Valeriani and Vaccari 2016; Weeks et al. 2017). While incidental exposure was possible in the mass media era, the Internet and social media have expanded opportunities for unintentional encounters with news. On social media platforms like Facebook and Twitter, users are exposed to flows of information posted by others in their social networks, including news. Incidental news exposure on social media may occur in a variety of ways; people may incidentally encounter political news headlines and stories shared by others, unexpectedly see individual posts related to politics, or happen upon comments sections containing political discussions. Although the majority of content on social media is not related to politics, these platforms have become important gateways to news (Vermeer et al. 2020) and users consistently report being incidentally exposed to news while using these sites (Fletcher and Nielsen 2018; Gil de Zúñiga et al. 2017).

Online incidental exposure can also occur outside of social networking platforms. Portal sites like MSN or Yahoo! are used as home pages and search engines or to access email, but may also facilitate incidental news exposure (Kobayashi et al. 2020). For instance, individuals using these sites to check their email are also likely to see news headlines as they navigate the site. In addition, video-sharing platforms like YouTube use algorithms to recommend videos to users that they did not actively seek out, and users report incidental exposure to news and political content on these platforms (Fletcher and Nielsen 2018). Finally, search engines may also promote incidental news exposure. While searches about topics like gardening or recipes are unlikely to turn up political content, other searches that are tangentially related to politics may facilitate unintended exposure. For example, a search about the National Basketball Association season may unexpectedly include stories about racial justice or players engaging in political activism. While the degree to which people are incidentally exposed to news via each of these routes depends on a number of individual and environmental considerations (Kümpel 2020; Thorson 2020; Weeks and Lane 2020), it

is clear that the contemporary media environment makes at least some incidental exposure online likely.

Although there are many opportunities to stumble upon political information online, it is unclear whether such encounters result in political learning. Research shows that exposure to offline political content on television, on the radio, in newspapers, or in entertainment content—even if it is not intentional—can lead to gains in political knowledge (Baum 2002; Neuman et al. 1992; Shehata et al. 2015; Zukin and Snyder 1984). On a theoretical level, this work illustrates that different forms of non-political media use can facilitate "passive learning" by lowering the cost associated with obtaining and processing news content (Zukin and Snyder 1984). This suggests that media can promote political knowledge even in the absence of motivation to seek political information.

But how does this passive learning occur? First, passive learning is likely in information-rich environments that provide people more opportunities to learn. In such cases, the supply of news can compensate for a lack of motivation and help passively build knowledge (Elenbaas et al. 2014). For example, when television news devotes more coverage to political issues, viewers tend to learn more about those issues, including those with less motivation to learn (Jerit et al. 2006). Second, research in educational psychology has typically stressed that for people to devote the cognitive resources required to learn new information, they need to be motivated (Volet and Järvelä 2001). In the absence of motivation, people may actively avoid learning tasks to achieve goals that matter to them more (e.g., socializing instead of doing homework). Yet, communication researchers have argued that media technologies like television serve as "animated stimuli" that relax users and lower their resistance to learning new information (Krugman and Hartley 1970). As people flip television channels or scroll their social media feeds, they may have fewer defenses up against scanning, processing, and retaining information. This is particularly important for those with little political interest who may otherwise actively resist learning about politics given that it requires cognitive resources they would rather devote to other tasks (Bode 2016). When politics and news are folded into humor, drama, or social interaction, learning does not require a significant trade-off between people's non-political goals and learning about politics (Baum 2002).

While the Internet and social media can create information-rich environments and have great potential to function as "animated stimuli" that can facilitate passive learning, the extent to which such a process occurs is unclear. No two individuals live in the same online information environment; passive learning effects likely depend on a number of contextual factors like the types of sites visited (e.g., portal sites) or composition of online social networks (Kümpel 2020; Thorson 2020; Weeks and Lane 2020). Survey research using general Internet or social media use as a proxy for incidental exposure has not found strong links between online media use and political knowledge (e.g., Boukes 2019; Dimitrova et al. 2014; Lee and Xenos 2019; Shehata and Strömbäck 2021). Experimental work that manipulates incidental flows of information on college students' Facebook pages has also failed to find strong learning effects (Feezell and Ortiz 2019).

However, a handful of studies that have more directly measured incidental exposure suggest that incidental learning online is possible. For example, individuals are likely to recall content to which they are incidentally exposed (Lu and Lee 2018) and cognitively elaborate on and engage with incidental information (Karnowski et al. 2017; Oeldorf-Hirsch 2018). Importantly, eye-tracking studies indicate that people notice and attend to incidental information, regardless of their political interest (Vraga et al. 2019). While some studies suggest this attention to incidental information does not translate into political knowledge (e.g., Bode 2016; Oeldorf-Hirsch 2018), other work has found a positive relationship between online incidental exposure and political knowledge (Kobayashi et al. 2020; Tewksbury et al. 2001). The most convincing evidence of a learning effect of incidental exposure online comes from a study in which respondents were incentivized to deactivate Facebook for four weeks ahead of the 2018 U.S. midterm election (Allcott et al. 2020). Individuals who deactivated their accounts had lower levels of political knowledge and attention after four weeks compared with those who stayed on Facebook. This suggests that social media, and perhaps the Internet more broadly, offer important opportunities for people to stumble across news and political information, which can help them learn.

The first goal of the present study is to clarify these mixed findings by testing the possibility that online incidental exposure is associated with increases in political knowledge over time. Given the OMA framework's proposition that more opportunities to learn should lead to increases in political knowledge (Delli Carpini and Keeter 1996) and existing evidence demonstrating that incidental exposure can increase such opportunities and lead to political learning (Allcott et al. 2020; Baum 2002; Jerit et al. 2006; Neuman et al. 1992; Shehata et al. 2015; Zukin and Snyder 1984), we hypothesize the following:

Hypothesis 1 (H1): Online incidental exposure to news and political information (W1) will be positively related to political knowledge (W2).

Political Knowledge for Whom?

If online incidental exposure does promote political knowledge, who learns the most from this exposure? This question is important because it speaks to the role digital media may play in political inequality. It also offers a chance to reexamine the theoretical roles of opportunity and motivation in the contemporary media environment. In light of the abundance of opportunities to incidentally encounter news today, the prevalence of motivation-based knowledge gaps may be overstated. While evidence does indicate that interest in politics (i.e., motivation) drives political news consumption (Prior 2007; Strömbäck et al. 2013) and that news consumption subsequently promotes political learning (Shehata and Strömbäck 2021), such evidence does not preclude alternative paths to political knowledge.

Many of the noted claims about motivation and knowledge gaps are based on a media environment where opportunities to learn about politics (1) came primarily from intentional exposure and (2) required individual motivation. For instance,

Prior's (2007) work was conducted in an era in which far fewer people used the Internet and social media than do today. In that context, exposure to political information often depended on Internet users actively seeking it through search engines or individual websites. Yet, the media environment has evolved greatly in the past ten to fifteen years. Today's digital media users have numerous opportunities to be exposed to news content, regardless of whether they seek it out. This shift to a media environment defined by "curated flows" (Thorson and Wells 2016) poses the biggest challenge to the contention that the contemporary media environment necessarily perpetuates motivation-based knowledge gaps. As we have noted, there is evidence that flows of information that are curated by social networks and algorithms can lead to political knowledge gains irrespective of motivation (Allcott et al. 2020).

Given this updated appraisal of the media environment, we argue that those who are less motivated to create their own opportunities to learn should see the greatest knowledge growth as a function of online incidental exposure. We acknowledge that individuals with high political interest (and, therefore, motivation) are still likely to create their own opportunities to learn by self-selecting into news (Prior 2007). This should build a solid foundation of knowledge, making it less likely for these individuals to see significant additional gains as a result of incidental exposure. Although high-interest and high-motivation individuals may be more likely to be unintentionally exposed to political content in the first place (Kümpel 2020; Thorson 2020), incidental exposure may not add much to their already robust knowledge of politics.

However, low-interest individuals have much to gain from incidental exposure. Incidental exposure to news and politics is common among Internet users, including the politically uninterested (Fletcher and Nielsen 2018), and even low-interest individuals pay attention to incidentally encountered news and political posts online (Vraga et al. 2019). While such exposure is not the same as substantive engagement, it is an important prerequisite for learning and passive, unmotivated exposure can lead to gains in political knowledge if the information environment affords more opportunities to learn (Elenbaas et al. 2014; Jerit et al. 2006; Zukin and Snyder 1984). Given these arguments, we predict that increased online incidental exposure will contribute to knowledge gains for those with low political interest, helping diminish motivation-based knowledge gaps:

> **Hypothesis 2 (H2):** Individuals with lower levels of political interest (W1) will see larger gains in political knowledge (W2) as they are incidentally exposed to more political news and information online (W1) than will those with higher levels of political interest.

Method

Samples

We use data from two panel surveys with samples of adults that resemble the demographic characteristics of the U.S. population. The surveys were fielded during two presidential elections in the United States (2012 and 2016).

The 2012 data were gathered through a two-wave national online survey of adults in the United States. We contracted the survey research company *Ipsos* to collect data via their online panel, which consisted of approximately 1 million households. *Ipsos* recruited through online sources and asked panel members to participate in online surveys. To obtain a sample that resembled the U.S. population, quotas for age and gender were implemented. While quota sampling is limited in that it does not produce a probability-based random sample, it did provide a sample that reflects key demographic characteristics of the U.S. population. Data for the first wave (W1) were collected from October 19 to 25, 2012, during the campaign season of the presidential election; 17,381 panel members received invitations to participate and 1,250 completed W1 for a completion rate of 7.2 percent. Upon completion of W1, respondents received an email inviting them to participate in the second wave (W2); 905 respondents (72.4 percent retention rate) completed W2, fielded from November 10 to 19, 2012. Eighteen respondents provided invalid data and were dropped from analyses, leaving a final sample of 887 across both waves.

The 2016 data were collected via an original two-wave national survey using a sample drawn by the online survey research company YouGov. YouGov maintains a pool of adult respondents in the United States recruited to the panel using a variety of strategic online advertising partnerships across a number of sites. While not probability-based, the sample was generated using YouGov's matching technique, which creates samples that reflect the population along several demographics. The first wave was fielded in late September 2016 during the presidential election, while data for the second wave were gathered in early November; 6,213 respondents were invited to participate in W1; 1,800 completed the survey, resulting in a participation rate of 29 percent; 1,293 participants who completed W1 returned for W2 (72 percent retention rate). The survey included attention-check questions; respondents who failed the attention check were removed from analyses, resulting in 1,056 respondents for both waves.[1]

Both the 2012 and 2016 samples resemble the American population on key demographics. Complete demographic information about the samples as well as comparisons to the 2012 and 2016U.S. Census Bureau's American Community Surveys are listed in Table A1 of the Supplementary Information File.

Measures

We briefly outline the measures used below. More details about question development and wording for all variables are found in Appendix S1 of the Supplementary Information File.

Incidental exposure. We note from the outset that self-reported measures cannot fully assess the extent to which individuals click on, attend to, or engage with incidentally encountered information. Instead, our primary purpose was to assess incidental *opportunities* to learn about politics. Four items were used in both 2012 and 2016 to measure incidental exposure in W1. Responses were measured on a 6-point scale and averaged to create a measure of incidental exposure (2012: W1 $M = 2.40$, $SD = 1.58$, $\alpha = .96$;

2016: W1 $M = 2.89$, $SD = 1.68$, $\alpha = .93$). Consistent with prior research (Valeriani and Vaccari 2016), the reported frequencies in these surveys, particularly in 2016, suggest that a majority of individuals at least occasionally incidentally encounter political information online, and more than one-third of the sample was incidentally exposed at least once to several times per week, including many respondents with low levels of political interest.[2]

Political interest. Political interest was measured using a single item in the first wave of the 2012 (a 6-point scale, $M = 3.45$, $SD = 1.59$) and 2016 (a 7-point scale, $M = 5.05$, $SD = 1.79$) studies.

Political knowledge. Political knowledge measures were designed to assess respondents' knowledge of the two major-party presidential candidates' policy positions on a number of different issues. In W1 of the 2012 study, respondents' knowledge was measured using a total of six questions. Respondents were shown three political policy proposals and asked in random order whether each presidential candidate supported or opposed each proposal (3 policies $\times$ 2 candidates = 6 knowledge items). In W2 of 2012 and in both waves in 2016, political knowledge was measured in the same way, but a fourth policy was added (4 policies $\times$ 2 candidates = 8 knowledge items). Respondents in both waves were given the option to report if they were unsure about the candidate's position on each proposal and encouraged to do so in the question stem. In the second wave of both surveys, the knowledge questions included some of the items asked about in W1 as well as new items for W2 (see Prior 2005, 2007 for a discussion of this approach). Correct answers were awarded only if respondents accurately identified the candidates' policy position. Incorrect and "unsure" responses were both coded as "not correct." We summed respondents' correct answers across the items in each wave (2012 W1 $M = 2.78$, $SD = 1.86$, W2 $M = 4.05$, $SD = 2.76$; 2016 W1 $M = 3.77$, $SD = 2.04$, W2 $M = 5.14$, $SD = 2.46$).

Control variables. The same set of control variables was used in the analyses of the 2012 and 2016 data. We identified a range of personal characteristics, political traits, and media use behaviors that may help explain political knowledge. These included the demographic variables: age, gender, and education. We also controlled for strength of party affiliation, offline news use, online news use, social media use, and intentional news exposure. Question wording, descriptive statistics, and correlations between all measures are found in the Supplementary Information File.

Results

We begin by offering evidence of construct validity for the main independent variable, incidental exposure. First, the items exhibited face validity in that they explicitly assessed unintended exposure to campaign information online and differentiated between incidental and intentional exposure to information. Second, we assessed discriminant validity to ensure that the incidental exposure items were capturing

unintended exposure and not information exposure more generally. Exploratory factor analyses (EFA) demonstrate discriminant validity and provide empirical evidence that our measure of incidental exposure is distinct from intentional exposure (see Appendix S2 of the Supplementary Information File for EFA details). Convergent validity was examined next. As expected, given that much incidental exposure occurs on social media, incidental exposure and social media use were related in both 2012 (r_{pb} = .135, $p < .001$) and 2016 ($r_{pb} = .097$, $p < .001$). It is also reasonable to suspect that politically knowledgeable and educated people exist in online environments where social connections are more likely to share news and political information, thus increasing opportunities for exposure (Kümpel 2020; Thorson 2020; Weeks and Lane 2020). Consistent with this expectation, incidental exposure was moderately correlated with political knowledge, education, and offline and online news use in both 2012 and 2016, providing evidence of convergent validity (see Tables A4 and A5 for correlations). We also tested whether incidental exposure was simply a reflection of political interest. The bivariate correlation between incidental exposure and political interest in both surveys was .34, $p < .001$, and individuals at the lowest levels of political interest reported, on average, at least occasional incidental exposure. Together, these tests provide evidence of construct validity for the incidental exposure measures, as none of the validity tests raised significant red flags about the concept's validity or reliability.

The primary hypotheses were tested next. The dependent variable in both datasets is political knowledge, which was measured using a count of correct answers to the knowledge questions. In the analyses of count data that follow, we used negative binomial (NB) regression models (two from both 2012 and 2016) with maximum likelihood estimation to examine the direct and conditional relationships between incidental exposure and political learning while controlling for several known predictors of political knowledge (see Table 1).

Before examining the main relationships of interest, we highlight a few other notable links in the data. In both 2012 and 2016, social media users were no more likely than non-users to build political knowledge, a result that is consistent with prior work finding a null or negative relationship between social media use and political learning (Bode 2016; Boukes 2019; Gil de Zúñiga et al. 2017; Oeldorf-Hirsch 2018; Shehata and Strömbäck 2021). Unsurprisingly, political interest and prior political knowledge were the strongest predictors of W2 political knowledge in both studies.

We then tested the first hypothesis that incidental exposure to news and political information online (W1) would be positively related to political knowledge (W2) during each election campaign. Coefficients for NB regression models report differences in logs of expected counts but, for ease of interpretation, are converted here into incidence rate ratios (IRRs), which were calculated by taking the exponent of the initial regression coefficient. Looking first at the 2012 data, incidental exposure to political information online in the first wave was associated with higher levels of political knowledge in the second wave, $B = .03$ (.01), IRR =1.03, $p = .004$. We find a nearly identical relationship in 2016, $B = .03$ (.01), IRR = 1.03, $p = .007$. Based on the IRR, a one-unit change in incidental exposure was associated with an approximately 3 percent increase in the number of correct answers to political knowledge questions. Taken together, these findings

Table 1. Predicting Political Knowledge about Presidential Candidates in 2012 and 2016 with Negative Binomial Regression.

	2012 Knowledge (W2) (without Interaction)	2012 Knowledge (W2) (with Interaction)	2016 Knowledge (W2) (without Interaction)	2016 Knowledge (W2) (with Interaction)
Incidental exposure (W1)	.03 (.01)**	.11 (.03)***	.03 (.01)**	.16 (.03)***
Political interest (W1)	.08 (.01)***	.12 (.02)***	.07 (.01)***	.13 (.02)***
Incidental Exposure × Political Interest (W1)	—	–.02 (.01)**	—	–.02 (.01)***
Political knowledge (W1)	.18 (.01)***	.18 (.01)***	.13 (.01)***	.12 (.01)***
Strength of partisanship (W1)	.06 (.02)**	.06 (.02)**	.03 (.02)†	.03 (.02)†
Intentional exposure (W1)	–.01 (.01)	–.00 (.01)	–.01 (.01)	–.01 (.01)
Offline news (W1)	.01 (.02)	.03 (.02)	–.00 (.01)	–.00 (.01)
Online news (W1)	.03 (.01)†	.03 (.01)†	.00 (.01)	.00 (.01)
Social media user (W1)	.05 (.04)	.05 (.04)	.00 (.04)	.05 (.04)
Age (W1)	.01 (.00)***	.01 (.00)***	.00 (.00)**	.00 (.00)**
Gender (W1)	–.12 (.04)**	–.12 (.04)**	–.10 (.03)**	–.10 (.03)**
Education (W1)	.07 (.02)***	.07 (.02)***	.03 (.01)**	.03 (.01)**
Intercept	–.31 (.13)*	–.46 (.14)***	.57 (.10)***	.25 (.13)*
Log likelihood	–1,04.50	–1,901.18	–2,193.59	–2,184.17
n	887	887	1,056	1,056

Note. Standard errors in parentheses.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

provide support for H1. Across two panel surveys in two election cycles, incidental exposure to political news and information online was associated with more knowledge of candidate issue positions over time.[3]

To assess whether individuals with low levels of political interest learned more from incidental exposure (H2), a second model that included an interaction between incidental exposure and political interest was tested in both years.[4] In the 2012 data, the coefficient for the interaction was negative and significant, $B = –.02$ (.01), IRR = 0.98, $p = .009$; 2016 data revealed a similar interactive relationship between incidental exposure and political interest on political learning, $B = –.02$ (.01), IRR = 0.98, $p < .001$. To interpret these coefficients, Figure 1 plots the predicted relationship between incidental

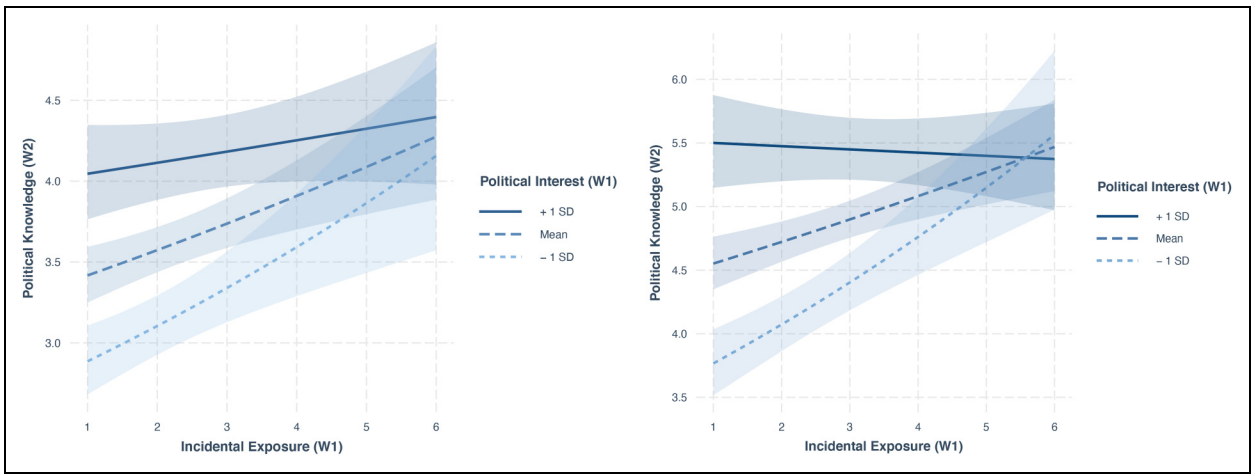

Figure 1. The 2012 (left panel) and 2016 (right panel) relationship between incidental exposure (W1) and political knowledge (W2) at various levels of political interest (W1).
Note. 2012 political interest: −1 *SD* = 1.87, *M* = 3.45, +1 *SD* = 5.04; 2016 political interest: −1 *SD* = 3.30, *M* = 5.08, +1 *SD* = 6.87. Figures created using negative binomial regression. Shaded areas represent 95 percent confidence intervals.

exposure and political knowledge across levels of political interest in 2012 (left panel) and 2016 (right panel). At low levels of incidental exposure, there are significant gaps in political knowledge between those who are more (+1 *SD*) and less (–1 *SD*) interested in politics, as more interested people are considerably more knowledgeable. However, as incidental exposure increases, these interest-based gaps diminish such that at higher levels of incidental exposure, there are no statistically distinguishable differences in political knowledge across levels of political interest. The plots in Figure 1 also show that those low in political interest see significant increases in knowledge as they incidentally encounter more information, while those high in interest see little change in knowledge as a function of incidental exposure. The mean predicted level of political knowledge at various levels of incidental exposure and political interest illustrates this pattern as well (see Tables A10 and A11 in the Supplementary Information File). These analyses provide evidence in support of the second hypothesis.[5] Together, the findings from both 2012 and 2016 suggest that incidental exposure to political information online can significantly minimize gaps in knowledge between people who are interested in politics and people who are not.[6,7]

Discussion

This study engages the long-standing theoretical tension between motivation and opportunity in the acquisition of political knowledge. The possibility that individuals learn from online incidental exposure to news provides a unique chance to examine this theoretical question in the context of the contemporary media environment. Many have suggested that in digital media environments, individual motivations like political interest drive information exposure, which ultimately determines who does and does not possess political knowledge (e.g., Prior 2007; Van Aelst et al. 2017). If true, the information rich will get richer while the poor get poorer (Kümpel 2020). Across two national panel surveys conducted in two unique U.S. election contexts, we find evidence that challenges this perspective. The data here revealed that incidental exposure to online news and political information was associated with increases in knowledge about the presidential candidates' policy positions during both campaigns. More importantly, the findings indicate that those with the least interest in politics—not the most—reaped the greatest benefits of incidental exposure to news. Rather than widening the knowledge gap, incidental exposure allowed the least politically interested the opportunity to begin to catch up to their more motivated peers. On a theoretical level, these findings offer evidence that political learning can occur in the absence of motivation if the media environment provides ample *opportunity* to encounter political information via incidental exposure.

By extension, motivation-based knowledge gaps in modern media environments may not be inevitable. According to the OMA framework, if any of the key factors that determine political learning (i.e., OMA) increase, political knowledge should follow suit. While it is not clear whether the public's motivation and ability to learn about politics have shifted in the past decade, their opportunities to do so have changed through incidental news exposure online (Thorson and Wells 2016).

Although motivation remains vital for producing well-informed citizens—as evidenced by the predictive power of political interest in this study—it may not always be a prerequisite for political learning. Our findings contribute additional evidence that the profusion of opportunities created by the contemporary media environment —particularly for those uninterested in politics—may help reduce knowledge gaps produced by different levels of motivation (Elenbaas et al. 2014). Although the strength of the relationships here is modest, even small changes in knowledge at the individual level can help citizens make more reasoned choices when voting or deciding whether to support a political policy. In this way, relatively small decreases in knowledge gaps may help less interested citizens behave politically like their more interested peers (Lupia and McCubbins 1998).

Despite the increases in available information and opportunities to learn, prior research has not found consistent evidence that people can learn about politics online. We note several possible explanations for the discrepancy in findings between the present study and prior work. First, this research is conducted in rapidly evolving political and media environments. It may be that the online environment has only recently become sufficiently "saturated" with political information for the effects of online incidental exposure to become observable (Elenbaas et al. 2014). This highlights the necessity of replicating the analyses we conduct here during future election cycles and in different political contexts. Second, in many studies, incidental exposure is often assumed rather than explicitly measured (e.g., Boukes 2019; Dimitrova et al. 2014; Lee and Xenos 2019; Shehata and Strömbäck 2021). While these studies employed social media use as a proxy for incidental exposure, the present work directly asked respondents to report unintended exposure to political information online. Directly tapping the frequency of incidental exposure is a more explicit measure of exposure than are self-reports of social media use more broadly, particularly given that some individuals are rarely exposed to news or politics on social media (Kümpel 2020; Thorson 2020). Third, some prior work uses more general political knowledge items rather than campaign-specific information that is likely to be circulating online during a campaign (Gil de Zúñiga et al. 2017) or uses cross-sectional data to assess knowledge gains (Bode 2016; Oeldorf-Hirsch 2018) rather than the panel design utilized in this study. Fourth, most prior research has been conducted in the context of social media, whereas the current study examines incidental exposure to information via the Internet more broadly. While much incidental exposure does occur on social media, it also happens in other places online (e.g., online portals, search results, or video hosting sites) in ways that may not be captured by general social media use measures. This suggests that the Internet provides greater opportunities to learn beyond the bounds of social media (Kobayashi et al. 2020).

The contrast between our findings and previous research more generally points to the notion that the effects of incidental exposure are likely highly contextual. A number of factors at both the individual and environmental levels help shape incidental exposure and its influence (Weeks and Lane 2020). For example, to what extent does one's online social network shape incidental exposure (Kümpel 2020; Thorson 2020)? It is also not fully clear whether there are individual

differences in who remembers seeing incidentally encountered information, or how people engage it. While attention to incidentally encountered news may not be contingent on political interest (Vraga et al. 2019), it may be that at least minimal interest is required for people to click on, read, or further engage incidentally encountered news. While beyond the scope of the current study, an in-depth exploration of the ways in which incidental exposure is engaged and experienced by users remains an important task for future work.

Overall, this study suggests a more balanced theoretical approach to studying the modern media environment, in which the unprecedented opportunity to encounter political information provided by digital media is recognized alongside the power of individual motivation. We do not argue that those who are highly politically motivated cannot learn from incidental exposure. On one hand, in the 2016 data, there is no evidence of knowledge gains from incidental exposure among the highly politically interested—a potential ceiling effect. On the other hand, these highly motivated respondents may gain more advanced forms of political knowledge from incidental exposure that our measures were not designed to assess. In other words, the absence of a relationship should not be interpreted as evidence that no relationship of any kind exists. What the data do suggest is a reduction in motivation-based knowledge gaps for one particular type of political knowledge (candidate issue positions) that is meaningful in the context of an election. Whether incidental exposure can help individuals with high political interest obtain more advanced forms of political knowledge is an interesting but distinct question for future research.

Although the evidence is largely consistent across two panel studies in two election contexts, there are limitations to note. As with any survey data, self-reports from respondents were used. Much like other forms of media exposure, reporting incidental exposure may be difficult for respondents. While the measure may be subject to misreporting, we conducted several empirical tests and found evidence in support of valid and reliable concept measurement. Nonetheless, future work should build on this study by using behavioral data to track incidental exposure and by experimentally testing the causal nature of the relationship between incidental exposure and knowledge (see Feezell and Ortiz 2019). The surveys here were also conducted in the context of national presidential elections, which likely increase the volume of political information that people can incidentally encounter. Prior work has found that knowledge gain is particularly likely when information is abundant (Elenbaas et al. 2014; Jerit et al. 2006), as it is during elections. This raises the possibility that the positive correlations between incidental exposure and political knowledge may be limited to situations in which political information is circulating more than usual. It may also help explain why prior work on social media use and knowledge gain produces such mixed findings; this relationship may only emerge in "information-rich" contexts like elections. Examining these relationships outside of major elections would better illustrate the generalizability and boundaries of the findings. Finally, this is a single-country study. Studies of incidental exposure outside the United States or in different media environments may find different results, and it will be important to replicate these analyses in other political contexts.

Ultimately, the findings connect to a broader movement to examine the dynamic ways in which digital media reduce or exacerbate political inequalities. It has been argued that the Internet and social media offer greater voice and influence to the politically interested, well-resourced, and powerful, while everyone else is left behind (Prior 2007). We view this work as vital to understanding the role media play in modern democracies. Our hope is to offer a complementary perspective that recognizes the equalizing forces woven into the complex modern media ecosystem. The problems created by unequal ability and motivation to engage in politics will persist. Yet, our findings demonstrate that individual ability and motivation coexist with increased opportunities to learn in online environments.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. In the 2016 data, respondents who only completed W1 of the survey did not differ from those who completed both waves in terms of political interest, political knowledge, or internal political efficacy ($ps > .2$).
2. Although reported levels of incidental exposure are consistent with prior work, we acknowledge potential difficulties with self-reported incidental exposure. One concern is that self-reports depend on attention; people may be better able to report exposure to topics they are interested in. Yet, eye-tracking studies demonstrate that people devote visual attention to news and political information to which they are incidentally exposed, even when they are not particularly interested in that content. This work also suggests a positive relationship

between visual and self-reported attention to political information (Vraga et al. 2019). While this offers some post hoc support for our approach, the results should be interpreted in the context of caveats regarding self-reported media exposure.

3. Variance inflation factor (VIF) tests using ordinary least squares (OLS) regression reveal no evidence of multicollinearity in the models (see Table A13 in the Supplementary Information File for all VIF scores).
4. We performed several diagnostics to assess the degree to which our model meets the two assumptions of multiplicative interaction models outlined by Hainmueller et al. (2019). To assess linearity of moderation, we compared the negative binomial regression models with alternative models that included a quadratic interaction term (Political Interest^2). In the 2012 data, there was no significant difference between log likelihood of the linear and quadratic models ($p = .26$). In 2016, the linear model had a significantly higher log likelihood than the alternative quadratic model. In both cases, there was no evidence that a non-linear interaction would have fit the data better than the linear model we report. In terms of common support, we examined the distribution of incidental exposure across levels of political interest, by binning political interest values into three equal categories and plotting a histogram of incidental exposure. In both datasets, incidental exposure is right-skewed, but at all three binned levels there are cases at every value of incidental exposure. In other words, there is variation in incidental exposure at low, medium, and high levels of political interest, indicating some level of common support.
5. The coding of W2 political knowledge does not allow for a strict test of change in knowledge over time as the W2 measure included knowledge questions asked about in W1 in addition to "new" knowledge questions in W2. To ensure that the findings are robust, all analyses were rerun using three alternative codings of W2 political knowledge. The results for 2016 are identical to the original coding. Notably, in 2012, we continue to find that incidental exposure has a modest relationship ($p < .10$) with political knowledge, but that link does not vary depending on levels of political interest. All alternative models, including coding details, are reported in Tables A8 and A9, and Tables A14 and A15 in the Supplementary Information File.
6. As a robustness check, we ran all models using OLS regression. All findings are substantively the same except for the incidental exposure by political interest interaction in 2012, which was not significant (see Table A12 in the Supplementary Information File).
7. To address the possibility of reverse causality, we conducted cross-lagged correlations between incidental exposure and political knowledge in both waves, controlling for all variables noted in our regression models. In the 2012 data, the partial correlation between W1 Incidental Exposure and W2 Political Knowledge ($r = .124$) is not significantly different from the link between W1 Political Knowledge and W2 Incidental Exposure ($r = .093$), $z = .655$, $p = .256$. In the 2016 data, the W1 Incidental Exposure–W2 Political Knowledge link ($r = .143$) is not significantly different from the W1 Political Knowledge–W2 Incidental Exposure relationship ($r = .077$), $z = 1.526$, $p = .064$. While this does not entirely rule out the possibility, we do not find strong evidence in favor of reverse causality (see Figure A1 in the Supplementary Information File).

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