Pathways to Deeper News Engagement: Factors Influencing Click Behaviors on News Sites

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This study draws on models of motivated news exposure and literature on affordances to examine how devices (i.e., PC or mobile) and paths to exposure (i.e., news homepages, search, or social referrals) relate to people's behavior on news sites. Using behavioral data from seven local broadcast news sites, we assess how the device used and referral site affect whether people click on links to more news. We experimentally test four components of the presentation of links on news sites: content, labels, location on page, and images. Findings show that accessing news via social media and mobile devices reduces clicks relative to other paths and devices. Further, link presentation matters; for instance, links to Related content yielded more clicks than Popular content for those coming from search or a news homepage on PCs. We advance a conditional explanation of motivated news exposure and identify practical insights for news organizations.

Keywords: News Exposure, Online News, Clicks, Behavioral Data, Incidental Exposure, Affordances
doi:10.1093/jcmc/zmab009

How people find news is changing dramatically. Whereas using PCs to access news homepages used to be the norm, mobile traffic and referrals from search engines and social media are increasingly important routes to news (Newman, 2020). Two streams of theory provide a fruitful way to understand how shifts in consumption affect news engagement. Models of motivated news exposure tell us how pre-exposure factors drive people to engage with news. Models of communication technology affordances tell us how the features and characteristics of platforms and devices—through both the types of news exposure they enable and the constraints they impose on content—shape engagement with news once exposure occurs.

We propose a conditional framework of motivated news exposure that combines these two models. Motivated news exposure distinguishes between news exposure as more active or purposeful versus more passive or incidental (e.g., Lang, Sanders-Jackson, Wang, & Rubenking, 2013). Less clear from

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Editorial Record: First manuscript received on 27 July 2020; Revisions received on 30 December 2020; Accepted by R. Kelly Garrett on 16 June 2021
this literature are the myriad ways digital media can present and structure news content with implications for cognitive and behavioral forms of engagement (for exception, see Matthes, Nanz, Stubenvoll, & Heiss, 2020). The literature on affordances highlights the importance of considering content characteristics when analyzing paths to news (Trilling, Tolochko, & Burscher, 2017; Wieland & Kleinen-von Königslöw, 2020). Although work on affordances cautions against the view that communication technologies are determinative (Gibson, 1966), the focus is on how media attributes structure users’ experience. Bringing these models together suggests that the effects of motivated news exposure on engagement should be conditional on the affordances and features of platforms and devices. This is important in the current media environment because these two streams of research propose that some newer paths to news may result in less substantive, more superficial news engagement.

The devices people use and pathways they take to news can influence how they engage with news links and how they react to attributes of news links, such as where links are positioned on a page. We empirically test our expectations with a field experiment based on user behavior on seven local broadcast news websites across 1,248,239 observations. The outcome variable of interest is the act of clicking to view a subsequent article on a news website, known as a click-through. Clicking to more news is a behavioral form of engagement, related to cognitive absorption (Oh, Bellur, & Sundar, 2018) and indicative of a more in-depth news encounter.1 This study provides evidence that newer pathways, namely mobile use and search/social referrals, have different relationships with clicking on news than older pathways, namely PC use and homepage referrals. More importantly, we experimentally investigate whether the click-through rate (CTR) can be affected by how links are presented. We propose, and find some evidence, that presenting links based on a conditional framework of motivated news exposure increases clicks.

The empirical contribution of this research is three-fold. First, we test whether past characterizations of mobile access and social referrals as less effortful news encounters bear out in data gathered in a real-world context. We find evidence that both news pathways yield lower CTRs compared to PC access and homepage referrals. Second, we examine whether news organizations can affect CTRs by experimentally varying aspects of links to news. We vary the substance of the links (whether to Popular or Related content), how the links are labeled (using generic wording, wording cuing social motivations, or wording cuing cognitive motivations), the presence or absence of images, and the placement of the links (in the middle or at the end of an article). These changes affect clicks to more news. Third, we connect the conditional framework of motivated news exposure with the experimental manipulations. We analyze whether experimental manipulations, which (a) cater to incidental news exposure via social media or (b) take advantage of the affordances of mobile devices, increase clicks among those accessing news via a social referral, mobile device, or both. Overall, we find that devices, referral paths, and news link presentation are consequential for news engagement.

Pathways to news: Referral site and device used

Reactions to content vary according to whether exposure is purposive, active, and motivated or passive and incidental (Lang et al., 2013), and the affordances of the devices and platforms where news is encountered (Matthes et al., 2020; Vorderer, Hefner, Reinecke, & Klimmt, 2017). We investigate both pathways to news and devices used.

Referral site

Referral site, whether social media, search engines, or news homepages, should influence how people interact with news. Social media users often report encountering news incidentally, or while online for
purposes other than seeking out news (Gottfried & Shearer, 2016). As Oeldorf-Hirsch (2018) notes, “the growing reliance on social media for incidental exposure to news suggests that individuals may be moving to an increasingly passive exposure to information” (p. 226). Those who report it is unnecessary to seek news actively are more likely to rely on social media for intermittent and incidental exposure, letting the news find them, and eschewing traditional forms of news. Consistent with the democratic consequences of less active news encounters, passive news consumers are significantly less informed about politics than their news-seeking counterparts (Gil de Zúñiga, Weeks, & Ardevol-Abreu, 2017).

From an affordances perspective, Weiland and Kleinen-von Königslöw (2020) theorize that the structural constraints of social media sites affect processing independent of motivations for information-seeking. They argue that the high volume and speed of newsfeeds encourage heuristic over systematic processing, reducing the likelihood of intense focus on single links or posts. The information deluge from social media is correlated with excessive communication demands (Lee, Son, & Kim, 2016) and multitasking (Garaus, Wagner, & Bäck, 2017). Especially among those not actively seeking news, the informational characteristics of social platforms shape (e.g., Matthes et al., 2020), and may limit engagement in the form of CTRs. Although we analyze behavior on a news site after a social referral, the experience of having recently been on social media may affect subsequent experiences. In line with a conditional framework of motivated news exposure, social referrals should yield fewer clicks to more news.

Active news encounters, such as when people visit a site via a search engine, are anticipated to influence site behavior differently. Information seeking varies depending on people’s goals (e.g., Winter, Metzger, & Flanagin, 2016) and though not a sufficient condition, user motivation also affects attention and processing (Weiland & Kleinen-von Königslöw, 2020). When people have a goal-directed surveillance motivation, they elaborate on the news more and subsequently learn more (Eveland, Shah, & Kwak, 2003). Actively searching for information via search engines should correlate with more goal-based, motivated information seeking and the retrieval of goal-relevant search results (Matthes et al., 2020), both of which should increase engagement and the probability of clicking on links to more news.

Direct engagement with a news homepage may involve active news seeking for some, such as those going to the homepage for breaking news, and more passive use for others, such as those with the homepage as their browser start screen. Users who go directly to news sites exhibit a wide range of engagement in terms of visits per month and time spent on site (Mitchell, Jurkowitz, & Olmstead, 2014); this suggests that users have diverse motivations for directly seeking news homepages. Encounters stemming from news homepages should yield clicking behaviors somewhere in between search and social, leading us to the following hypothesis:

H1: Search referrals will be more likely to click on more news than news homepage referrals, and news homepage referrals will be more likely to click than social referrals.

Device used
The device used (mobile or PC) should influence the probability of clicking to access more news. Here, the affordances and features of devices affect how much effort people will expend to seek and/or process information. The features that make mobile phones portable, affordable, and widely used—smaller screens and wireless connections—constrain the size and speed of information delivery, curbing motivations for complex information seeking. Mobile browsing is a surface-level experience compared to PCs; information structure and screen size significantly affect the navigation behavior of mobile users (Napoli & Obar, 2014).
The affordances and features of mobile devices also reduce cognitive (i.e., attentional) and behavioral (i.e., link-related) forms of engagement (Vorderer et al., 2017). People are less attentive to news on mobile devices compared to PCs (Nelson & Lei, 2018). Web traffic data show that desktop-based time spent on major news sites (on a per visitor basis) is nearly double that of smartphone visits (Dunaway, Searles, Sui, & Paul, 2018). Mobile users are less likely to notice links or to look at links as often or for as long as PC users. These attentional limits are attributed to effortful cognitive processing required by information from smaller screens and mobile users’ unwillingness to dedicate the required cognitive energy (Dunaway et al., 2018). Differences between these manners of access may also reflect different digital skills, which mediate behavioral indicators of engagement (Correa, Pavez, & Contreras, 2020). Mobile devices impose barriers to Internet use for information-seeking, especially among those with low digital skills and literacy (Napoli & Obar, 2014). Smartphone-size screens lead to more reading fatigue relative to computer screens (Hsieh, Kuo, & Lin, 2016), and larger screens are positively correlated with ease-of-use (Kim & Sundar, 2016), suggesting that news consumption via mobile should be less in-depth than via PC, yielding a lower probability of clicking for more news.

H2: Those accessing news via a PC will be more likely to click on a link to access another news article than those accessing news via a mobile device.

Affordances and motivations from the combination of referral site and device features can shape responses to digital news. Although the affordances of social media accessed via mobile provide opportunities for cognitive performance and social interaction, they can also lead to information overload (Matthes et al., 2020; Vorderer et al., 2017). Mobile devices and social media referrals each yield less substantive engagement. In combination, people may be especially unlikely to engage with news. Building on this rationale, our analysis strategy looks at the various combinations of the device used and referral site separately to compare effects of the experimental manipulations described below.

Characteristics of linked news stories

Although referral sites and devices used may affect clicking on subsequent news articles, news organizations may be able to affect the CTR by catering to users’ motivations or the affordances of the device or platform. Newsrooms can change what content is linked, how the links are labeled, whether images are used, and where the links are placed. These factors may influence news engagement, and their effects may vary according to device used and referral site.

Popular and related news content

Two frequently used types of links on news websites are “Most Popular” and “Related” (Stroud, Scacco, & Curry, 2016). News links also can be labeled in ways that cater to different motivations, whether cognitive (e.g., “Learn More about . . .”), social (e.g., “What People are Reading”), or generic (e.g., “Related Stories”). Our two theories provide limited rationale for directional main effects hypotheses; nonetheless, these characteristics may affect the probability that people click to read more news. We ask:

RQ1: Are news site users more likely to click on links to Popular or Related content?
RQ2: Are news site users more likely to click on links with generic, cognitive, or social labels?
Engagement with links is contingent on whether the links are consistent with user motivations and device and platform affordances. Winter et al. (2016) show that different motivations influence information seeking; participants primed with a social motivation (e.g., to make a positive impression on others) were more likely to click on recommended articles than others primed with a different motivation (e.g., to justify their opinion). Those with social motivations are drawn to information other people are consuming (Messing & Westwood, 2014).

Here, social, search, and homepage referrals should reflect different motivations for news exposure. Social media users often list social motivations for site use. Socializing and self-status seeking are commonly named reasons for participating in Facebook Groups (Park, Kee, & Valenzuela, 2009). Quan-Haase and Young (2010) identify feeling “involved with what’s going on with other people” (p. 356) as a common motive for using Facebook—the platform on which we focus. Settle (2018) chronicles numerous ways in which the affordances of Facebook are designed to facilitate social interaction. Search engines, on the contrary, are typically used to find specific information; information exposure through search is based on retrieval rather than visibility and serendipity (Flaxman, Goel, & Rao, 2016). Accessing news via news homepages requires an intentionality in selecting a particular news site but click behaviors should be less tethered to a particular topic compared to someone using a search engine to find information.

Motivations for those referred from search, social, or news homepages should affect clicks depending on the type of content linked and how links are labeled. Related content should be more appealing to pur- posive news seekers (i.e., search referrals) while Popular content should be more appealing to those referred by social media. Those accessing news via a homepage are predicted to fall in between. In addition to the content of the links, the way that the links are labeled should matter. Link labels catering to motivations may enhance the probability of clicks. Links labeled in line with a social motivation (“What People Are Reading Now”), for instance, may make those coming from social more likely to click, whereas links labeled in line with a cognitive motivation (e.g., “Learn More from Similar Stories”) may prompt those coming from search to click over those with generic labels (e.g., “Related Stories”). We propose:

H3: Social referrals will be more likely to click Popular content; search referrals will be more likely to click Related content; and homepage users will fall in between.
H4: Social referrals will be more likely to click Social labels; search referrals will be more likely to click Cognitive labels; and homepage users will fall in between.

Past research is less clear on how the presentation of news links interacts with the device used. If Popular content caters to those engaged in less effortful processing, then Popular links and labels may yield more clicks among mobile users than Related links and labels. Absent strong theoretical guidance, we pose the following research questions:

RQ3: Does the device used to access a news site influence whether users click on Related versus Popular links?
RQ4: Does the device used to access a news site influence whether users click on links with Cognitive, Social, or Generic labels?

Images and placement
Newsrooms can also determine whether links contain images and where they are placed on the page. Images are more readily processed and require less cognitive engagement than text (e.g., Grabe & Bucy, 2009; Townsend & Kahn, 2013). Given CTRs are higher for images than text (Trilling et al., 2017), we pose a confirmatory hypothesis:
H5: Links with images will earn more clicks relative to those without.

The affordances of mobile devices and PCs suggest that the effects of images may vary. For mobile device users interested in conserving cognitive energy, images may increase mobile news engagement. Isomursu et al. (2007) note that on mobile, “passive forms of content consumption, such as sound, often work better in this kind of situation because they take up less cognitive energy” (p. 262–263). Conversely, images may have less impact for those using a PC due to the greater amount of time spent and more immersive nature of the desktop experience (e.g., Dunaway et al., 2018; Kim & Sundar 2016). We hypothesize:

H6: Mobile users will be more likely to click on links accompanied by images than those without, whereas the presence of images will matter less for PC users.

It is also possible that the effects of images on clicks will depend on the referral site. For instance, those coming from social media, a more visual medium, may be more responsive to images than those coming from search. Absent strong empirical or theoretical guidance, we ask:

RQ5: Does referral site influence whether users click on links with images or without?

The positioning of news links may also influence click-through behavior. How links are structured on a page influences how people interact with them (e.g., Chu, Paul, & Ruel, 2009; Kammerer & Gerjets, 2014), although it is not clear whether people will engage differently with news links positioned at the end or in the middle of news pages as a main effect. We ask:

RQ6: Does the site which refers users to a news site influence whether users click on links in the middle or at the end of an article?

Based on the conditional framework of motivated news exposure, we have predictions about how the positioning of links will matter depending on the device people use. Given the persistent finding that people spend less time with news on mobile devices and engage in more skimming behavior (Napoli & Obar, 2014), we anticipate that links in the middle of an article will increase the probability of clicking to another article for mobile device users relative to those using a PC. We anticipate those accessing news via PCs will engage in more purposive reading of full articles than mobile users, who might stop midway through.

H7: Mobile users will be more likely to click on links appearing at the middle of the article; PC users will be more likely to click on links appearing at the end of the article.

We pose a final research question asking whether the referral site affects the relationship between placement on the page and clicking on news links:

RQ7: Does the referral site influence whether users click on links in the middle or at the end of news articles?

Method

Using a field experiment launched in partnership with Graham Media Group, a U.S.-based media company, this study explores how referral site and device affect the probability of clicking a link to more news content. Across Graham Media’s seven local broadcast station news sites, we examined four practices, yielding a 2 (content type: Related or Popular) × 3 (link label: generic vs. cognitive vs. social) × 2
experiment. Upon arrival to a story, site visitors were randomly assigned into conditions varying link content, labels, layout, and placement, and their click-through behavior was recorded. The local news sites are in large to mid-size markets and cover a cross-section of the southern, Midwestern, and eastern United States. Each site publishes news content for its geographic area including landing pages such as News, Sports, Weather, and Traffic. The sites collected data for all 4.5 million site visits from 22 to 28 March 2018. We removed duplicate visits from the same users, resulting in 1,799,993 observations. We also removed users accessing news from a referral site outside of search, social, or news homepages \((n = 465,828)\) and those accessing the site from a device other than mobile or PC \((n = 291)\) resulting in 1,248,239 observations for analysis. The study received Institutional Review Board approval on 15 March 2018.

Measures

Dependent variable
Clicking on news is our dichotomous dependent variable indicating whether a user clicked on a news link in an article. Overall, links were clicked 0.98% of the time.

Treatment variables
We manipulated four variables. The first independent variable, content type, varied whether users saw links to Related or Popular content. Links were to content either (a) related to the article users were reading or (b) being accessed by many visitors to the site (or trending) at the time of exposure. Second, we manipulated the label used to describe the links. Labels were generic, cognitive, or social. Label variations differed according to the type of links displayed. Popular content could be labeled generically (“Popular Content”), in ways cuing cognitive motivations (“Learn More from Trending Stories”), or in ways cuing social motivations (“What People are Reading Now”). The same was true for Related Content, where links could be labeled generically (“Related Content”), cuing cognitive motivations (“Learn More from Similar Stories”), or cuing social motivations (“What Else People Can Read on This Topic”). Third, the links varied by layout. Half displayed images and text; half displayed only text. Finally, link placement varied with links appearing in the middle or at the end of an article.

Referral sites
We recorded the referral site from which users came to the news site, which was coded as search, social, or homepage. Search consisted of those coming from Google. Social consisted of users coming to the site from Facebook. The homepage category consisted of users coming from the main landing page (e.g., site-.com) or sublanding pages (e.g., site.com/news) for the seven local news sites. The majority of users came from news site homepages \((n = 771,740)\), followed by social media \((n = 442,674)\) and search \((n = 33,825)\).

Device used
We examined effects associated with the device people used. In our dataset, and consistent with previous work (Dunaway et al., 2018), more users came from mobile devices \((n = 861,233)\) than from PCs \((n = 386,579)\). Consistent with the same work, we combine mobile \((n = 681,717)\) and tablet \((n = 179,516)\) users.

Control variables
The following controls were included in each model: number of paragraphs per article \((M = 14.76, SD = 16.11, Min = 1, Max = 275)\), number of links displayed \((M = 3.47, SD = 1.27, Min = 1, Max =\)
5), news site, and day. Controls for paragraphs were included because we anticipate that people are less likely to click on links in longer articles. For each article, there were between one and five headlines displayed in the link section depending on the availability of Related articles. The code used to deliver the treatments showed users the same number of Popular articles as the number of available Related articles for any given article. As data were collected across 7 days and seven news station websites, we also controlled for station and date, to account for possible differences by market and day.

Analysis strategy

We used logistic regression analyses to determine which variables affected individuals’ propensity to click on a link. We first ran an overall model. Then, following recommendations from Gerber and Green (2012) for field experiments where randomization occurs within different blocks, we also ran the analysis separately for each device and referral site combination. In each model, we include fixed effects for station and day. We follow Mize, Doan, and Long (2019) to compare effects across models.

Results

The results, as shown in Table 1, provide support for H1 and H2. Compared to those coming from search, social referrals are significantly less likely to click on a link ($B = -0.40; SE = 0.05; p < .001$), as are those coming from homepages ($B = -0.30, SE = 0.05, p < .001$). Testing the model with homepage as the reference group (not shown in Table 1) supports our expectation that those coming from social are less likely than those coming from homepages to click on a link to news ($B = -0.10; SE = 0.02; p < .001$). Results also provide support for H2; users accessing news via mobile device ($B = -0.34, SE = 0.02, p < .001$) were significantly less likely to click on a link than users accessing news via PC.

Popular and related news content

RQ1 asked whether users would be more likely to click on Popular or Related content (see Table 1). As a main effect, users were more likely to click on Related content ($B = 0.08, SE = 0.02, p < .001$). RQ2 asked whether there were differences in people’s propensity to click on news links depending on how the links were labeled. Those seeing the Generic label were more likely to click on a link than those who saw a Cognitive label ($B = 0.05, SE = 0.02, p = .015$). Those seeing a Social label did not differ in their clicking behavior relative to the other labels.

H3 predicted that those accessing news from search would be more likely to click on Related content, whereas individuals accessing news via social would be more likely to click on Popular content, with those accessing news from a homepage falling in between. The results are depicted in Figure 1 (accompanying models for each device and referral site combination can be found in Online Appendix). For Google referrals, Related links outperformed Popular links for those accessing the page from a PC ($B = 0.40, SE = 0.14, p = .005$), but not for those using a mobile device. For Facebook referrals, the type of link did not matter, although for those using a mobile device, Popular content increased the likelihood of a click, but the effect fell just short of reaching statistical significance ($B = -0.06, SE = 0.03, p = .056$). Those using a PC and referred by a homepage were more likely to click on Related links ($B = 0.26, SE = 0.03, p < .001$). Across models, social mobile users were significantly less likely to click on Related (vs. Popular) links than those coming from search and homepage PC users. Social PC users were also significantly less likely than search PC users to click on Related links. These results provide partial support for H3.
RQ3 asked whether clicking Related versus Popular links would vary based on device. For mobile site visitors, the type of link did not matter. For those accessing the site via PCs and coming from either a search engine ($B = 0.40, SE = 0.14, p = .005$) or a news homepage ($B = 0.26, SE = 0.03, p < .001$), however, Related links outperformed Popular links. Only for news homepages were the effect of link content greater for those using a PC than a mobile device.

### Table 1 Logistic Regression Analyses of Clicking on News Links

|                          | B     | SE   | OR    | 95% CI       |
|--------------------------|-------|------|-------|--------------|
| Intercept                | -4.54*** | 0.07 | 0.01  | (-4.67, -4.40) |
| Facebook (vs. Google)    | -0.40*** | 0.05 | 0.67  | (-0.50, -0.30) |
| Homepage (vs. Google)    | -0.30*** | 0.05 | 0.74  | (-0.40, -0.20) |
| Mobile (vs. desktop)     | -0.34*** | 0.02 | 0.71  | (-0.39, -0.30) |
| Related (vs. popular)    | 0.08***  | 0.02 | 1.08  | (0.05, 0.12)  |
| Generic label (vs. cognitive label) | 0.05*  | 0.02 | 1.06  | (0.01, 0.10)  |
| Social label (vs. cognitive label) | 0.01  | 0.02 | 1.01  | (-0.03, 0.06) |
| Text-only (vs. text + image) | -0.46*** | 0.02 | 0.63  | (-0.43, -0.37) |
| Middle (vs. end)         | -0.41*** | 0.02 | 0.67  | (-0.37, -0.31) |
| Site 1 (vs. Site 7)      | 0.42***  | 0.03 | 1.52  | (0.36, 0.47)  |
| Site 2 (vs. Site 7)      | 0.23***  | 0.03 | 1.26  | (0.16, 0.30)  |
| Site 3 (vs. Site 7)      | 0.20***  | 0.03 | 1.22  | (0.13, 0.26)  |
| Site 4 (vs. Site 7)      | -0.01    | 0.05 | 0.99  | (-0.12, 0.09) |
| Site 5 (vs. Site 7)      | 0.08**   | 0.03 | 1.09  | (0.02, 0.14)  |
| Site 6 (vs. Site 7)      | 0.28***  | 0.08 | 1.32  | (0.11, 0.43)  |
| Number of links displayed| 0.27***  | 0.01 | 1.31  | (0.25, 0.29)  |
| Paragraphs per article   | -0.02*** | 0.00 | 0.98  | (-0.03, -0.02) |
| Tuesday (vs. Monday)     | -0.09*   | 0.04 | 0.92  | (-0.16, -0.02) |
| Wednesday (vs. Monday)   | -0.08*   | 0.04 | 0.92  | (-0.15, -0.01) |
| Thursday (vs. Monday)    | -0.11**  | 0.04 | 0.90  | (-0.18, -0.04) |
| Friday (vs. Monday)      | -0.11**  | 0.04 | 0.90  | (-0.18, -0.03) |
| Saturday (vs. Monday)    | -0.11**  | 0.04 | 0.90  | (-0.18, -0.03) |
| Sunday (vs. Monday)      | 0.02     | 0.04 | 1.02  | (-0.06, 0.09) |
| Nagelkerke $R^2$         | 0.03     |      |       |              |
| $n$                      | 1,248,239 |      |       |              |

*Notes: We also examined interactions among the experimental treatments, device, and referral site. A model with several two-way interactions best fitted the data. Nearly all significant interactions involved either the device or referral site and, based on the recommendations from Gerber and Green (2012), we present these results separately in Table A2. The other significant interactions (Text-only × Middle and Text-only × Related) did not substantively change our conclusions. We also inspected the average marginal effects across the main and interaction models; they were similar in terms of the magnitude and direction of the effects.

* $p < .05$, ** $p < .01$, *** $p < .001$. 

RQ3 asked whether clicking Related versus Popular links would vary based on device. For mobile site visitors, the type of link did not matter. For those accessing the site via PCs and coming from either a search engine ($B = 0.40, SE = 0.14, p = .005$) or a news homepage ($B = 0.26, SE = 0.03, p < .001$), however, Related links outperformed Popular links. Only for news homepages were the effect of link content greater for those using a PC than a mobile device.
H4 predicted that Cognitive labels would increase the likelihood of a click among those referred from search and Social labels would increase the likelihood of a click among those referred from social with those coming from a news homepage falling between. As shown in Figure 2, there is little support for these predictions. For those using a mobile device and referred to news from Google, Social labels reduce the likelihood of a click relative to Cognitive labels ($B = -0.33, SE = 0.16, p = .042$). For those using a PC and referred to news from Google, Generic labels ($B = 0.36, SE = 0.18, p = .044$) and Social labels ($B = 0.47, SE = 0.18, p = .008$) perform better than Cognitive labels. Finally, for mobile users referred to the site from Facebook, the Generic label outperforms the Social label ($B = 0.10, SE = 0.04, p = .014$). The pattern does not support H4. Also answering RQ4, there does not appear to be a systematic pattern based on whether people accessed the site via a mobile device or PC.

**Images and placement**

Results supported H5, which predicted that links with images would generate more clicks. Text-based links yielded fewer clicks than did image links ($B = -0.46, SE = 0.02, p < .001$). H6 proposed that the presence of images would matter more for those accessing the site on mobile devices compared to PCs. The results are shown in Figure 3. For search and homepage referrals, there were no differences across mobile and PC devices on the effect of images. For social referrals, the presence of images mattered significantly more for those on mobile devices than for those on PCs. Results offer only modest support to H6.

RQ5 asked whether there were differences by referral site in terms of whether the presence of images influenced the probability of clicking on a link. Here, there are more systematic differences, as
shown in Figure 3. Images mattered more for those coming from Google than for those coming from Facebook or news homepages. Images mattered less to those coming from a homepage than those coming from Google on a mobile device, but a similar amount compared to those coming from Facebook on a PC.

Answering RQ6 (Table 1), links at the end of the article garnered more clicks than did those in the middle \((B = -0.46, SE = 0.02, p < .001)\). H7 proposed that mobile users would be more likely to click on links in the middle of articles where PC users would be more likely to click on links at the end of articles. Across nearly all combinations of referral site and device, placing links at the end of the article yielded a greater chance of a click than placing the links in the middle of the article (Figure 4). The only exception was those accessing the site from social on PCs, where the placement of links did not affect the likelihood of clicking. Further, there are no significant differences across the device and referral site combinations. This offers no support for H7 and answers RQ7, which asked about differences by referral site.

Summarizing the findings, several patterns are clear. Across nearly all referral site and device combinations, links accompanied by images appearing at the end of the article yielded the highest CTR. The only exception was those using a PC and accessing news via Facebook, where the treatments were not significant. Among those accessing the site from Google, clicks increased when Cognitive labels were used for those on a mobile device and Social labels increased clicks for those on a PC. Among those accessing the site from Facebook, clicks increased when Generic labels were used for those on a mobile device. Finally, Related links, as opposed to Popular links, increased the

**Figure 2** Labeling of links by referral site and device.
*Note:* Each combination of referral site and device has three corresponding average marginal effects.
probability of a click for those using a PC and accessing the news site from either Google or a news homepage. Looking across all six referral site and device combinations, the experimental combination yielding the lowest CTR ranged from predicted probabilities of 0.003 to 0.005. The lowest was for those using a mobile device, referred by a homepage, and seeing Related links in the middle of the article, unaccompanied by images, and displayed with a Cognitive label. The experimental combination yielding the highest CTR ranged from predicted probabilities of 0.01 to 0.02. The highest CTR was observed for those using a PC with a search referral, seeing Related links at the end of the page accompanied by images and labeled with a Social label.

**Discussion**

The conditional framework of motivated news exposure suggests that some routes to news are more purposeful and active whereas others are more incidental and passive; and these routes are shaped by the affordances of the platforms and devices people use to access news. Consistent with this framework, we find that users accessing news via a mobile device or referred to news from social media are less likely to click on links to additional news compared to those accessing news via PC or referred to news from search or a news homepage. If the increasing popularity of social referrals and mobile devices means that people engage with news less, this is problematic given the civic benefits of news exposure (de Vreese & Boomgaarden, 2006). We caution that the research is supportive of this account, but not conclusive. Two nonmutually exclusive possibilities arise: one where people choose pathways
to news and devices based on their preferences and another where pathways and devices dictate behavior.

First, the array of options for accessing news may allow people to sort into pre-existing news engagement patterns. There may have always been people who incidentally encountered news, skimmed content, and engaged based on social motivations, and others who purposefully sought news, immersed themselves in content, and engaged based on cognitive motivations. The additions of search and social referrals and mobile devices may simply allow people to sort into exposure patterns that match their interests. Users preferring brief or incidental news encounters may gravitate toward mobile devices and social media, whereas those preferring more in-depth and purposeful news encounters may gravitate toward PCs and search/homepage access. This would mean that there are not aggregate changes in news interactions, but that the media environment allows people to opt into news in ways that match their pre-existing motivations.

An alternative account that may operate simultaneously is that the pathways to news change how people interact with news. The same person may behave differently depending on the device used and the referral site. If this is the case, aggregate changes in where people go for news could mean real change in how people interact with news. If people are increasingly accessing news via social media and mobile devices, we would anticipate less substantive interaction with news over time. Distinguishing between these two accounts requires further research. Even with our large dataset, there were too few cases of people who accessed news via both mobile and PC (one click and 190 user visits) or who accessed news via different referral sites (five clicks and 516 user visits) to allow us to

Figure 4 Placement of links in the middle (vs. end) of articles by referral site and device. Note: The models on which the figures are based can be found in Online Appendix.
examine within-person differences in news engagement that would shed light on the effects of newer pathways to news.

Although some newer paths to news, such as mobile devices and social referrals, correspond with fewer clicks, strategies can be implemented to increase news engagement. Our experiment provides evidence that how links are presented affects how people engage with news. Consistent with the conditional framework of motivated news exposure, Related links outperformed Popular links for those accessing news via PC and via search or site homepages. Although only marginally significant, Popular links outperformed Related links for those accessing news via social media on a mobile device. This suggests there are meaningful distinctions between different routes to news that manifest themselves in news site behaviors.

We also find that the addition of images to news links increases clicks. For social referrals to news, links with images increase clicks for mobile users more than PC users. Additionally, images increased clicks more for those coming from search than for those coming from social media or news homepages. We theorized that the ease with which people process images (e.g., Grabe & Bucy, 2009; Townsend & Kahn, 2013) would mean that links accompanied by images would cater more toward those engaged in less effortful, more incidental news encounters. These findings offer partial support for that expectation for device used, but not for referral sites. More research is needed to understand the larger effects for search referrals.

For link placement, links appearing at the end of articles yielded more clicks than links in the middle of articles in all instances except among those accessing news via a PC and social media, for whom the link placement did not affect clicks. Perhaps users have come to expect links at the end of articles such that when their information needs are met or their attention runs low, they can scroll to the end of articles where site design norms would dictate more information (in the form of links) should be waiting. Although we hypothesized these variations would appeal differently to people depending on device and referral site, it is helpful to learn that some presentations may be generally effective across varying devices and pathways to news.

The final manipulation, how the links were labeled, did not vary systematically based on the device used or the referral site. In the overall model, generically labeled links garnered more clicks than link labels appealing to cognitive motivations. Perhaps the quick decision-making that happens when people decide whether to continue to more news requires simpler labels. When looking across devices and pathways, the results did not line up with expectations. For search referrals, mobile users clicked more when seeing Cognitive (vs. Social) labels and PC users clicked more when seeing Generic and Social (vs. Cognitive) labels. For social referrals, mobile users clicked more when seeing Generic (vs. Social) labels. These patterns require further exploration and may coincide with people’s digital news literacy. For instance, those using mobile and search may have greater literacy such that cognitive labels attract greater attention. Those using PCs, or coming from social on mobile, may have less digital or news literacy skills.

As several of the link manipulations did not yield support for the hypotheses, it may be tempting to dismiss the conditional framework of motivated news exposure. We do not believe that this is the correct path forward. Past research has found evidence that both motivations (Lang et al., 2013) and affordances (Evans, Pearce, Vitak, & Treem, 2017) can affect engagement. Further, we found evidence that both pathways and devices affected clicks in anticipated ways, and that some manipulations behaved as anticipated. We believe that the mixed results indicate our field’s limited understanding of how to create conditions that align people’s motivations and the affordances of their devices—a substantial opportunity for future research.
The results support the proposed conditional framework of motivated exposure in that there are differences across devices and referral sites. The amount of effort expended gathering news, a rationale for differences by device, is different from one’s motivation to consume news, an explanation for differences by referral site. Empirically, device and referral site yield similar results in some instances. Mobile devices and social referrals depress clicks relative to PCs and homepage referrals, respectively. Further, social referrals and mobile device use have lower average marginal effects for Related (vs. Popular) links in some instances. In other cases, however, social referrals and mobile use do not produce similar effects. Although nearly all device and referral type combinations yield more clicks when images are included, the effects are greater for search referrals and, at least for social referrals, higher for mobile users. Further, mobile users are indistinguishable from PC users, just as social referrals are indistinguishable from search and homepage referrals, when it comes to the positive effects of end-of-article link placement. Research should continue to distinguish between the effort expended to gather news and the purposiveness of news gathering in the same model.

With that said, we should acknowledge that the conditional framework of motivated news exposure is a simplification. We equate social media with incidental exposure and mobile use with less effortful engagement than PC use, yet this glosses over diverse patterns of engagement. Some may encounter news incidentally on search, perhaps stumbling across an interesting piece of content while searching for something else. Further, there may be instances where people purposefully search for news on social media. Oeldorf-Hirsch (2018), for instance, distinguishes between those who actively seek news and those who incidentally encounter news on social media. Interestingly, she finds little difference across these two forms of news exposure in their relationships with social media engagement (e.g., liking, replying, etc.) and cognitive elaboration on the news. These findings beg for future research to consider not only the referral site and device used, as we do here, but also people’s underlying motivations for consumption.

This discussion highlights key limitations of this work. First, although real-world field experiments with behavioral outcome measures yield strong internal and external validity, they limit what can be measured. We have no insights into people’s cognitions or motivations and infer based on past literature that mobile users expend less effort whereas those coming from social are more likely to be incidentally exposed to news. Future research should supplement these findings with study designs that allow for more insight into the process behind the effects. Second, the sites examined here are U.S.-based television stations at one point in time. The variation in clicks based on the site and day (see Table 1) could reflect differences in content or in the sites’ online audiences. Although we do not have a theoretical reason to expect it, it is possible that effects of device, referral type, and experimental treatment may vary by context.

Despite these limitations, the research makes theoretical, normative, and practical contributions. Theoretically, this study provides real-world, behavioral evidence supporting a framework drawn from theories of motivated news exposure and the affordances of communication technologies. Results show that mobile use and referrals from social sites correspond with different patterns of news engagement than PC use and homepage and search referrals. More importantly, we provide experimental evidence that people accessing news via various routes respond differently to news links designed to tap into these exposure pathways. Normatively, the potential democratic consequences of changing news patterns are noteworthy. News audiences gravitating toward social and mobile news consumption have less in-depth news engagement, which past research associates with lower levels of political knowledge and civic engagement (de Vreese & Boomgaarden, 2006). Investigating theoretically grounded ways to boost news engagement among these audiences could have desirable democratic outcomes. Practically, news organizations rely on clicks for advertising revenue. Devising
strategies to increase CTRs helps news organizations respond to changing patterns of consumption. Results here suggest that some strategies for displaying links boost click-through regardless of device or referral site including placing links at the end of articles and including images with links. Overall, clicks occur rarely, and the magnitude of the link presentation effects is small. Yet doubling the probability that a site visitor clicks on a link from 0.5% to 1.0% could have financial consequences for newsrooms when multiplied by the number of people accessing a news site each day.

Conclusion
People encounter news in increasingly diverse ways. These paths are influenced by the motivations individuals have for obtaining news as well as the features afforded to them by the media they choose to consume news. It is important to consider these paths simultaneously. Using behavioral data from local news sites, we show that different pathways to news and devices affect whether people click to more news. Further, manipulations of the links themselves—their placement, the presence of images, and the types and labels of linked content—are predictive of greater clicks depending on a person’s device and pathway to news. Findings from this study advance the theories surrounding motivated exposure to news and affordances to put forth a conditional framework of motivated news exposure, as well as provide practical insights for newsrooms aiming to increase engagement.

Acknowledgements
This project was funded through a grant from the Lenfest Institute for Journalism to the Center for Media Engagement.

Supporting information
The following supporting information is available for this article:
Table A1. Label Manipulations by Condition.
Table A2. Logistic Regression Analyses of Clicking by Referral Site and Device Used.
Additional Supporting Information may be found in the online version of this article.

Notes
1. News engagement is a broad concept, difficult to capture with any one metric. Click-throughs are sometimes associated with clicktivism but are increasingly associated with news engagement. They predict time on page and session duration, two common measures associated with attention. Click-throughs inform news professionals about how user behaviors vary by website content and design, helping them to generate more revenue (Hindman, 2015).
2. In 306,046 cases, a referral site was missing from our dataset. Although we cannot be certain why the case loss occurred, several explanations are plausible, including users accessing the site directly, users accessing the site via email, search engine web spiders accessing the pages, or the use of privacy protection tools. In 116,799 cases, the recorded referral site was a nonlanding page URL from one of the news sites. It is possible that the study was not running on some of the site pages or that a UTM tag was not recorded. The remainder of the excluded cases came from sites like Outbrain, NBC News, Drudge Report, SmartNews, and Twitter. Those accessing the site from a nonmobile, non-PC device were using television devices or gaming consoles.
3. Google accounted for 92.9% of site search traffic. Other search sites (Yahoo, Bing, and Duckduckgo) were excluded from the analyses. Although this decision makes no substantive difference in our conclusions, the conditional framework of motivated news exposure would suggest that there may be differences across search engines and our data are inadequate to test the idea.

4. Facebook accounted for 99.2% of the social site traffic. Other social platforms (Twitter, YouTube, and Reddit) were excluded from the analyses.

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