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**MAPPING THE MOBILE DNA OF NEWS. UNDERSTANDING INCIDENTAL AND SERENDIPITOUS
MOBILE NEWS CONSUMPTION**

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Abstract

Scholarly work argues that mobile technology facilitates serendipitous news consumption. This article examines how users understand serendipity in mobile news consumption and whether this leads to news diversity. Technology-mediated news encounters are argued to reduce news diversity, yet these theoretical filter bubbles cannot be found empirically. This paper investigates whether this might be explained by incidental news use. A mixed methods study (n=20) was set up, which involved interviews, on-device loggings and experience sampling data. Results show that incidental news differs in the level of user agency, ranging from responding to an unsolicited recommendation or alert; via monitoring, facilitated by a previous action (e.g. activated news notifications); to browsing or stumbling upon unexpected topics during news use. Incidental encounters become serendipitous when they provide new information or insights and consequently stick in one's mind. Based on our findings, we further develop a conceptual model for (mobile) incidental news, which shows the interplay of news recommendations by peers, algorithms, and editors. Editorial recommendations result in topic diversity. Both peer and algorithmic recommendations lead to brand diversity, yet this remains unnoticed to audiences. Peer recommendations mostly do not lead to topic or viewpoint diversity, but are perceived as valuable when they do.

KEYWORDS Incidental news; News consumption; News diversity; Mixed methods research; Mobile news; MobileDNA; Serendipity; Social recommendations

Introduction

Because of their centrality in audiences' everyday lives, mobile media have become important objects of study in the field of news consumption (e.g. Molyneux 2018; Westlund and Färdigh 2015). The extant scholarly work has focused mostly on news consumers who *intentionally* access dedicated mobile news sites and applications to stay informed (e.g. Shim et al. 2015; Wolf and Schnauber 2015). Given that accessing news on their smartphone is often not a primary goal for users, but rather an activity that may occur incidentally in the 'slipstream' of other smartphone activities – for example because a news item is presented in one's social media feed (Poindexter 2016); a pertinent question that keeps mobile news scholars occupied, is to what extent users experience *incidental* – or even *serendipitous* – mobile news consumption.

Incidental information retrieval has traditionally been regarded as beneficial for society as it introduces individuals to alternative viewpoints and stimulates creative thought (Kim, Chen, and de Zúñiga 2013). It allows individuals to touch upon new ideas, unexpected angles or to simply be surprised. Within the field of news use, these new ideas or viewpoints might result in a desired consequence: a potentially broadened news package or increased news diversity (cf. Voakes et al. 1996), which is considered to be a crucial democratic prerequisite of a well-informed citizenry (McQuail 1992; Schrøder and Larsen 2010).

Due to the emergence of the algorithmic culture (Striphas 2015), the notion of *serendipity* is gaining scholarly attention. Serendipity refers to incidental encounters that deliver a valuable insight. Recent voices (e.g. Just and Latzer 2016; Pasquale 2015) argue that technology-mediated news encounters may reduce news diversity, because of the algorithmic nature of technology-mediated news. Web analytics and audience feedback affect users' exposure to news, as they result in automated suggestions such as 'Most Read Articles' (Lee and Tandoc 2017; Duffy, Ling and Tandoc 2018). Also, algorithms often reinforce news personalisation, tailored to one's personal profile, such as news via social recommendation (e.g. a shared news article) or algorithms that select and present content based on user profile (e.g. a news story about a celebrity whose music you bought online). As such, algorithms are believed to offer less of an alternative viewpoint than is available (cf. filter bubble theory, Pariser 2011).

There is, however, a growing body of evidence that these theoretical bubbles of personalisation cannot be found empirically (e.g. Haim et al. 2017; Zuiderveen et al. 2016). This might be explained by serendipity, as incidental news consumption carries the potential to broaden personal news repertoires of audiences and increase news diversity. Incidental mobile news use is assumed to result from news recommendations; news put forward by algorithms, peers, and editors. Algorithms frequently strive for a moderate level of serendipity in order to keep recommendations useful, surprising and therefore not 'boring' (cf. the Boredom Punisher Model, De Pessemier et al. 2014). Additionally, sharing news with peers via messaging applications is gaining importance (Reuters Institute for the Study of Journalism 2018), and editors can steer users' news use by pushing both personalised and non-personalised news notifications at random times.

As such, the question can be raised whether peoples' incidental news encounters might explain why the filter bubble theory cannot be empirically validated for news. This paper puts forward a conceptual model of incidental mobile news consumption resulting from recommendations presented by algorithms, peers, and editors. Given the fact that smartphones play an increasingly important role in news use, this article aims to gain a deeper understanding of mobile incidental and serendipitous news.

Literature review

News Diversity: A Democratic Prerequisite

From a normative point of view, (news) media have the societal responsibility to inform the audience. News media are crucial in democratic societies (Schrøder and Larsen 2010) as they offer information to create well-informed citizens. To this end, news diversity should be aimed for, both in structure (i.e. plurality of ownership; diversity of channels and forms) and content (i.e. diversity of

information, opinion, and culture) (McQuail 2010). As artificial intelligence (AI) and algorithms are increasingly gaining importance in journalism – from news production, to distribution and consumption – news diversity is regaining scholarly attention (Joris et al. forthcoming). Helberger (2019, 2) points out that AI, algorithms and news personalisation challenge the normative idea of diversity:

“[T]he power to actively guide and shape individuals’ news exposure also brings with it new responsibilities and new very fundamental questions about the role of news recommenders in accomplishing the media’s democratic mission. How diverse or not diverse, and how personally relevant and inclusive should recommendations be?”

News diversity is a multifaceted construct that is subject to various interpretations (Haim et al. 2017) and should be specified to highlight the researcher’s interpretation (Joris et al. forthcoming). Voakes et al. (1996) distinguish source and content diversity. *Source diversity* refers to various actors presented in the news: one news outlet giving voice to multiple informational sources. Influenced by the conceptual approach of Napoli (1999), the interpretation of source diversity has shifted from this *actor diversity* within one news outlet (as meant by Voakes et al.) to structural news diversity, including *channel diversity* (i.e. different channels), *outlet diversity* (i.e. multiple news carriers including devices or platforms) and *ownership diversity* (i.e. multiple owners). To overcome this dual interpretation of source diversity, we introduce the notion of *brand diversity* to refer to a news diet that results from different (often legacy media) news brands (cf. source diversity by Napoli 1999; Kim and Kwak 2017).

The *content diversity* presented by Voakes et al. (1996) can be disentangled from *topic diversity* (i.e. providing the audience with a broad range of different topics) and *viewpoint diversity* (i.e. offering the audience various perspectives on one topic). Additionally, news diversity might refer to *frame diversity*, addressing the various available frames on a given topic (Haim et al. 2017). In our operationalisation of news diversity, we include *topic diversity* to refer to different news topics and *viewpoint diversity* as different interpretations or presentations of one topic.

As a consequence of media convergence and digitisation, we have entered the age of news abundance (Beckers et al. 2017). However, in the 1990s, scholars raised concerns that news diversity is declining due to concentration and a general decrease in newspaper titles (Beckers et al. 2017). Today, these concerns about declining news diversity are repeated by the common belief (e.g. Reviglio 2017; Just and Latzer 2016; Pasquale 2015) that algorithms provide personalised news, as they are designed to provide specific information based on the user’s profile.

Serendipity, however, might help to increase news diversity (i.e. topic, viewpoint, and brand diversity), as incidental news encounters might result in new viewpoints. Especially serendipitous news encounters on mobile phones could be interesting, as smartphones have penetrated audiences’ daily lives by affording anytime and anywhere connectivity (Dimmick, Feaster, and Hoplamazian 2011). Accessing mobile news is effortless and immediate and as such, mobile devices are “*ideal news-accessing platforms*” (Poindexter 2016, 13), yet at the same time, news is not a high priority on smartphones for the majority of mobile audiences; just because mobile devices are always with their owners, owners do not necessarily use them to access news. However, even though news use is indeed often not a primary goal of smartphone owners, recent study findings show that more and more users do encounter news on their mobile device. In a German study, 96 per cent of mobile internet users were found to consult news and service information on their smartphone at least once a week (Wolf and Schnauber 2015). Given the fact that news is often not a primary goal on a smartphone, while mobile news use is nonetheless increasing, the question can be raised if incidental news encounters might explain this surge in mobile news use, and whether some of these encounters may be experienced as serendipitous encounters with news.

Serendipity: Incidental, Yet Valuable

Serendipity as a concept was coined by Horace Walpole in 1754, referring to the act of “*making discoveries by accident and sagacity, of things which one is not on quest of*”. Later, serendipity was used to name the unintentional character of many scientific discoveries and inventions (Cannon 1945). Over time, several attempts have been made to define the concept (cf. Rubin, Burkell, and Quan-Haase

2011). While definitions vary, it is generally agreed upon that serendipitous encounters are incidental occurrences that deliver a valuable insight.

According to Makri and Blandford's (2011) Swiss Cheese model, serendipity can be described as a process that manifests itself when two internal and two external conditions meet. Concerning internal conditions, people need an open mind that is prepared to make serendipitous connections and an implicit awareness of a need or an opportunity for such a connection. Other scholars refer to these conditions when using the term "*the prepared mind*" (Foster and Ford 2003; Rubin et al. 2011). For external conditions, Makri and Blandford (2011) claim that people should not experience time pressure and find themselves in a conducive environment in order to experience serendipity. While some scholars agree that a lack of time pressure is beneficial to serendipity (e.g. McBirnie 2008), other scholars, in contrast, believe (moderate) time pressure may increase the chance of a serendipitous encounter, because it stimulates mindfulness (Weick and Sutcliffe 2006). Concerning the conducive environment to experience serendipity, we may think of a physical environment (e.g. a library or workplace), but also a technological environment (e.g., a mobile device versus desktop computer).

According to Makri and Blandford (2011), a technological environment can be conducive to serendipitous encounters when it lends itself to quick and easy access to new information. Mobile technologies enabled with internet access, in particular, have these affordances, as their flexibility to be used everywhere and anytime enables audiences to continually update themselves on the latest news facts (Dimmick et al. 2011, 24). Additionally, smartphones are personal devices, highly customised and tailored to their owner (Vanden Abeele, De Wolf, and Ling 2018). As such, users may exercise agency to facilitate news use by setting up their smartphone as desired. Put differently, mobile users themselves can shape their device as a conducive environment for news use by, for example, installing news apps and enabling breaking news notifications. As such, user agency may facilitate both intentional and incidental mobile news use to various extents.

Although research focusing on mobile serendipitous news consumption is scarce, incidental news use is found to be facilitated by browsing the internet (Yadamsuren and Erdelez 2011) and social media (e.g. Boczkowski et al. 2017; Matsa and Mitchell 2014; Fletcher and Kleis Nielsen 2018) – two of the primary uses of mobile devices. Moreover, mobile devices serve as a conducive environment for interstitial news use, news consumed in the interstices of time, referring to the gaps in the routines of media users between scheduled activities (Dimmick et al. 2011; Van Damme et al. 2015). Although the serendipity framework of Makri and Blandford (i.e. the Swiss Cheese Model) has its origins in the area of health and medicine and is used to address incidental, yet occurring issues such as safety incidents (Perneger 2005) or human error (Reason 2000), the model also lends itself well for understanding serendipitous encounters in general, including mobile serendipitous news consumption. Multiple studies point toward the beneficial consequences of incidental news encounters. For example, in their study on search engines, Tewksbury et al. (2001) found that incidental online news exposure served as a positive predictor for knowledge on current affairs (i.e. increased topic diversity). Additionally, incidental news encounters shape the news practices of users without specific news use routines (Van Damme et al. 2015).

Serendipity via Mobile News Recommendations

In the conceptualisation of mobile serendipity in the current study, our underlying assumption is that serendipity can occur in response to a pushed news item: in other words, as news that is somehow presented or recommended to the user on his or her phone. On a mobile phone, these news recommendations result from news producers (editorial news), algorithms (news aggregators and social media) and peers. This results in a conceptual model (see Figure 1) of mobile news recommendations (and consequently possible serendipity), which shows the interplay and overlap of these three types of recommendation. These mobile news recommendations might result from mobile-specific features (i.e. notifications or widget news) or any type of news recommendation which is accessible via mobiles (including social recommendations, newsletters, and messages with news content).

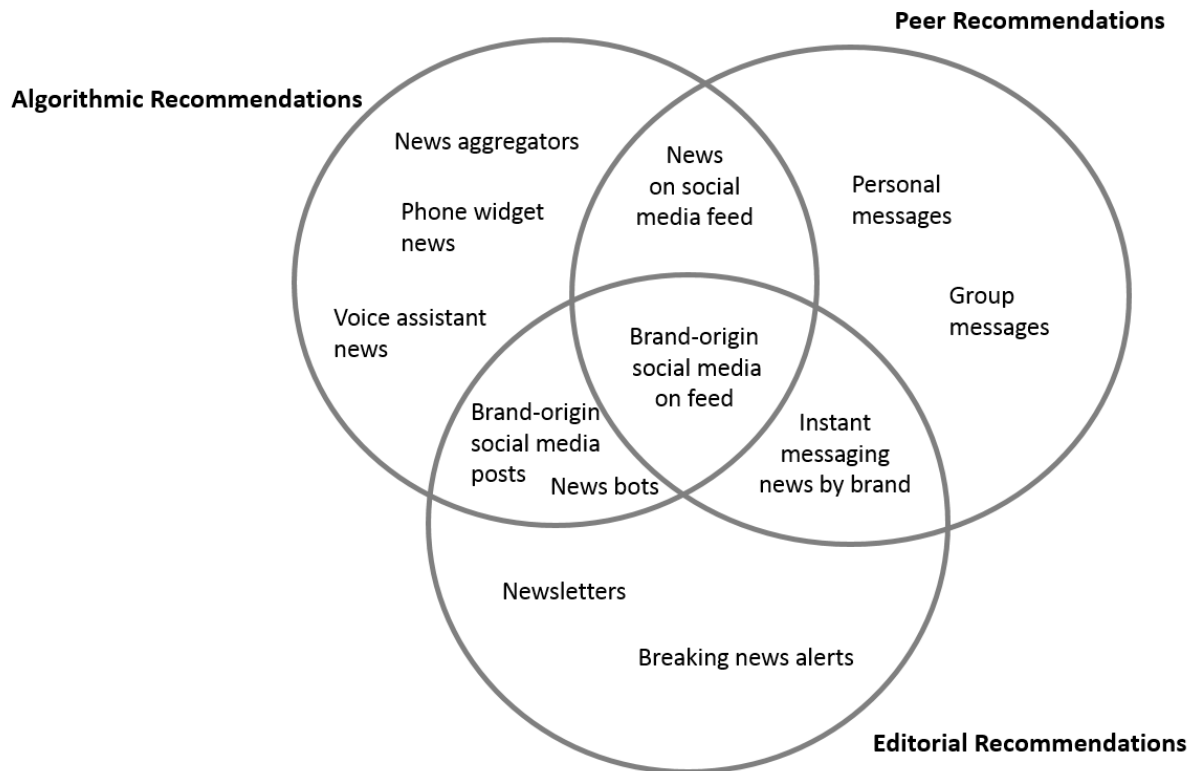


Figure 1. Conceptual model for news serendipity on smartphones: interplay of recommendations by peers, algorithms, and editors

The following paragraphs describe the non-overlapping areas of the model. The assumptions made for these non-overlapping recommendations on news diversity come together in the overlapping areas. Social recommendations, for example, combine the assumptions of peer and algorithmic recommendations (i.e. social recommendations are assumed to lead to brand diversity, within the field of interest of the user). News shared by a friend (~peer) as an update on his or her Facebook page (~algorithm), which was initially posted by a news brand (~editors) is found in the centre of the model (i.e. the brand-origin news on social media feed).

Editorial Recommendations – News organisations can push specific news stories to their audiences via app notifications, newsletters and messaging apps (the latter still being in its infancy; Newman 2018). These pushed news items arrive at unstructured times, and as such will lead to unexpected news use at these specific times. These editorial recommendations are assumed to lead to topic (and to a lesser extent) viewpoint diversity, as users might stumble upon news stories on topics away from their interest, within their preferred news brand(s).

Peer Recommendations – People within the network of the user can share news items, personal or group, via messages. The use of messaging apps such as WhatsApp and Facebook Messenger for news is on the rise. Reuters Institute for the Study of Journalism (2018) found that users are more likely to take part in a private (24 per cent) or group (16 per cent) discussion about news on WhatsApp, compared to Facebook. News shared among peers via messages is often personal, as it is considered to be newsworthy to the other(s). As such, brand diversity is assumed to result from peer recommendations, while the topic and viewpoint of these stories are likely to be in line with the users.

Algorithmic Recommendations – News can be presented by algorithms via automated suggestions, news aggregators and social media news feeds. First, web analytics and audience feedback impact other users' exposure to news, as they result in automated suggestions such as "Most Read Articles" (Lee and Tandoc 2017; Duffy, Ling, and Tandoc 2018). Second, tech companies have become news aggregators (i.e. Google News, Apple News and default installed news widgets on smartphones), labelled by Niemanlab as the '*next major traffic driver for publishers*' as it grew a shocking 2100 per cent in 2017 (Saroff 2018). Their algorithms offer a personalised news package,

which selects and presents content based on a user profile (e.g. a news story about a celebrity whose music you bought online). These tech aggregators are found to over- and under-represent certain news outlets (Haim et al. 2017), which results in a certain bias towards these outlets (i.e. limited brand diversity). Third, news use on mobile devices often occurs on social media. Social media news recommendations filter content based on a personal profile and data trails such as search behaviour, clicking behaviour and the behaviour of peers online.

Algorithmic recommendations are assumed to both limit and cultivate serendipity in a digital environment (Reviglio 2017), especially on social media. The algorithmic logic of social media renders news content indistinguishable from other forms of content (Boczkowski et al. 2017), allowing users who browse their social media feeds to find news without actively looking for it. Hence, news on social media is available to be discovered (cf. Reuters Institute for the Study of Journalism 2018). This is what Costera Meijer (2006) labelled as news snacking: effortless consuming bits and pieces of news, without pursuing in-depth knowledge or developed opinions. However, because these platforms provide a customised news feed, they also limit news diversity. At the same time, audiences believe that algorithmic selection guided by a user's past consumption behaviour is a better way to get news than editorial curation (Thurman et al. 2018). The approval for this algorithmic news selection is even stronger among younger people (Fletcher and Kleis Nielsen 2018).

Given the fact mobile devices are increasingly embedded in people's everyday practices (Van Damme et al. 2015), and news is not the primary goal of mobile devices (Poindexter 2016), this article aims first to understand what audiences regard as incidental news on mobile devices and when incidental news then becomes valuable or serendipitous. Incidental news is gaining scholarly attention, yet it remains unclear what defines incidental news or how it is experienced by audiences. As such, the first research question is: *"How do audiences define incidental, and serendipitous, mobile news use?"*.

Second, this study aims to evaluate how mobile recommendations resulting from editors, peers and algorithms lead to increased news diversity, more specifically topic, viewpoint and brand diversity. Therefore, the second research question is: *"How do mobile news recommendations facilitate or limit news diversity?"*.

Method

To answer the research questions, we set up a mixed methods research design that combined three research methods in the data collection phase: on-device logging, mobile Experience Sampling Method (ESM) and interviews. Figure 2 presents the different steps of the mixed methods research design.

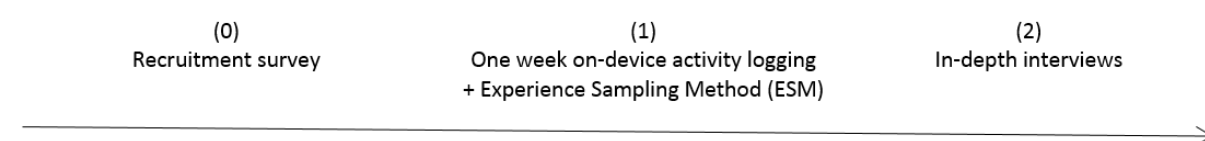


Figure 2. Mixed methods research design combining mobile methods with interviews

Phase 0: Recruitment Survey and Sample

We first distributed an online recruitment survey (Phase 0), which served as a means to compose a varied sample, in terms of gender, age and self-reported mobile news use. Respondents were presented with a brief introduction to the upcoming study and were asked to complete the survey if they were willing to participate. The only precondition for participants was that they must have an Android smartphone, a necessary precondition for Phase 1. The questionnaires included questions on mobile news consumption (*"How often do you encounter news on your smartphone via...?"*) including apps, messages, social media and notifications, and news topic preference (such as societal matters, sports or politics). In total, 49 people took part in the survey and agreed to participate in the follow-up study. We eventually drew 20 informants from this pool to participate in our study (see Appendix 1), 10 male and 10 female. The average age was 34.9 years ($SD = 12.9$), ranging from 21 to 69 years. No incentives were provided to the informants.

Phase 1: One Week of Mapping Mobile News

The first phase of the study involved mapping news-related activities on the informants' smartphones. To that end, we used two mobile research methods: smartphone logging using the MobileDNA app, and mobile Experience Sampling Method (ESM) using a mobile online survey platform. As such, the informants' monitored news (app) use is complemented with self-reported in-app news consumption.

MobileDNA – MobileDNA is a research application that logs smartphone behaviour (Google Play Store; bit.ly/mobiledna) and that thereby overcomes multiple methodological shortcomings related to other (self-report) measures of smartphone usage. MobileDNA captures when and how long apps are used, visualised in Figure 3. Furthermore, it measures if the screen was turned off if a notification was received and if an app was opened from this notification. We analysed the data of each informant, looking specifically for apps and notifications which might lead to news use, including news apps, social media, messaging, email and browser.

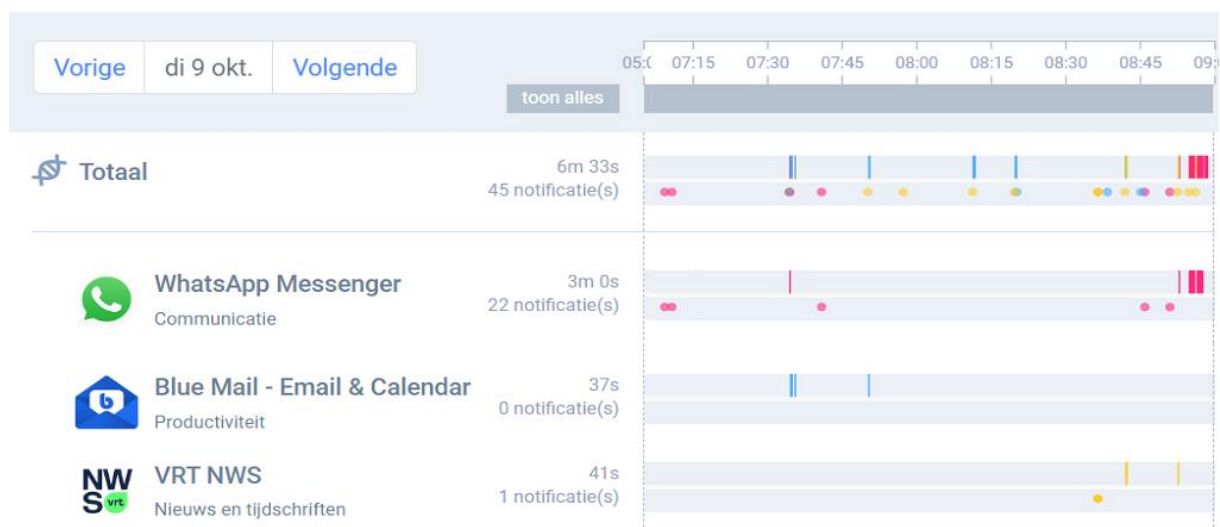


Figure 3. MobileDNA – Screenshot of the application interface. Vertical lines indicate app events (opening an app and using it for a certain time), whereas the dots represent notifications. The colour indicates which app is used.

Experience Sampling Method (ESM) – The Experience Sampling Method (ESM) collects data through in-situ self-reports by triggering participants at various points throughout the day (van Berkel et al. 2017) and is aimed at measuring day-to-day activities. During the week of on-device logging, informants were prompted daily with short surveys on their phone, sent out at random times during the day. Questions included “*Did you incidentally encounter news on your smartphone since answering the last questionnaire?*”, and if so, “*If you were looking intentionally for news, would you have encountered this news?*” and “*Where were you?*” An open question allowed for the informants to add extra information when desired.

Phase 2: In-depth Interview with Probing

Finally, we interviewed the informants using a semi-structured interview protocol that was organised around several themes concerning news consumption patterns and incidental news encounters. During the interview, informants were confronted with their data collected during Phase 1. On-device logs are particularly relevant when discussing incidental news consumption because they are direct evidence of the content consulted by the participants through their mobile devices (Nicholas et al. 2006). Moreover, MobileDNA helps to unveil specific news practices, such as enabling news notifications, but never opening the featured news article.

Results

The mobile DNA of news

Analysis of the on-device logging shows our informants used their mobile phones, on average, one and a half hours (1:30:31) a day, using an average of sixteen different applications daily. Detailed use per informant is presented in the informant matrix (see Appendix 1). News applications were unpopular among our informants because mobile websites were perceived as just as practical; moreover, the informants felt that news apps take up too much memory, and their notifications systems are labelled as “pushy”. Eleven informants used a news app during the study, of which seven informants received news notifications. Four informants opened a news app via a notification. In terms of smartphone gateway behaviour, many informants indicated that they used Facebook as a gateway to access news. While MobileDNA does not allow the registering of the URLs of visited websites, we indeed found that during the study browser activity mostly resulted from Facebook use (423 times), email (293 times) and instant messages (e.g. WhatsApp; Messenger, 285 times). Most informants use Facebook and communication apps as a gateway to access news, and apps following these gateway-apps could indicate news triggered by them.

ESM was used to gain a better understanding of the mobile news that was labelled as incidental. In total, 355 surveys were sent out. The informants said they encountered news they were not looking for in 35 per cent of the cases. Many mobile incidental encounters took place at home (57 per cent) and school/work (19 per cent). More than half (59 per cent and 6 per cent in doubt) of these incidental encounters resulted in news the informant believes he or she would also have found elsewhere. In other words, one in three incidental encounters led them to some kind of news diversity, mostly at home (64 per cent) or at school/work (19 per cent).

During the interviews, reactivity to the study was assessed, by asking if the informants were more aware of their (incidental) mobile news use or had changed their behaviour because of the study. In most cases, informants did not change their mobile practices, but some found themselves thinking “OK, I should remember this [topic] for the next survey” (Mae-69-F). One informant (Wenna-35-F) did increase her news use, as she was ashamed she did not engage with news at all and Lana-24-F did become more aware of her news use practices as “I realised I was saying ‘no’ a lot, [...] more than I expected. I’m not a news freak, but I do think I am informed. But apparently the phone is not my primary news source”.

Understanding Incidental and Serendipitous Mobile News

Incidental news encounters are defined by the informants as encounters with news that they were not actively looking for, those “news messages that are coming to you and you had no idea you would find them” (Lana-24-F). Most informants automatically refer to news on Facebook. To Wade-21-M, incidental news encounters are those that result from boredom (cf. lack of time pressure, Swiss Cheese Model):

When I seek news myself, I know what I want to check. Like, for example, sports updates. Whereas incidental news are those messages you encounter when you open a website when you are bored. You scroll down, you see stuff and think, ‘ha, I will click on this one’ because it looks interesting’.

However, what is understood by ‘actively looking for news’ (and consequently also ‘incidental news’) varies among informants. As such, the incidental news encounters can be conceptualised as a continuum of experienced user agency as shown in Figure 4, ranging from (1) responding, via (2) monitoring, to (3) browsing. At the top of the diagram, audiences are responding to an unsolicited recommendation or alert, so that the user experiences no agency at all over the news exposure. In the middle, incidental news results from a previous agency of the user, which leads to what can be labelled as ‘self-enabled incidental news’. This can be referred to as monitoring, as users set up a news surveillance system of apps, newsletters and notifications to stay updated, without knowing when they will receive an update, nor on which topic. At the bottom, incidental news results from browsing, as the user was consciously consuming news, frequently expecting specific items, and stumbling upon unexpected topics.

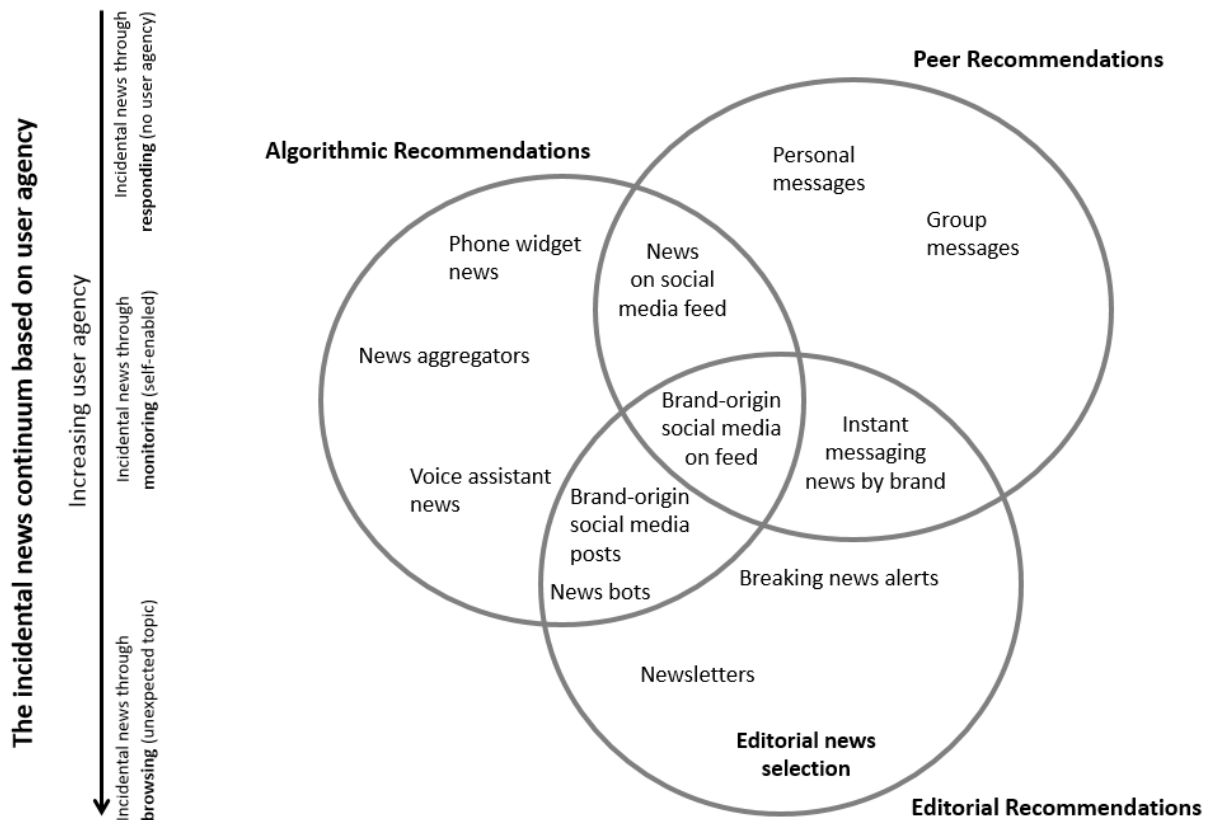


Figure 4. The incidental news continuum based on user agency plotted on our adjusted conceptual model for news serendipity on smartphones

Responding relates to the strictest definition of incidental news as there is no user agency. This is news that is shared by peers, on mobile phones, via call, messages or instant messages. Sue-26-F argues this is the only “*real incidental news*”, as she has no control over what or when her peers will share news with her.

The majority of the informants refer to incidental news in those situations where the news is encountered at unexpected times, but somehow enabled by the user through news monitoring practices. In other words, a previous action of the user facilitates news use at unexpected times. Moving to the centre of the continuum, informants increasingly disagree whether news is incidental or not. Notifications sent by news apps are unexpected (both in terms of time and the topic), yet the user installed the app and enabled the notification. Even so, most informants do see them as incidental.

News via newsletters or shared on social media are both argued to be incidental and intended. News via newsletter and social news are found to be intended, as users explicitly opt in on a news offer (“*No, those [newsletters] are not incidental. I allowed them to send me news*” (Lea-53-F). To some, social media plays a central role in their news repertoire. Basil-32-M is always thirsty for information, which he cleanses with radio news, Google News, niche newsletters (“*stuff I structurally regret I do not read more often*”) and news on Facebook. However, even Basil – to whom news is an essential part of Facebook – considers news on Facebook as incidental. He argues Facebook is not a news medium, even though he does use it that way: “*it is a great way to check the pulse of the world, yet I might just see a baby picture*”. The main argument for those who state socially recommended news is incidental, is the timing of the news use. “*It is not coincidental Facebook shows you news, but it is coincidental you read it. It’s not that you are actively looking for news. And therefore it is incidental*”, Bret-34-M explains.

On the lower end of the continuum, incidental news refers to unexpected news resulting from actively engaging with news. Whereas some informants claim that opening a news app or browsing to a news site or Facebook page of a news brand (both are labelled as ‘the same thing’) “*is a clear example*

of ‘conscious news use’” (Sven-41-M; Pascale-23-M; Sue-27-F), others say this too might lead to incidental news as the presented news might involve unexpected topics. As such, news selection by editors was added to our conceptual model of news recommendations (see Figure 4, the highest level of user agency). Additionally, incidental news use might result from news habits, where news apps or sites are opened without realising. Lea-53-F has developed the habit of checking the time on her phone and states she automatically opens a news application. Lea ‘confesses’ timidly she finds herself checking the news at night, which is also labelled as incidental news by her: “horrible, but I simply cannot help it!”

Interestingly, even though the interpretation of incidental news varies among the informants, they do agree serendipitous news is *unexpected*, is *useful* and involves a *news authority*. Bret-34-M explains incidental news becomes useful when it is *enlightening*:

Incidental news can be useless. Those are the messages that I don't remember. Sure you do stumble upon items of which you think "that doesn't enlighten me". But then once in a while, you see an item you weren't expecting and that triggers you.

Serendipitous news thus provides him with new insights, and as a consequence, he *remembers* the news item. Useful news is also news which somehow broadens their news package or increases news diversity. Sue-26-F refers to serendipitous news as news she would not have known, based on her fixed news habits (i.e. checking the app of De Standaard [i.e. legacy quality newspaper] multiple times a day; public service radio; watching public service newscast). To her, incidental news only “*contributes when it is an in-depth piece I haven't read yet. Not the bits of news of the day, because those I will hear anyway*”.

When she was presented with an Instagram post by Nafi Thiam (Belgian athlete and champion), announcing the end of her successful season, Sue-26-F argued she was missing an explicit link to an article. The presence of an explicit link of a (mostly legacy) news media brand is perceived as crucial for the informants, “*otherwise it's just people sharing stuff*” (Pascale-23-M). Ben-32-M labels this as a *news authority*, a trustworthy source such as a news brand or well-known institution. This idea of a news authority is shared among the informants, as most include a news brand, journalist or editors when defining ‘news’.

As such, serendipitous news use can be defined as incidental news originating from a news authority, which provides new information or insights, and consequently, sticks in one's mind. In other words, incidental news becomes valuable when it leads to topic or viewpoint diversity. Incidental news does not imply news diversity, but it becomes valuable to the user when it differs from their personal news repertoire.

Understanding News Diversity Resulting From Mobile Serendipitous News

Peer Recommendations – On mobile devices, (one-to-one/few) peer news recommendations mostly result from (instant) messages and personal social recommendations (e.g. tagging someone in a Facebook post). In line with our expectations, this results predominantly in brand diversity. However, this brand diversity is not important to the informants; the news content (both topic and viewpoint) or person sharing the news makes the news interesting. Most informants receive news from peers, which is relevant to their personal lives, such as (hyper)local news (e.g. explaining sirens Emma-31-F heard), news related to their job (e.g. local news for a city guide, Mae-69-F; new VR device for researcher, Jeda-26-F; job announcements, for Wenna-35-F) or news that features someone they know (e.g. minister and family member, to Laureen-22-F; medal won by student for teacher, Steven-58-M).

Common ground is also a driver to share news among peers. Calvin-26-M and his mates have a WhatsApp group, where they often share news. Mostly, the news is shared with a personal, humorous remark, “*like just now I read Venice is flooding. And then I add 'isn't that the whole point of Venice? Water everywhere?' [laughs]*”. To him, humour prevails and as such, even though this might lead to topic diversity, the topic is less important than a witty remark.

Editorial Recommendations – In line with our expectations, topic diversity results from editorial recommendations. However, this is mostly the consequence of editorial news selection rather than pushed news via notifications (ref. supra). While browsing a news website, Bret-34-M stumbled upon an article on parental leave for young dads, which he labelled as a surprising topic:

When you open the website of De Standaard to check what has happened, there are those things you expect. Political news, a continuing debate [...]. But then there are always those items you did not expect.

Algorithmic Recommendations – The informants are aware about the algorithmic nature of news that appears on Facebook and Google and this is perceived as valuable as it makes the news relevant. Most informants have developed practices where they adjust the algorithm to their preferences by following specific individuals, organisations or news brands that might offer relevant and interesting news. They “feed the algorithm” (Calvin-26-M) of Facebook with editorial news selection (ref. supra) and their judgement of peers to get relevant news. Interestingly, only one informant (Lea-53-F) seems to worry about personalisation as “you no longer receive new input, other ideas. That is not healthy. And it scares me”. Other informants too explicitly mention a bubble of personalised information they encounter on Facebook, but this is perceived as an advantage rather than a threat. Sven-41-M, for example, was shocked by the opinions he saw when he opened his grandfather’s Facebook: “only then I realised how limited the viewpoint was on my wall. These people were stupid!”

Basil-32-M points out that Facebook’s algorithm is successful in providing him with relevant news. He experimented with multiple news applications, but always falls back on Facebook as it gives him the best selection of news. Yet, he values Google News for clustering multiple outlets on trending topics.

The algorithmic recommendations can be both informing and amusing. Lea-53-F, for example, is a socially engaged woman, doing voluntary work with refugees. Consequently, she is interested in information on climate change or migration. Yet, her eyes sparkle when she says she sometimes stumbles upon gossip and celebrity news (“coarse gossip, I must confess”). Dagmar-30-F too states she: “would never look for celebrity news, but when I see juicy gossip, I will open it!” At the same time, Dagmar argues she is aware of the commercial strategies of news brands sharing certain content on Facebook.

Most informants also encounter news shared or commented on by peers on Facebook. The informants decide if this news is valuable, based on their idea of whether the news sharer is a relevant gatekeeper to share this specific news item. This gatekeeping also results in specific news use practices. Steven-58-M, for example, sees Facebook as a personal network, yet he chooses to follow certain people he perceives as experts with interesting insights, so he can encounter their ideas, opinions or shared news on Facebook. In contrast, others “agree to disagree” (Mae-69-F) with people in their personal network. Especially when there is a close offline tie between the peers online, different viewpoints are encountered and neglected. However, extremely different viewpoints are blocked. Both Sue-F-26 and Basil-32-M already ‘unfollowed’ people on social media when they share viewpoints they completely disagree with. As such, informants consciously shape their online peer network to provide them with valuable news, often with the same viewpoint.

Discussion

To date, the growing body of scholarly work on mobile news use has focused on audiences who intentionally use their mobile devices to stay informed (e.g. Shim et al. 2015; Wolf and Schnauber 2015). This article argues that incidental mobile news consumption might be equally valuable to investigate, as these incidental news encounters might increase news diversity. As such, incidental news encounters might help to explain why the filter bubble theory (Pariser 2011) cannot be found empirically (e.g. Haim et al. 2017; Zuiderveen et al. 2016). To investigate incidental news use, mobile news serendipity and its consequences for news diversity, a mixed methods research design was used, which combined on-device logging, Experience Sampling Method and interviews.

The first aim of this study was to understand how audiences understand incidental news use and when it becomes valuable or serendipitous to them. *Incidental news* encounters are those news updates that audiences were not actively looking for. However, what is understood by ‘actively looking for news’ (and consequently also incidental news) varies among informants. As such, we approach incidental news as a continuum of experienced user agency, ranging from: responding (i.e. no agency at all, such as being exposed to pushed news at random time); over monitoring (i.e. previous agency of the user leading to ‘self-enabled incidental news’); to browsing (i.e. consciously consuming news and stumbling upon unexpected topics). Even though the latter conceptualisation of incidental news is broad, the informants taking this approach do not consider all news use incidental to some extent. To them, non-incidental news refers to those news topics in line with their expectation. For example, when they browse an online newspaper, they know in advance they will stumble upon a certain mix of routine topics, such as political news (e.g. election or Brexit), ongoing debates (e.g. vaccinations) and current affairs. Hence, these topics are considered non-incidental, even though the news event in itself is new. Incidental news, then, refers to those unexpected topics they did not foresee or expect, such as an item on parental leave for young fathers or the death of a celebrity. *Serendipitous news* use can then be defined as incidental news encounters which provide new information or insights and are consequently remembered. As such, incidental news does not imply news diversity, but it becomes valuable (or serendipitous) news when it diversifies the audiences’ news repertoire.

The second aim of the study was to understand how incidental news increases news diversity, more specifically topic, viewpoint and brand diversity. The underlying assumption was that incidental news use results from news recommendations provided by peers, news producers and algorithms. As expected, editorial recommendations result in topic diversity. However, this is mostly the consequence of editorial news selection rather than the news notifications we expected. Both peer and algorithmic recommendations lead to brand diversity, yet this is often invisible (and unimportant) to audiences. Most informants receive news from peers on topics that are relevant to their personal lives or provide a sense of common ground. As such, (non-algorithmic) peer recommendations mostly do not lead to topic or viewpoint diversity. When they do, however, these are perceived as valuable. Algorithmic recommendations were assumed to both limit and cultivate news diversity (cf. Reviglio 2017; Helberger 2019), especially on social media. Most informants appreciate news curated by algorithms as it offers an interesting set of news topics. However, as Helberger (2019, 18) argues, algorithmic news recommenders often follow a commercial, rather than democratic logic. As such, this topic diversity will likely not provide articles with information people “ought to read” to become informed citizens. Moreover, viewpoint diversity is mostly limited on social media, sometimes even as a result from unfollowing people they disagree with.

Based on the presented study, additional conclusions can be drawn. First, brand diversity is not perceived as important. Even though both policy and scholars (e.g. Baker 2006; Wellstone 1999) have expressed concerns on decreasing structural news diversity (e.g. declining number of titles and companies) as a result of media concentration, this is unimportant to audiences. Informants only mention news brands when they do not want to consult specific news titles, for example, because these brands are known to provide too sensational news.

Second, scholars have argued serendipity as a result of editorial selection could be threatened by online news (e.g. Zuckerman 2008; Thurman 2011). Yet, we found that news applications and news websites facilitate serendipity as well. In our conceptualisation of serendipity, we anticipated that incidental news use would result from pushed news recommendations. Consequently, we did not include news presented in a news application or on a news website. This was, however, labelled as a conducive environment (cf. Swiss Cheese Model by Marki and Banford 2011) by multiple informants as the presented news often concerns topics they did not foresee. Based on Nelson’s (2019) argument that mobile news users predominantly rely on websites of large and familiar news brands, these perceived serendipitous encounters result in topic diversity, favouring legacy media news brands.

Third, our study reveals the ambiguous relationship news users have with news on Facebook. Studies have shown that mobile news users come across news content unintentionally (Van Damme et al. 2015), with (mobile) social media as primary platforms where serendipitous news consumption

takes place (Boczkowski et al. 2017; Fletcher and Kleis Nielsen 2018). On the one hand, audiences have developed strategies to feed Facebook's algorithm with news content they prefer by following people and news brands they value. On the other hand, Facebook's algorithm also presents news that is commented on or where friends are tagged. These encounters are not facilitated by the user (i.e. 'self-enabled'), but by the algorithm. As such, these are a clear by-product of their other online activities (put forward by Tewksbury et al. (2001) as the opposite of "purposeful, directed" offline newsgathering). These encounters are more likely to lead to topic and viewpoint diversity, yet the person who shares the news will serve as the determiner of whether the news is worthwhile (cf. Schrøder 2015).

In terms of methodology, this study combined mobile research methodologies and interviews. Due to our sample size of 20 informants, the quantitative data from these mobile methods only give impressions and cannot be considered as representative. This remains a qualitative study where a diverse sample was strived for. MobileDNA only measures which applications are used when and for how long. Most mobile news use of the informants took place in the browser or on Facebook, and therefore, MobileDNA only demystifies mobile news use to a limited extent. Specific patterns in the use of applications could, however, refer to news practices and could be used as a guideline in the interviews. For example, browser activity following the use of Facebook could implicate a shared link was opened. Regarding the ESM, informants pointed out the questionnaire addresses one encountered news item, whereas multiple incidental news encounters could have taken place.

This study put forward a conceptual model of news recommendations on a smartphone. The model can also be used for broader online news use, as some informants stated they encounter more news incidentally on a laptop compared to their mobile. Scholarly work argued that mobile technology facilitates serendipitous news consumption (Van Damme et al. 2015), yet we found no evidence that mobile devices afford more serendipitous news encounters compared to other devices. In conclusion, we follow Reviglio's (2017) idea that serendipity is both limited and cultivated in the digital environment. Audiences value recommendations performed by algorithms as these result in better (or more relevant) recommendations (Thurman et al. 2018). They have developed skills to shape the algorithm to a relevant feed, which provides them with new information and insights (= topic and viewpoint diversity). At the same time, peer recommendations remain an essential source of news as well, mostly when news is relevant or shows a common ground (referred to as relevance and inclusiveness by Swart, Peters and Broersma (2017), characteristics of public connection).

REFERENCES

- Baker, C. Edwin. 2006. *Media Concentration and Democracy*. Cambridge : Cambridge University Press.
- Beckers, Kathleen, Andrea Masini, Julie Sevenans, Miriam van der Burg, Julie De Smedt, Hilde Van den Bulck, Stefaan Walgrave. 2017. "Are newspapers' news stories becoming more alike?". *Journalism* online-first. doi:10.1177/1464884917706860.
- Boczkowski, Pablo, Eugenia Mitchelstein, and Mora Matassi. 2017. "Incidental news." *Proceedings of the 50th Hawaii International Conference on System Sciences*. doi:10.24251/HICSS.2017.217.
- Cannon, Walter Bradford. 1945. *Way of an Investigator*. New York: W. W. Norton.
- Costera Meijer, Irene. 2006. *De Toekomst Van Het Nieuws [The Future of the News]*. Amsterdam: Otto Cramwinckel Uitgeverij.
- Costera Meijer, Irene. 2013. "Valuable journalism." *Journalism* 14(6): 754-770. doi:10.1177/1464884912455899.
- De Pessemier, Toon, Simon Dooms, Kris Vanhecke, Bart Matté, Ewout Meyns, and Luc Martens. 2014. "Context and activity recognition for personalized mobile recommendations". In *Web Information Systems and Technologies*, edited by Krempels and Stocker, 243-262. Springer Berlin Heidelberg. doi:10.1007/978-3-662-44300-2_15.

- Dimmick, John, John Christian Feaster, and Gregory J. Hoplamazian. 2011. "News in the interstices." *New Media & Society* 13(1): 23-39. doi:10.1177/1461444810363452.
- Duffy, Andrew, Rich Ling, and Edson C. Tandoc Jr. 2018. "The People Have Spoken (The Bastards?)." *Journalism Practice* 12(9): 1130-1147. doi:10.1080/17512786.2017.1372696.
- Fletcher, Richard, and Rasmus Kleis Nielsen. 2018. "Are people incidentally exposed to news on social media?" *New Media & Society* 20(7): 2450-2468. doi:10.1177/1461444817724170.
- Foster, Allen, and Nigel Ford. 2003. "Serendipity and Information Seeking." *Journal of Documentation* 59(3): 321-340. doi:10.1108/00220410310472518.
- Haim, Mario, Andreas Graefe, and Hans-Bernd Brosius. 2018. "Burst of the filter bubble?" *Digital Journalism* 6(3): 330-343. doi:10.1080/21670811.2017.1338145.
- Helberger, Natali. 2019. "On the Democratic Role of News Recommenders". *Digital Journalism* (online-first). doi:10.1080/21670811.2019.1623700.
- Joris, Glen, Frederik De Grove, Kristin Van Damme, Lieven De Marez. Forthcoming. "News diversity reconsidered: unravelling the diversity of conceptualizations of news diversity in the digital era".
- Just, Natascha, and Michael Latzer. 2017. "Governance by Algorithms." *Media, Culture & Society* 39(2): 238-258. doi:10.1177/0163443716643157.
- Kim, Dam Hee, and Nojin Kwak. 2017. "Media diversity policies for the public." *Journal of Broadcasting & Electronic Media* 61(4): 682-702. doi:10.1080/08838151.2017.1375498.
- Kim, Yonghwan, Hsuan-Ting Chen, and Homero Gil De Zúñiga. 2013. "Stumbling Upon News on the Internet." *Computers in Human Behavior* 29(6): 2607-2614. doi:10.1016/j.chb.2013.06.005.
- Lee, Eun-Ju, and Edson C. Tandoc Jr. 2017. "When News Meets the Audience." *Human Communication Research* 43(4): 436-449. doi:10.1111/hcre.12123.
- Makri, Stephann, and Ann Blandford. 2012. "Coming across Information Serendipitously—Part 1." *Journal of Documentation* 68(5): 684-705. doi:10.1108/00220411211256030.
- Matsa, Katerina Eva, and Amy Mitchell. 2014. "8 key Takeaways about Social Media and News." *Pew Research Journalism Project*, March 26. <http://www.journalism.org/2014/03/26/8-key-takeaways-about-social-media-and-news>.
- McBirnie, Abigail. 2008. "Seeking Serendipity." *Aslib Proceedings*. 60(6). Emerald Group Publishing Limited. doi:10.1108/00012530810924294.
- McQuail, Denis. 2010. *McQuail's Mass Communication Theory*. Thousand Oaks, California: Sage publications.
- Molyneux, Logan. 2018. "Mobile News Consumption." *Digital Journalism* 6(5): 634-650. doi:10.1080/21670811.2017.1334567.
- Napoli, Philip M. 1999. "Deconstructing the Diversity Principle." *Journal of Communication* 49(4): 7-34. doi:10.1111/j.1460-2466.1999.tb02815.x.
- Nelson, Jacob L. 2019. "The Persistence of the Popular in Mobile News Consumption". *Digital Journalism* (online-first). doi:10.1080/21670811.2019.1612766.
- Nelson, Jacob L. and Ryan F. Lei. 2018. "The Effect of Digital Platforms on News Audience Behavior." *Digital Journalism* 6(5): 619-633. doi:10.1080/21670811.2017.1394202.
- Newman, Nic. 2018. "News in Social Media and Messaging Apps." *Reuters Institute for the Study of Journalism*. <http://www.digitalnewsreport.org/publications/2018/news-social-media-messaging-apps/>.
- Nicholas, David, Paul Huntington, Hamid R. Jamali, and Anthony Watkinson. 2006. "The Information Seeking Behaviour of the Users of Digital Scholarly Journals." *Information Processing & Management* 42(5), 1345-1365. doi:10.1016/j.ipm.2006.02.001.
- Pariser, Eli. 2011. *The Filter Bubble*. Westminster: Penguin UK. doi:10.3139/9783446431164.
- Pasquale, Frank. 2015. *The Black Box Society*. Cambridge, MA: Harvard University Press. doi:10.4159/harvard.9780674736061.
- Perneger, Thomas V. 2005. "The Swiss Cheese Model of Safety Incidents." *BMC Health Services Research* 5(1): 71. doi:10.1186/1472-6963-5-71.

- Poindexter, Paula M. 2016. *News for a Mobile-First Consumer*. New York: Peter Lang.
doi:10.3726/978-1-4539-1815-9.
- Reason, James. 2000. "Human error". *Bmj*, 320(7237), 768-770. doi:10.1136/bmj.320.7237.768.
- Reuters Institute for the Study of Journalism. 2018. "Digital News Report 2018". *Reuters Institute for the Study of Journalism*. <http://media.digitalnewsreport.org/wp-content/uploads/2018/06/digital-news-report-2018.pdf>.
- Reviglio, Urbano. 2017. "Serendipity by design?" *International Conference on Internet Science*. Cham: Springer. doi:10.1007/978-3-319-70284-1_22.
- Rubin, Victoria L., Jacquelyn Burkell, and Anabel Quan-Haase. 2011. "Facets of Serendipity in Everyday Chance Encounters." *Information Research* 16(3).
- Saroff, John. 2018. "This is the Next Major Traffic Driver for Publishers." *Nieman Lab*, March 29. <http://www.niemanlab.org/2018/03/this-is-the-next-major-traffic-driver-for-publishers-chromes-mobile-article-recommendations-up-2100-percent-in-one-year/>.
- Schrøder, Kim C., and Bent Steeg Larsen. 2010. "The Shifting Cross-media News Landscape." *Journalism Studies* 11(4): 524-534. doi:10.1080/14616701003638392.
- Schrøder, Kim C. 2015. "News Media Old and New." *Journalism Studies* 16(1): 60-78. doi:10.1080/1461670X.2014.890332.
- Shim, Hongjin, Kyung You, Jeong Lee, and Eun Go. 2015. "Why Do People Access News With Mobile Devices?" *Telematics and Informatics* 32(1): 108-117. doi:10.1016/j.tele.2014.05.002.
- Striphas, Ted. 2015. "Algorithmic culture." *European Journal of Cultural Studies* 18(4-5): 395-412. doi:10.1177/1367549415577392.
- Swart, Joelle, Chris Peters, and Marcel Broersma. 2017. "Repositioning News and Public Connection in Everyday Life." *Media, Culture & Society* 39(6): 902-918. doi:10.1177/0163443716679034.
- Vande Abeele, Mariek, Ralf De Wolf, and Rich Ling. 2018. "Mobile Media and Social Space." *Media and Communication* 6(2): 5-14. doi:10.17645/mac.v6i2.1399.
- Tewksbury, David, Andrew J. Weaver, and Brett D. Maddex. 2001. "Accidentally Informed". *Journalism & Mass Communication Quarterly* 78(3), 533-554. doi:10.1177/107769900107800309.
- Thurman, Neil. 2011. "Making 'the Daily Me'." *Journalism* 12(4): 395-415. doi:10.1177/1464884910388228.
- Thurman, Neil, Judith Moeller, Natali Helberger, and Damian Trilling. 2018. "My friends, editors, algorithms, and I." *Digital Journalism* 1-23. doi:10.1080/21670811.2018.1493936.
- van Berkel, Niels, Denzil Ferreira, and Vassilis Kostakos. 2018. "The experience sampling method on mobile devices". *ACM Computing Surveys* 50(6). doi:10.1145/3123988.
- Van Damme, Kristin, Cédric Courtois, Karel Verbrugge, and Lieven De Marez. 2015. "What's APPening to News?" *Mobile Media & Communication* 3(2): 196-213. doi:10.1177/2050157914557691.
- Voakes, Paul S., Jack Kapfer, David Kurpius, and David Shano-Yeon Chern. 1996. "Diversity in the News." *Journalism & Mass Communication Quarterly* 73(3): 582-593. doi:10.1177/107769909607300306.
- Weick, Karl E., and Kathleen M. Sutcliffe. 2006. "Mindfulness and the Quality of Organizational Attention." *Organization Science* 17(4): 514-524. doi:10.1287/orsc.1060.0196.
- Wellstone, Paul. 1999. "Growing media consolidation must be examined to preserve our democracy." *Federal Communications Law Journal* 52: 551-554.
- Westlund, Oscar, and Mathias A. Färdigh. 2015. "Accessing the news in an age of mobile media." *Mobile Media & Communication* 3(1): 53-74. doi:10.1177/2050157914549039.
- Wolf, Cornelia, and Anna Schnauber. 2015. "News Consumption in the Mobile Era." *Digital Journalism* 3(5): 759-776. doi:10.1080/21670811.2014.942497.
- Yadamsuren, Borchuluun, and Sanda Erdelez. 2010. "Incidental Exposure to Online News." *Proceedings of the 73rd ASIS&T Annual Meeting on Navigating Streams in an Information Ecosystem-Volume 47*. American Society for Information Science.

Zuckerman, Ethan. 2008. "Serendipity, echo chambers, and the front page." *Nieman Reports*, December 15. <https://niemanreports.org/articles/serendipity-echo-chambers-and-the-front-page/>.

Zuiderveen Borgesius, Frederik J., Damian Trilling, Judith Möller, Bodó Balázs, Claes H. de Vreese, and Natali Helberger. 2016. "Should we worry about filter bubbles?" *Internet Policy Review* 5(1): 1-16. doi:10.14763/2016.1.401.

APPENDIX

Appendix 1. Informant matrix presenting sociodemographic data, frequency of intentional news use ESM and mobileDNA data

Pseudonym	Sociodemographics				Frequency of intentional mobile news	ESM data			Mobile DNA (daily average)				
	Age	Gender	Economic situation	Level of education		Response Rate	Unintended news encounters	Increased news diversity (I don't know)	Time spent smartphone (h:mm:ss)	Apps used (news apps)	News apps opened	Time spent news apps (h:mm:ss)	News notifications enables
Bret	34	M	Working	Master	Daily	19/19	9/17	7/9	1:03:56	14(0)	-	-	-
Sue	26	F	Working	Master	Daily	18/19	2/18	0/2	2:22:56	13(0)	-	-	-
Wade	21	M	Student	Bachelor	Daily	21/21	12/19	5/12	2:51:25	20(1)	3	0:37:00	yes
Jena	26	F	Working	Master	Monthly	19/19	5/14	0/5	1:24:22	21(2)	10	0:01:20	no
Darian	38	M	Working	Master	Never	18/20	0/18	0/0	1:40:50	18(1)	9	0:02:52	yes
Lea	53	F	Unemployed	Secondary	Daily	18/20	7/18	2(1)/7	1:51:19	15(1)	4	0:02:10	yes
Laureen	22	M	Student	Bachelor	Daily	17/17	13/17	2(2)/13	0:47:48	11(0)	-	-	-
Wenna	35	F	Unemployed	Secondary	Never	17/17	6/17	4/6	1:18:43	15(0)	-	-	-
Emma	31	F	Working	Bachelor	Weekly	17/18	5/13	2/5	0:37:55	12(0)	-	-	-
Basil	32	M	Working	Master	Daily	21/21	4/19	1(1)/4	1:25:51	14(0)	-	-	-
Kim	28	F	Working	Bachelor	Daily	24/24	10/24	3(1)/10	2:23:07	17(0)	-	-	-
Lana	24	F	Working	Master	Daily	18/18	8/18	1/8	2:32:25	24(0)	-	-	-
Steven	58	M	Working	Bachelor	Daily	16/17	3/16	2(1)/3	0:33:04	17(1)	6	0:01:09	yes
Dagmar	30	F	Working	Master	Daily	17/17	8/17	4/8	1:13:20	15(1)	4	0:05:05	no
Carter	27	M	Working	Bachelor	Daily	15/17	7/15	0/7	0:41:58	11(1)	2	0:01:01	no
Mae	69	F	Retired	Master	Daily	16/16	16/16	5(2)/16	1:41:43	16(1)	6	0:01:38	yes
Ben	32	M	Working	Master	Never	17/17	4/17	1/4	0:36:02	8(0)	-	-	-
Pascale	23	M	Working	Master	Daily	15/17	4/15	1/4	0:30:43	12(1)	3	0:02:14	no
Sven	41	M	Working	Bachelor	Never	17/18	4/17	3/4	3:09:47	21(1)	4	0:01:17	no
Kathlin	47	F	Working	Master	Daily	15/17	3/15	0/3	1:22:58	18(1)	7	0:02:03	yes