The Mechanisms of "Incidental News Consumption":

An Eye Tracking Study of News Interaction on Facebook

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Abstract

This exploratory study examines how participants incidentally consumed news on social media through an eye tracking analysis of their visual interaction with posts on Facebook. By interaction, we refer to the attention participants gave to news (measured through the time devoted to looking at the content); how they read these news items (measured through ocular movements on the screen); and the way they engaged with this content (measured through forms of participation such as liking, commenting, or sharing news). The data were triangulated through interviews with Facebook users and an analysis of the metrics of posts from Costa Rican news organizations on Facebook from 2017 to 2020. We draw on scholarship in communication studies and multimodal discourse analysis. We argue for a more nuanced approach to what study participants did when they incidentally encountered news on social media that focuses on mechanisms, that is, the specific procedures and operations that shape user interaction with news on Facebook (such as visual fixations on parts of news posts; the visual entry points through which they begin to interact with the news; the sequences that characterize how they navigate content; and the time they spend assessing various multimodal elements).

Keywords: Eye tracking measurement - Facebook - Incidental news - Latin America - News consumption - Social media

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Introduction

Consuming the news incidentally has grown in importance over the past years. Although encountering news that was not sought out purposefully has been a common practice historically, it is considered to be a defining feature of the digital age (Ahmadi & Wohn, 2018; Boczkowski, Mitchelstein, & Matassi, 2018). Consequently, researchers have devoted increasing attention to the incidental consumption of news on social media (Fletcher & Nielsen, 2018; Kligler-Vilenchik, Hermida, Valenzuela & Villi, 2020; Yadamsuren & Erdelez, 2016).

This paper supplements recent approaches to incidental consumption through an analysis of how certain users in Costa Rica consume news on social media. To this end, we implemented an exploratory eye tracking study of the interaction between a group of users with news on their Facebook News Feed. By interaction, we refer to three specific issues: the attention participants in our study gave to news (measured through the time devoted to looking at the content); how they read these news items (measured through ocular movements on the screen); and the way they engaged with this content (measured through forms of participation such as liking, commenting, or sharing news). Scholars have often recommended eye tracking as a promising method to explore incidental news consumption because it "measures selective exposure mechanisms in real time during reception [...] [and] provides more objective indicators about perceived contents because it is less susceptible to biases, such as social desirability" (Sülflow, Schäfer & Winter, 2019, p. 7) (c.f. Matthes, et al., 2020; Yadamsuren & Erdelez, 2016). We

triangulated these data through interviews with these Facebook users and an analysis of the metrics of posts from Costa Rican news organizations on Facebook from 2017 to 2020.

We combined scholarship in communication studies and multimodal discourse analysis to examine issues of incidental news consumption. This allowed us to understand not only how participants in our study made sense of the news they encountered on Facebook (and why this matters), but also how they interacted with multimodal stimuli.

We argue that incidental news "consumption" can be a problematic term to account for user interaction with content on Facebook. This is because users such as our study participants interacted in various ways with the news they encountered. By examining the specific mechanisms of these users' visual interactions with content on Facebook, we argue for a more nuanced approach to what they actually did when they incidentally encountered news on social media. By mechanisms, we mean the specific procedures and operations that shape user interaction with news on Facebook (such as visual fixations on certain parts of news posts; the visual entry points through which they begin to interact with the news; the sequences that characterize how they navigate content; and the time they spend assessing various multimodal elements, among others).

The focus on Costa Rica allows us to discuss findings from a leader in the use of the Internet in Latin America. Costa Rica typically ranks high in connectivity rates in the region. According to Latinobarómetro (2018), 77% of the Costa Rican population uses Facebook (the highest percentage in Latin America), compared to a regional average of 60%. Costa Rica also leads the use of apps typically employed for sharing news, such as WhatsApp (Latinobarómetro, 2018). News consumption online is a widespread practice in the country. The analysis of Costa

Rica also enables us to analyze news consumption issues in a part of Latin America that has not received major academic attention.

Bridging Scholarship on Incidental News Consumption and Research on Attention to Multimodal Stimuli

The incidental consumption of news is not an entirely new phenomenon. Researchers have examined incidental exposure to news in relation to print, broadcast, and digital media (Kim, Chen, & Zuñiga, 2013; Lee & Kim, 2017; Tewksbury, Weaver, & Maddex, 2001). In the case of digital media, scholars have focused on three particular issues associated with incidental consumption: the phases that characterize it, the practices that shape it, and the political consequences of this phenomenon.

Research has shown that incidental news consumption on social media is typically carried out through a set of specific *phases*. Yadamsuren and Erdelez (2016), for example, argued that it consists of seven steps: noticing, stopping, reading, capturing, sharing, returning, and wandering off. Studies generally reveal the centrality of the subject matter of the news as a trigger of user attention. This body of work has typically resulted in the production of ideal types of news consumption and online news consumers (c.f. Meijer & Kormelink, 2015).

The focus on phases has been supplemented through an assessment of the *practices* of incidental consumption. In a study conducted in Argentina, Boczkowski and colleagues (2018) showed that this form of reading the news is shaped by two groups of practical traits:

(1) strong connections between technological and content practices, "anywhere and anytime" coordinates of news consumption, derivative information routines, and increasingly mediated sociability and (2) brief and fragmentary reading patterns, re-

contextualization and loss of hierarchy of the news report, and the coexistence of

editorial, algorithmic, and social filtering. (p. 3524)

Fletcher and Nielsen (2018) also noted that those who are less interested in news tend to

experience a greater incidental exposure to this kind of content than those with higher interest.

Incidental exposure to news also increases when received through weak ties rather than strong

ties (Ahmadi & Wohn, 2018).

Another central analytic concern has been the *consequences* of incidental news

consumption (Oeldorf-Hirsch, 2018; Valeriani & Vaccari, 2016). Regarding this issue, findings

are "downright contradictory" (Kligler-Vilenchik et al., 2020, p. 2). Individuals who experience

the news incidentally consider to be well informed (Bergström & Belfrage, 2018). However, Lee

and Kim (2017) concluded that "incidental exposure to news has causal effects on learning about

public affairs [...] spending some time on actual news stories is necessary to learn sufficient

information about public affairs in order to recall it later" (p. 1013). Drawing on survey data, de

Zuñiga and colleagues (2017) similarly noted that "individuals who perceive that news will find

them tend to show lower levels of political knowledge" (pp. 115-116).

Most research on incidental news consumption has relied on self-reported data, primarily

from surveys or interviews with social media users. This has made it possible to better

understand how reflexive individuals make sense of the information environment they inhabit.

However, despite their many contributions, these studies tend to take for granted the descriptions

given by users of what catches their attention on social media. To deal with this issue, we studied

incidental consumption issues through an eye tracking analysis of how a group of users in Costa

Rica visually interacted with news on Facebook.

Multimodal discourse analysis provides a useful approach to better understand how users interact with the news. Studying news and publications on Facebook as multimodal stimuli invites a thorough consideration of semiotic resources and modes (Bateman, Wildfeuer, & Hiipala, 2017; Kress, 2010; Kress & van Leeuwen, 2001). This allows understanding that processing texts is achieved through the attribution of meaning to their distinct components and their interrelation (Schnotz & Bannert, 2003; Schnotz & Horz, 2010).

The eye-mind hypothesis posits that, when a word or image is looked at, the mind is processing what they eye is watching (Just & Carpenter, 1980). Eye tracking methods thus allow observing phenomena such as fixations (a marker of attention when the eye stops to look at something such as an image or word) and saccades (paths or ocular movements between fixations) (King, Bol, Cummins, & John, 2019). In this way, it becomes possible to better identify the mechanisms that people employ to process and interact with texts (e.g., whether texts are actually read or not, what components catch the attention of people, or what kind of relationships are established between components).

Few scholars have used eye tracking techniques to study interaction with news on social media. Bode, Vraga, and Troller-Renfree (2017) exposed users to a simulated Facebook News Feed. They concluded that users pay differentiated attention to various formats (such as links, photos, and texts) and to distinct kinds of content (such as politics and social issues). In their experiment, links and images received more attention than texts, and users skipped over political content faster than posts on other issues. In a similar manner, Sülflow and colleagues (2019) designed a laboratory experiment to analyze attitude consistency, source credibility, and attention to and engagement with the news. They showed that users tended to select content that

reinforced their attitudes and that they "spend more time looking at news posts from sources with high credibility compared with sources with low credibility" (Sülflow et al., 2019, p. 184).

Eye tracking studies of both digital and print advertising have focused, for the most part, on issues of composition and combinations of texts and images (Grigaliūnaitė, Pilelienė, & Bakanauskas, 2016; Zantides & Kourdis, 2014). Much more research has been devoted to multimodal stimuli from sources other than digital media (Kurzhals, Fisher, Burch, & Weiskopf, 2016). Studies have found that verbal cues tend to receive more attention than images on billboards (Grigaliūnaitė et al., 2016; Zantides & Kourdis, 2014), newspapers (Holsanova, Rahm, & Holmqvist, 2006), stories in online newspapers (Zambarbieri, Carniglia, & Robino, 2008), or when simple images and simple verbal texts are combined (Arndt, Schüler, & Scheiter, 2015). All these studies suggest that texts receive more visual fixations, regardless of the size, color, place, and nature of images. However, Holsanova and colleagues (2006) indicate that the primacy of images in media such as newspapers is explained by the fact that these are usually a visual entry point to navigate content.

Informed by the scholarship discussed previously, in this paper we provide empirical answers to the following research questions:

- How did study participants encounter news on Facebook?

- How many news items did they encounter?

- For how long did participants visually interact with the news?

- How did participants visually interact with the news they encountered?

- What news themes and stories did participants pay attention to?

To this end, we implemented the mixed methods research design described next.

Research Design

We began by conducting an exploratory eye tracking study with 41 Facebook users. Rather than seeking to obtain generalizable findings, the purpose of this exploratory research was to gain new insights into the mechanisms of incidental news consumption, a largely unexplored issue in the literature. Previous exploratory studies using this method have relied on data from a comparable number of individuals (or even fewer) (King et al., 2019). Participants were recruited through a call for participation that circulated on social media platforms associated with the University of Costa Rica. Interested individuals filled out an online questionnaire. Only participants who had a Facebook account were selected. The final sample included a larger representation of women (62%) than men (38%). Participants were either college students at the University of Costa Rica or had recently graduated. They studied majors such as Architecture, Biology, Business, Engineering, English, Communication Studies, Computer Science, Geography, Law, Microbiology, Nursing, Pharmacy, Philology, Physics, Political Science, and Sociology, among others. The average age of participants was 21 years old (ranging from 18 to 33). Participants came primarily from urban backgrounds.

Participants sat in front of a 21-inch screen with a SMI RED500 eye-tracker, which was placed next to the screen where the stimuli were shown. Eye movements were tracked using a sampling rate of 250 Hz. A screen with instructions was shown first to each person. These instructions were also read out loud by a researcher. Calibration was then conducted for each participant. Only participants with a deviation of the x- and y-axis below 1.0° were included in the final sample. Individuals were asked to open their Facebook profile and interact with their News Feed in a natural way for five minutes without interruptions. After five minutes, the eye tracking session closed automatically. Because the first two minutes included time devoted to

logging in to Facebook accounts, this article reports findings from interactions with news during the final three minutes of the session only. This represented a total of 1,413 posts (see Table 1). The use of Facebook for short periods of time is also consistent with the nature of incidental news consumption.

Stimuli came from posts available on users' own Facebook News Feed. Participants could scroll through their News Feed for as long as they wanted or could click on any link they wished to. Eye tracking sessions were recorded upon approval. These videos were then exported and coded by members of the research team using ELAN software. To identify the number of news items that appeared on users' News Feed, we applied Nielsen's (2017) typology. First, by "news-as-impressions," we considered "decontextualized snippets of information presented via headline services, news alerts, live tickers, and a variety of new digital intermediaries including search engines, social media, and messaging apps" (Nielsen, 2017, p. 93). Second, "news-as-items" refer to typical, "self-contained, discrete articles and news stories bundled together in a newspaper, a broadcast stream, on a website, or in an app" (Nielsen, 2017, p. 93). And, finally, "news-about-relations" were considered as combinations of "elements of long-form 'contextual' or 'explanatory' forms of journalism […] with new forms of data journalism, visualization, and interactivity enabled and empowered by digital technologies" (Nielsen, 2017, p. 93).

We coded videos based on three particular issues: the time devoted to looking at different kinds of news (as an indicator of attention); patterns in ocular movements on the screen (as an indicator of how news were read); and interactions with forms of participation such as liking, commenting, or sharing news (to evaluate engagement). Figure 1 shows how posts on Facebook were operationalized to enable this coding. Drawing on previous studies, we also coded content available on users' News Feed to identify preferences for public or non-public affairs, subject

matter of news items (main topic and secondary topic; international or national issues), and framing issues (Boczkowski & Mitchelstein, 2013; de Vreese, Esser, & Hopmann, 2016).

[FIGURE 1 NEAR HERE]

We triangulated these data by interviewing participants and by scraping data on the most-liked, commented, and shared news on Facebook produced by Costa Rican news organizations. Interviews were semi-structured and took place immediately after the eye tracking session (in May 2018). Conversations with participants lasted for an average of 20 minutes. We asked them about their typical news consumption practices (online and offline) and asked them to discuss specific examples of news posts that appeared on their Facebook News Feed during the eye tracking sessions. Interviews were conducted in Spanish. (All translations are our own.) We analyzed the interviews in a grounded theory manner (Corbin & Strauss, 2015). We conducted three rounds of coding to identify, respectively, main patterns in the data, relationships between these patterns, and theoretical categories to account for these relationships. Quotes from interviews cited in this article reflect the main patterns and categories we identified.

Publications from the ten Costa Rican news organizations with most followers on Facebook were collected through an app from 2017 to 2020 (Siles, 2020). The top 10% of news that gathered most likes, comments, and shares was coded through a content analysis to identify longitudinal patterns. Data from interviews and social media mining helped to triangulate and add nuance to findings derived from the eye tracking sessions. Evidence from these different methods is thus integrated throughout the next section to provide a clearer understanding of patterns in the data.

Interacting with News on Facebook

How Did Participants Encounter News on Facebook?

Participants in our exploratory study recognized the centrality of Facebook in how they consume the news. As an interviewee put it, "News is what I focus on Facebook, that's what I use Facebook for." Interviewees indicated that they follow at least one news outlet on Facebook, usually Costa Rican news organizations (print, pure players, and television news outlets). They also claimed to follow international news organizations (such as CNN or BBC). These users argued that news matter to them for both personal (e.g., they learned about their social importance at some point in their lives) or professional reasons (e.g., news allow them to be updated in their fields of work).

Other study participants were open and straightforward about their relative disinterest in the news (most notably about public affairs) or in following mainstream media outlets on Facebook. These users indicated being primarily interested in what their friends and contacts post, in non-news items (such as memes), or in non-public affair issues (such as soccer and entertainment).

During the interviews, participants described practices that are consistent with the incidental consumption of news. Both those interested and uninterested in the news admitted to typically encountering them without necessarily looking for them. As a person put it: "[I just] receive them." According to another interviewee, "News show up when I scroll down." Participants indicated to have installed the Facebook app on their cellphones and said they check their News Feed constantly and quickly throughout the day. A person noted, "I check [Facebook] many times a day but for brief periods. It is very hard for me to stay an hour watching content. I'll spend ten minutes now and I'll check it again in fifteen minutes or so." Almost any occasion seems appropriate to check the Facebook app. As one user put it, "[I check it] when I get

bored… through small lapses [that add up to] two hours a day." Users also indicated receiving unsolicited news content from others through messaging apps such as WhatsApp.

How Many News Items Did Participants Encounter?

To assess how participants interacted with the content they encountered on Facebook, we began by identifying the number of news items that appeared on their News Feed during the eye tracking sessions. As Table 1 shows, 9% of posts (n = 127) displayed on users' News Feed could be considered news and 91% were coded as non-news, following Nielsen's (2017) definition. Leaving out of the analysis the two individuals who were exposed to the highest number of news, this percentage of news on Facebook would drop to almost 5% (see Figure 2).

[TABLE 1 NEAR HERE]

As Table 1 shows, study participants encountered an average of three news items on the News Feed during the study and the median of news exposure was one news item. 78% of users in the sample were exposed to less than three news items. Less than half of participants (39%) did not encounter a single news post on their Facebook feed. Only three people were exposed to more than ten news items. As Figure 2 reveals, one of them was exposed to 15 news posts and another one to 23. The participant with most news content on her feed encountered 29 news items during the duration of the study.

[FIGURE 2 NEAR HERE]

For How Long Did Participants Visually Interact with the News?

Encountering news posts on Facebook does not mean that people pay attention to them. To make sense of this difference, we analyzed how participants visually interacted with news on

their Facebook News Feed. Building on extant literature, we considered as a visual fixation each time a user looked exclusively at a specific content for at least 500 milliseconds (Liversedge, Gilchrist, & Everling, 2011) (see Table 2). This has been proved enough to recognize images and words, but it does not necessarily mean that the person read or understood them.

[TABLE 2 NEAR HERE]

Table 2 illustrates the time that study participants spent interacting with news items. Participants paid attention to most news items (that is, looked at them for more than 500 milliseconds). They looked at 70% of the news they encountered for less than five seconds. To better understand what this finding means, we compared time of attention to news with the most common kind of non-news content found in our study: memes. In this way, we sought to bring specificity to this comparison, given that the category of "non-news" items integrates a wide variety of content types. The KS Test indicates that there was less than a 2% chance the two samples of content (news and memes) came from the same distribution. We found that 78% of news and 75% of memes were observed under 6 seconds. There was no major difference in the temporal attention that both news and memes received, χ^2 (1, N = 331) = 0.43, p > .05.

During the interviews, participants provided various reasons to account for this form of interaction with the news. They emphasized contextual reasons. According to an interviewee, "I have a bunch of components around me that don't let me just watch a [news site] or Facebook." This explanation suggests that news can't receive all the attention because users have to conduct other activities simultaneously. Others explained their practices as a reaction to the nature or the affordances of platforms such as Facebook. As one person put it, "There are so many things [on the screen] that I just have to go through them quickly." In this account, the abundance of information prevents users from devoting more time to specific content items.

How Did Participants Visually Interact with the News They Encountered?

We also analyzed eye movements in order to determine reading sequences when participants encountered news on their Facebook News Feed. Specifically, we examined the order of eye fixations when participants looked at elements such as the news copy, images, headlines, source of posts (that is, the person or organization who shared the content), the text of the news post, videos, and participation features (such as likes, shares, or comments) before moving on to another post. Figure 3 presents an example of a reading sequence during the eye tracking sessions.

[FIGURE 3 NEAR HERE]

A sequence can consist of a combination of six possible elements: 1) person or organization that publishes the content; 2) image; 3) lead; 4) headline; 5) copy; and 6) participation features. Table 3 shows how many elements were included in reading sequences of participants.

[TABLE 3 NEAR HERE]

Participants examined news items on their News Feed through sequences with less than three steps. Participants did not look at every element that makes up news posts. They looked at two elements or less before moving on to another post 61% of the times they encountered news posts and looked at three elements or less 84% of the times. Participants thus processed minimal information when they incidentally encountered news on Facebook, considering the number of visual stimuli that news posts contain. Moreover, they engaged in relatively few integratory movements, that is, ocular movements through which a person attempts to relate information contained in different components of a post, considering that two elements in a sequence are

required to form one integratory movement. A typical example of this kind of movements—which combines both fixations and saccades—is returning to an element that was previously seen during a sequence. This suggests that reading or interacting with all components of a post is not necessarily relevant to understand a post or a news item.

We further examined what was the entry point (the first fixation) to look at news posts, that is, where participants started visually navigating the news they encountered. Figure 4 demonstrates the centrality of images as a visual entry point. Users looked at an image before anything else on 70% of occasions when they encountered news. Considering videos as a kind of image, iconic elements were the visual privileged entry point to interact with the news. During the interviews, participants recognized the importance of visual stimuli in their use of Facebook. Asked what typically caught her attention on Facebook, an interviewee quickly responded: "Videos and photos. In that order."

The headline of news stories was the second most frequent visual entry point when encountering news on Facebook (13%). Third was the copy that accompanied the news post (11%). Thus, verbal statements were the preferred way to assess news on Facebook 24% of the times. Yet, the difference between iconic and textual elements was significant. Verbal statements didn't account for half of the times an image was the preferred element to start assessing news on Facebook.

[FIGURE 4 NEAR HERE]

As noted previously, studies on incidental news consumption confirm the importance of trust in the source of news published on Facebook (Sülflow et al., 2019). During the interviews, participants corroborated the importance of this factor in their attention to Facebook. In a typical statement, one user noted:

It's [a matter of] trust. You feel like, "Ah! [indicating pleasure]: This person or outlet knows what I like, I will give them an opportunity." If their recommendation is good [*si la "pegaron"*] the first time and then a second time, then it's like, "Ok. I will always like it."

However, participants rarely began evaluating news based on the source of the post during the eye tracking sessions. On 11% of occasions when users encountered news posts, they looked at who shared it as a visual entry point or the following step.

Participants engaged in diverse combinations of elements when they examined news posts. There were at least 41 sequences that combined these elements differently. The most common sequence was beginning with an image and then looking at the headline, which occurred 28% of the times that users examined news posts. The other 40 element combinations were more much more episodic and did not occur more than 8% of the times each.

What News Themes and Stories Did Participants Pay Attention To?

We also analyzed what was the subject matter of the news that study participants looked at on Facebook. First, we examined attention differences to national and international news. Participants paid attention to more news stories about national issues (73%) than international affairs (27%). During the interviews, participants indicated they preferred news they felt was "closer"—as one person described it—to their lives and interests. An interviewee thus explained the range of national issues that he cared about: "National politics, cultural events, concerts, exhibitions, theater plays, dance presentations, food festivals, and everything that happens in the country."

We then identified patterns of attention to public affairs and non-public affair news, to determine whether this made a difference in how users interacted with news posts. This has been a key concern in literature on online news consumption (Boczkowski & Mitchelstein, 2013). Among the news that received some form of user attention, 51% was about public affairs and 49% was about non-public affairs. In the particular case of national news, stories about *sucesos* (crime) (20%), sports (18%), politics (15%), social issues (such as education and migration) (10%), and entertainment (8%) gathered the most attention from participants in terms of frequency. This could also be explained by the notion that users feel these issues are "closer" to their lives than typical public affairs.

The preference for news about crime, sports, and entertainment is consistent with our analysis of metrics of posts from Costa Rican news organizations on Facebook. During non-electoral periods, typically between 65% and 70% of the news published by Costa Rican news organizations on Facebook that receive likes, comments, and shares are about non-public affairs issues (Siles, Campos, & Segura, 2018; Tristán, Álvarez & Siles, 2020). As with the eye tracking sessions, news about *sucesos*, politics, and sports also received the highest levels of engagement on Facebook at the time the study was conducted. This is typical user behavior during non-electoral periods in the country (Siles, 2020; Siles, et al., 2018; Tristán & Álvarez, 2018).

As a supplement to the analysis of the subject matter of news, we also examined how much time was spent looking at specific issues and themes. We used Eta correlation to estimate whether the variance of temporal attention to the news was explained by individual participants. We found that 43% of the total variation in temporal attention to the news could be attributed to specific participants. In this sense, attention to news is different to non-news. Eta correlation

showed that 18% of the variance of temporal attention to memes is explained by specific

participants.

Table 4 shows that temporal attention to the news was relatively distributed among

various issues. *Sucesos* was the category that gathered most attention from participants in terms

of the time users spent looking at news. Twenty-five percent of users in our study spent time

interacting with this category, which also had one of the two highest medians. This result is

significant in that, unlike the average, the median is not affected by extreme cases of users who

spent more time interacting with one kind of news. In this sense, the median is arguably a more

reliable way to assess the time that participants spent watching or reading news posts (Table 4).

[TABLE 4 NEAR HERE]

Table 4 shows both the average and median time spent interacting with specific subject

matters of national news to further illustrate this distinction. Religion and LGTBIQ and gender

were the categories with the highest median (21 and 12 seconds, respectively), although

relatively few users encountered news about these topics (2 and 5 users, respectively). This

finding is somewhat inconsistent with user behavior tracked through data scraping. This might be

explained contextually. The eye tracking sessions were conducted exactly one month after the

presidential election in Costa Rica, which centered largely on the discussion of same-sex

marriage (Pignataro & Treminio, 2019). Social media was a key space for sharing opinions about

this issue for a significant segment of the public (Siles, Carazo, & Tristán, 2019, 2020). During

an interview, one user described how the context of the election shaped her attention to this kind

of news: "I was a very active user during the presidential [election], but that's not common in

me. It was really, really because of the context. I mean, if you were to see my Facebook, you'd

only find birthday messages!" We thus argue that study participants were still interested in news about these two issues one month after the election.

Science and technology had a median of 12 seconds, which is also relatively high. This could be explained by the characteristics of our user sample: they were mostly college students who agreed to participate in a scientific study. As noted above, participants were students in science and technology majors (such as Biology, Engineering, Microbiology, or Pharmacy, among others). It is expectable that news about these issues might be of professional interest to them. Some social desirability might also explain this finding. Users spent more than ten seconds interacting with a news post in only 13% of the cases they encountered. Thus, in the case of *sucesos*, only two users exceeded the average of 15 seconds watching a news post but eight of them were below this average.

Discussion

The incidental consumption of news was widespread in our sample of study participants. They tended to find news on their Facebook News Feed that they did not purposefully seek. However, there was so much variety in the ways these users visually interacted with the news that the use of the term "incidental consumption" warrants further consideration and precaution. We argue that encountering and interacting with news on Facebook is characterized by several mechanisms that help to broaden our understanding of what incidental consumption means.

To begin with, consuming news (incidentally or not) depends on encountering it. 9% of the content to which participants were incidentally exposed was news (and 5% when the two individual users who encountered the most news were left out of the sample). Much has been said about how "algorithmic gatekeepers" tend to show news that exploits the tendency of

readers to consume exclusively information with which they agree (Boczkowski et al., 2018). But these gatekeepers are central to the incidental consumption of news also because they get to partially decide how many news posts users will encounter in the first place.

Recent research has begun to show empirically how algorithms might be shaping news consumption practices (Diakopoulos, 2019). Some authors have argued that platform operators can manipulate the flow of news and information through algorithms to favor certain commercial or political interests (Napoli, 2015). As Thorson (2020) notes, "On algorithmically curated platforms like Facebook, content selection is shaped not only by user preferences and news gatekeeping processes but also by the dynamics of platforms themselves" (p. 12). By shaping how news surfaces and who gets to receive it, algorithms thus play a key role in the incidental exposure to news.

The incidental consumption of news is also characterized by differentiated patterns of visual attention. Participants in our study looked at both news and non-news items for similar periods of time. This finding is significant in that it allows understanding incidental consumption as a cognitive issue. In this way, it becomes possible to separate issues such as how people encounter and scan the news from how they actually process it (Matthes et al., 2020). Individuals typically require between 200 and 300 milliseconds to actually process individual words (Liversedge et al., 2011). Complex images require at least 300 milliseconds of processing (or more if individuals are not familiar with the issues portrayed). In light of these patterns, the incidental consumption of news on the Facebook of our participants could be associated with relatively superficial processing of multimodal stimuli. This result is also significant for the production of news. In our study, participants made decisions about which news posts (and

memes) they wanted to read in less than 6 seconds. To be sure, this finding applies only to our sample of participants and requires further investigation.

Our findings also show that, for users in our sample, the consumption of news on Facebook was not exclusively triggered by the relevance of the subject matter of the news—as most studies contend—but that was also significantly conditioned by visual stimuli. Iconic elements were the visual entry point to interact with news 79% of the times. On 28% of occasions, participants immediately look at the headline right after examining an image.

The very same notion of "consumption" can be misleading in that it evokes an image of similarity in user behavior. In many ways, it standardizes how users can interact with the news and the significance of these interactions. To speak of "incidental consumption" thus suggests that, when people encounter news they did not purposefully seek, they behave in the same way. However, participants in our study did different things when they encountered news on social media. For this reason, Mitchelstein and colleagues (2020) argue for considering incidental consumption "on a continuum, rather than as an either-or phenomenon" (p. 13). In a similar manner, our study participants engaged in differentiated reading sequences (that is, combinations of visual steps where particular elements of news posts are looked at). The only relatively common mechanism in our study was to begin examining news posts by looking at images first and then assessing the headline. But, as noted earlier, there were more than 40 different sequences that characterized interaction with the news. These reading sequences tended to incorporate either two or three steps, but usually not more than that. This provides an important supplement to research on the phases of incidental consumption reviewed earlier. By focusing on mechanisms, our research suggests that attention sequences to news on Facebook are neither linear nor follow any particular order.

By combining different methods, we sought to overcome the perils of self-reported data. Eye tracking sessions helped us identify some of the concrete mechanisms that might shape incidental news consumption. Interviews offered a means to add nuance and detail to these mechanisms. Scraping data from Facebook then provided us with an opportunity to triangulate data sources and situate findings from small groups of participants within aggregate user behavior. They also helped us place findings within longitudinal perspective.

There were several consistencies between the data gathered from these three different methods. For example, participants in eye tracking sessions paid more attention to content that tends to receive more engagement (that is, news about non-public issues, particularly *sucesos* and sports). Data collected at the aggregate level, eye tracking sessions, and interviews also revealed the significance of specific contexts (such as a presidential election) in modifying user behavior. In our results, news about LGTBIQ issues—a prominent theme in the Costa Rican 2018 election—received relatively more attention than they typically get. However, triangulating methods also made it possible to identify differences in findings from certain data collection procedures. For example, eye tracking sessions offered a way to counterbalance accounts offered by interviewees about the centrality of their trust in media outlets as a trigger of attention or the prominence of the subject matter of the news.

Conclusion

To conclude, it is important to note some of the limitations of our research. Some limitations are derived from the exploratory nature of this study. Our data came from 41 college students (or graduates) in one specific country (Costa Rica). We examined specifically three minutes of their visual interactions with content on Facebook on a desktop computer, and then

interviewed them for an average of twenty minutes. We then compared findings with scraped

data about user engagement with content on Facebook. Because of its exploratory nature, this

study sought to gain further insight into the mechanisms of incidental news consumption. We

privileged a relatively more natural setting to conduct the research (since the content came from

the real News Feed of users). Yet, the lack of experimental control limits the potential for the

generalization of our findings. Moreover, since Facebook's content changes each time a person

logs on, it is reasonable to suspect that the number of news items that participants in our study

incidentally encountered could vary.

As noted in the previous paragraph, our eye tracking sessions and interviews focused

primarily on college students. This might explain why certain subject matters received more

attention from participants than expected (e.g., science and technology). This specific population

is appropriate for this kind of studies because the phenomenon of incidental news consumption is

particularly relevant for those who are less interested in the news (Fletcher & Nielsen, 2018).

However, some research suggests that there are significant differences in how people aged 20 to

30 years old use social media (Perrin & Anderson, 2019). Although this difference is less

substantial in the case of Facebook compared to other social media platforms, it still suggests

that more precision might be necessary to analyze how college students encounter certain types

of content, such as news. Recent studies also indicate that less educated people "are more likely

to be incidentally exposed news users than […] educated people" (Goyanes, 2019, p. 12). For

this reason, college students might be incidentally exposed to fewer news articles than other

segments of the public.

Thus, it would be important to conduct similar studies with older users to help confirm

some of our findings for people who tend to be more interested in following media organizations

on Facebook or who receive different kinds of news. For example, given that a relatively high percentage of the variance in temporal attention to the news was explained by specific participants, it would be relevant to consider groups of Facebook users from different age groups, educational backgrounds, and geographic locations.

Finally, we collected the data (both eye tracking sessions and interviews) exactly one month after the presidential election. It could be argued that this qualifies as a transitional period between moments of unusual interest in public affairs and everyday politics when non-public affairs are more prominent (Boczkowski & Mitchelstein, 2013; Siles, 2020; Tristán, Álvarez & Siles, 2020). We could expect to find different user behaviors if data were collected during either elections or post-electoral contexts (rather than their transition).

Despite the cautions, we believe the results presented in this paper open valuable directions for future research. It would be important to determine how many news items do users in other contexts encounter on their News Feeds. This would help to further make sense of the significance of our findings (most notably the specific percentage of news that our study participants encountered). Moreover, further research could asses how patterns of attention and interaction with news posts compare to non-news items, given their prevalence in the content displayed on study participants' News Feed. Our comparison with non-news items, for example, revealed that were no major differences in the time that participants spent looking at news and memes. It would also be appropriate to compare forms of interaction with different kinds of content and to examine what users remember from their interactions with both news and memes at a later time.

An important limitation of this exploratory study comes from investigating news consumption in desktop devices. Recent research has indicated this is a relatively uncommon

form of interacting with the news, notably among younger generations (Newman et al., 2019).

Comparing these results with similar studies for news consumption on smartphones could

provide a more nuanced account of what interacting with incidental news means in practice. This

is not only because smartphones represent a relatively more natural setting for receiving news,

but also because recommendation algorithms typically adjust to the technological device that is

users employ to access apps such as Facebook.

Finally, our study began investigating the procedures and operations that shape visual

interaction with news on Facebook. To expand the results, research would benefit from a much

more thorough investigation of the time that users spend on interacting with the news and, more

precisely, of how long it takes to read complex news and actually understand them. This would

provide more empirical data to support (or problematize) the recent push for "slower, better

news" in the journalistic field (Luo, 2019).

References

Ahmadi, Mousa, & Donghee Y. Wohn. 2018. "The antecedents of incidental news exposure on

social media." *Social Media + Society* April-June: 1–8.

Arndt, Jana, Schüler, Anne, and Katharina Scheiter. 2015. "Text–picture integration: How

delayed testing moderates recognition of pictorial information in multimedia learning."

Applied Cognitive Psychology 29 (5): 702–712.

Bateman, John A., Janina Wildfeuer, and Tuomo Hiipala. 2017. *Multimodality: Foundations,

research and analysis, a problem-oriented introduction*. Berlin: De Gruyter.

Bergström, Annika, and Maria Jervelycke Belfrage. 2018. "News in social media: Incidental

consumption and the role of opinion leaders." *Digital Journalism* 6 (5): 583–598.

Boczkowski, Pablo J., and Eugenia Mitchelstein. 2013. *The news gap: When the information

preferences of the media and the public diverge*. Cambridge, MA: MIT Press.

Boczkowski, Pablo J., Eugenia Mitchelstein, and Mora Matassi. 2018. "'News comes across

when I'm in a moment of leisure': Understanding the practices of incidental news

consumption on social media." *New Media & Society* 20 (10): 3523–3539.

Bode, Leticia, Emily K. Vraga, and Sonya Troller-Renfree. 2017. "Skipping politics: Measuring

avoidance of political content in social media." *Research & Politics* 4 (2): 1–7.

Corbin, Juliet, and Anselm Strauss. 2015. *Basics of qualitative research: Techniques and

procedures for developing grounded theory* (4th ed.). Los Angeles: Sage.

de Vreese, Claes, Frank Esser, and David N. Hopmann. 2016. *Comparing political journalism*.

London: Routledge.

Diakopoulos, Nicholas. 2019. *Automating the news: How algorithms are rewriting the media*.

Cambridge, MA: Harvard University Press.

Fletcher, Rirchard, and Rasmus K. Nielsen. 2018. "Are people incidentally exposed to news on social media? A comparative analysis." *New Media & Society* 20 (7): 2450–2468.

Goyanes, Manuel. 2019. "Antecedents of incidental news exposure: The role of media preference, use and trust." *Journalism Practice*. DOI: 10.1080/17512786.2019.1631710

Grigaliūnaitė, Viktorija, Lina Pilelienė, and Arvydas P. Bakanauskas. 2016. "The analysis of the influence of internal factors on outdoor advertising effectiveness." *Research for Rural Development* 2 (2): 166–173.

Holsanova, Jana, Henrik Rahm, and Kenneth Holmqvist. 2006. "Entry points and reading paths on newspaper spreads: comparing a semiotic analysis with eye tracking measurements." *Visual Communication* 5 (1): 65–93.

Just, Marcel A., and Patricia A. Carpenter. 1980. "A theory of reading: From eye fixations of comprehension." *Psychological Review* 87 (4): 329–354.

Kim, Yonghwan, Hsuan-Ting Chen, and Homero G. de Zuñiga. 2013. "Stumbling upon news on the Internet: Effects of incidental news exposure and relative entertainment use on political engagement." *Computers in Human Behavior* 29: 2607–2614.

King, Andy J., Nadine Bol, R. Glenn Cummins, and Kevin K. John. 2019. "Improving visual behavior research in communication science: An overview, review, and reporting recommendations for using eye-tracking methods." *Communication Methods and Measures*, *13*(3), 149–177.

Kligler-Vilenchik, Neta, Alfred Hermida, Sebastián Valenzuela, and Mikko Villi. 2020. "Studying incidental news: Antecedents, dynamics and implications." *Journalism*, in press.

Kress, Gunther. 2010. *Multimodality: A social semiotic approach to contemporary communication*. London: Routledge.

Kress, Gunther, and Theo van Leeuwen. 2001. *Multimodal discourse: The modes and media of contemporary communication*. London: Hodder Education.

Kurzhals, Kuno, Brian D. Fisher, Michael Burch, and Daniel Weiskopf. 2016. "Eye tracking evaluation of visual analytics." *Information Visualization* 15 (4): 340–358.

Latinobarómetro. (2018). *Informe 2018*. Santiago: Corporación Latinobarómetro.

Lee, Jae Kook, and Eunyi Kim. 2017. "Incidental exposure to news: Predictors in the social media setting and effects on information gain online." *Computers in Human Behavior* 75: 1008–1015.

Liversedge, Simon P., Iain Gilchrist, and Stefan Everling (Eds.). 2011. *The Oxford handbook of eye movements*. Oxford: Oxford University Press.

Luo, Michael. 2019. "The urgent quest for slower, better news." https://www.newyorker.com/culture/annals-of-inquiry/the-urgent-quest-for-slower-better-news

Matthes, Jörg, et al. 2020. "Processing news on social media: The Political Incidental Exposure model (PINE)." *Journalism*, in press.

Meijer, Irene Costera, and Tim G. Kormelink. 2015. "Checking, sharing, clicking and linking." *Digital Journalism* 3 (5): 664–679.

Mitchelstein, Eugenia, et al. 2020. "Incidentality on a continuum: A comparative conceptualization of incidental news consumption." *Journalism*, in press.

Napoli, Philip M. 2015. "Social media and the public interest: Governance of news platforms in the realm of individual and algorithmic gatekeepers." *Telecommunications Policy* 39 (9): 751–760.

Newman, Nic, Richard Fletcher, Antonis Kalogeropoulos, and Rasmus K. Nielsen. 2019. *Reuters*

Institute Digital news report 2019. Oxford: University of Oxford.

Nielsen, Rasmus K. 2017. "Digital news as forms of knowledge: A new chapter in the sociology of knowledge." In *Remaking the news: Essays on the future of journalism scholarship in the digital age*, edited by Pablo J. Boczkowski and C. W. Anderson, 91–109. Cambridge, MA: MIT Press.

Oeldorf-Hirsch, Anne. 2018. "The role of engagement in learning from active and incidental news exposure on social media." *Mass Communication and Society* 21 (2): 225–247.

Perrin, Andrew, and Monica Anderson. 2019. Share of U.S. adults using social media, including Facebook, is mostly unchanged since 2018. *Pew Research Center*. https://www.pewresearch.org/fact-tank/2019/04/10/share-of-u-s-adults-using-social-media-including-facebook-is-mostly-unchanged-since-2018/

Pignataro, Adrián, and Ilka Treminio. 2019. "Reto económico, valores y religión en las elecciones nacionales de Costa Rica 2018." *Revista de Ciencia Política* 39 (2): 239–264.

Schnotz, Wolfgang, and Horz, H. 2010. "Technology and Learning - supports for skill learning: New Media, Learning from." In *International Encyclopedia of Education*, edited by Penelope Peterson, Eva Baker, and Barry McGaw, 140-149. Oxford: Elsevier.

Schnotz, Wolfgang, and Bannert, Maria. 2003. "Construction and interference in learning from multiple representation." *Learning and Instruction* 13 (2): 141–156.

Siles, Ignacio (Ed.). 2020. *Democracia en digital: Facebook, comunicación y política en Costa Rica*. San José: CICOM.

Siles, Ignacio, Carolina Carazo, and Larissa Tristán. 2019. "Comunicación y política en clave digital: Redes sociales y el proceso electoral 2018." In *Tiempos de travesía: Análisis de las elecciones del 2018 en Costa Rica*, edited by Manuel Rojas and Ilka Treminio, 175–

196). San José, Costa Rica: FLACSO.

Siles, Ignacio, Carolina Carazo, and Larissa Tristán. 2020. El "matrimonio gay" como tema electoral en Costa Rica: Eventos mediáticos en sistemas híbridos de comunicación. In *Democracia en digital: Facebook, comunicación y política en Costa Rica*, edited by Ignacio Siles, 207–232. San José: CICOM.

Siles, Ignacio, Pedro Campos, and Andrés Segura-Castillo. 2018. "Sitios costarricenses de noticias en Facebook: ¿Qué "likean", comentan y comparten sus usuarios?" *Revista de Ciencias Sociales 160* (II): 37–55.

Sülflow, Michael, Svenja Schäfer, and Stephan Winter. 2019. "Selective attention in the news feed: An eye-tracking study on the perception and selection of political news posts on Facebook." *New Media & Society*, 21 (1): 168–190.

Tewksbury, David, Andrew J. Weaver, and Brett D. Maddex. 2001. "Accidentally informed: incidental news exposure on the World Wide Web." *Journalism & Mass Communication Quarterly* 78 (3): 533–554.

Thorson, Kjerstin. 2020. "Attracting the news: Algorithms, platforms, and reframing incidental exposure." *Journalism*, in press.

Tristán, Larissa, and Mariana Álvarez. 2018. "'¿Brecha de las noticias?'. Una comparación de la oferta y el consumo de contenidos en Nacion.com y CRHoy.com." *Revista de Ciencias Sociales* 160 (II): 57–74.

Tristán, Larissa, Mariana Álvarez, and Ignacio Siles. (2020). Entre "brechas" y "cuotas" informativas: Tendencias generales del consumo de noticias en Facebook en Costa Rica. In *Democracia en digital: Facebook, comunicación y política en Costa Rica*, edited by Ignacio Siles, 19-36. San José: CICOM.

Valeriani, Augusto, and Cristian Vaccari. 2016. "Accidental exposure to politics on social media as online participation equalizer in Germany, Italy, and the United Kingdom." *New Media & Society* 18 (9): 1857–1874.

Yadamsuren, Borchuluun, and Sanda Erdelez. 2016. *Incidental exposure to online news*. San Rafael, CA: Morgan & Claypool.

Zambarbieri, Daniela, Elena Carniglia, and Carlo Robino. 2008. "Eye tracking analysis in reading online newspapers." *Journal of Eye Movement Research* 2 (4): 1–8.

Zantides, Evripides, and Evangelo Kourdis. 2014. "Graphism and intersemiotic translation: An old idea or a new trend in advertising?" *Image* 19 (1): 54–73.

Zuñiga, Homero G. de, Brian Weeks, and Alberto Ardèvol-Abreu. 2017. "Effects of the news-finds-me perception in communication: Social media use implications for news seeking and learning about politics." *Journal of Computer-Mediated Communication* 22 (3): 105–123.