

Abstract

Social media have become a central source for news and current affairs information. This article focuses on the overarching attributes that shape how people come in contact with news, engage with news, and are affected by news on social media. Although all social media are different and constantly change, news experiences on these platforms can consistently be characterized as **personalized, incidental, non-exclusive**, as well as **granularized and social**. Accordingly, this article introduces the PINGS framework, which acts as a systematization of social media news experiences and can be used to map key opportunities and challenges of using news across various social media platforms. In addition to presenting the framework components, the article also discusses how researchers can investigate personalization, incidentalness, non-exclusivity, granularity, and sociality in empirical studies.

Keywords: social media, social network sites, online news, political information, incidental news exposure, high-choice media environment, news media use

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Social Media Information Environments and Their Implications for the Uses and Effects of News: The PINGS Framework

Social media have become an influential player in our news landscape. Across different countries around the globe, platforms such as Facebook, Twitter, or Instagram are now a central source for current affairs information and news (Newman et al., 2020). Although the popularity of specific social media platforms has fluctuated over time—and will likely continue to do so (see also Bayer et al., 2020)—it can be assumed that the basic practice of turning to social media for information-related needs is unlikely to diminish any time soon. Users particularly value the convenience and speed of updates on social media as well as the simplicity of accessing a variety of sources in one place (see, for example, Shearer & Matsa, 2018, p. 8; Stark et al., 2017, pp. 119–121). Moreover, especially young users seem to appreciate the fact that they can simultaneously communicate with friends or family and, as a byproduct, stay on top about what is going on outside their immediate social circle through engaging with current affairs information (e.g., Bergström & Belfrage, 2018; Boczkowski et al., 2018). But engaging with news on social media also seems to affect the very process of using news. Research has shown that news use has become less intentional, shorter in duration, and more fragmented, which also affects the processing and effects of current affairs information (e.g., Costera Meijer & Groot Kormelink, 2015; Gil de Zúñiga & Diehl, 2019).

The relevance of social media for informational purposes challenges us to think about the overarching attributes that shape how people come in contact with news, engage with news, and are affected by news. While there already is a plethora of research that addresses (parts of) these issues empirically, theoretical assessments of the changes that social media information environments have brought about the use of news are sparse and often focused on selected social

media platforms. Moreover, extant theoretical frameworks have mostly addressed specific—albeit highly relevant—areas in this domain such as the (changing) role of curating actors and gatekeepers (Soffer, 2019; Thorson & Wells, 2016) or audiences’ news repertoires (Peters & Schröder, 2018). However, what is largely missing is a broad view of what characterizes news experiences in social media environments and how this affects the uses and effects of news. Although all social media are different and constantly change, five overarching characteristics shape news experiences and are likely to endure even if Facebook, Twitter, or other specific platforms lose their appeal: News experiences on social media are **personalized**, **incidental**, **non-exclusive**, as well as **granularized** and **social**. Accordingly, in this article, I propose the PINGS framework, which is not only a systematization of social media news experiences but can also be used to map and assess key opportunities and challenges of using news via social media. For this purpose, the framework highlights the conditions under which news is encountered, used, and disseminated today, while acknowledging that none of the characteristics are positive or negative per se (i.e., personalization is not inherently ‘bad’ and incidentally stumbling upon news not inherently ‘good’). It also challenges us to think about (new) ways to collect and analyze data on social media news use.

Using News in Social Media Information Environments: The PINGS Framework

Before proceeding to explicate the framework, it is crucial to define what is (not) meant by “news” and “social media.” In accordance with prior empirical studies, an inclusive conceptualization of news is adopted for this article, “which ranges from ‘hard’ news stories about world or local affairs to ‘softer’ news stories that could include entertainment or sports” (Vraga, Bode, Smithson, et al., 2016, p. 273). However, while the framework is able to describe and characterize news experiences across the spectrum from ‘very soft news’ to ‘strong hard

news’ (Lehman-Wilzig & Seletzky, 2010, p. 51), the discussion of effects will often be centered around hard news due to research on social media news use being heavily focused on political outcomes (see also Matthes et al., 2020, p. 1034). Still, an attempt is made to explicitly consider the implications for different types of news. Reflecting extant empirical approaches to studying news use in social media information environments (e.g., Edgerly & Vraga, 2020b; Kaiser et al., 2018; Kümpel, 2019a; Schäfer, 2020), the focus is further restricted to news content that *originates* from professional journalistic news providers¹ but is not necessarily transmitted by these providers—for example, when a friend is sharing the link to an article by The Guardian. “News” in a broader sense (i.e., all kinds of previously unknown information) is therefore not the focus of interest.

Referring to Carr & Hayes (2015; see also Bayer et al., 2020), social media are defined as disentrained, persistent online channels of masspersonal communication that facilitate interaction among users. Although the original definition highlights that social media derive “value primarily from user-generated content” (Carr & Hayes, 2015, p. 49), social media have undoubtedly become more and more reliant on (external) content that was not created by the sharing users. Recent social media platforms “are more like news aggregators” (Ellison & boyd, 2013, p. 155) and heavily feature links to external websites or content providers. While social media news use can be active and goal-directed (e.g., performing a Twitter search for a news topic, purposely browsing the CNN Instagram page—both of which are possible even without

¹ In our current information environment, accompanied by the rise of alternative news media (Holt et al., 2019) and various types of so-called fake news, “the boundaries between professional and nonprofessional news content have become increasingly difficult to distinguish” (Tandoc Jr. et al., 2018, p. 2746). In the context of this article, *professional journalistic news providers* are normatively defined as institutional actors that are committed to norms of objectivity, accuracy, and independence, work autonomously and establish truth based on facts (see Deuze & Witschge, 2018; Lewis, 2019). While this narrow conceptualization certainly does not reflect what (online) journalism can or does look like in practice (ibid.), it mirrors the news-democracy narrative pervasive in much empirical research on social media news use (see Edgerly & Vraga, 2020a).

registration), the focus here is on instances where users browse their own feeds in social-media-typical patterns such as habitual “checking” and laid-back “snacking” (Costera Meijer & Groot Kormelink, 2015; Schäfer, 2020).

Building on these definitions, the PINGS framework calls attention to the conditions of coming in contact with news, being attentive to news, and engaging with news on social media (see Figure 1 for an overview). I will start with a general characterization of the respective component, accompanied by a discussion of key opportunities and challenges, specifically those related to the reception of hard news and political outcomes. Following the tradition of Eveland’s (2003) “mix of attributes” approach, the framework components can be seen as general attributes of social media news use that are more or less pronounced and intertwined on different social media platforms (see also Dylko & McCluskey, 2012). This focus on overarching attributes not only helps researchers to systematically assess the effects of social media news use but also to extract particularities by comparing the specific configuration of attributes with earlier forms of (online) news use (Ohme, 2020, p. 105).

Personalization of the News Experience

Whether it is a hashtag-based search on Twitter, discovering a news post in the Facebook feed, or following a news provider on Instagram—the news experience in social media information environments is highly *personalized*. Social media are “fundamentally based on the idea of customizability” (Dylko, 2016, p. 390), which means that encountering news is contingent on who users decide to follow, which accounts they have subscribed to, and what (news) content they frequently read, click on, or disseminate among their network. These decisions are fed into highly responsive algorithms that influence which content is featured in a given social media user’s feed. Two types of personalization can be distinguished: (1) *Explicit*

personalization (Bozdag, 2013; also discussed under terms such as user-driven customization and personal curation, see Dylko, 2016; Thorson & Wells, 2016) describes instances in which the social media users themselves take action to customize their information environment, for example through following journalists or subscribing to news-related pages. (2) *Implicit personalization* (Bozdag, 2013; also discussed under terms such as system-driven customization and algorithmic curation, see Dylko, 2016; Thorson & Wells, 2016), on the other hand, refers to the idea that platform-specific algorithms infer what the user should be interested in—building on prior interactions (e.g., clicks, reactions) and the behavior of one’s contacts, but also on more general factors such as global user trends, or the timeliness of posts. On social media, both types of personalization work together, creating a constantly changing stream of content that may—or may *not*—feature various kinds of news. This observation already highlights the main challenge associated with personalization, especially in the context of hard news and political information (see also Kümpel, 2020; Thorson et al., 2019). While “news junkies” (Prior, 2007) that heavily engage in explicit personalization and follow a lot of news providers or journalists are likely to encounter more and diverse news, the same cannot be expected for users without an interest in news, as they are a) unlikely to deliberately follow news accounts on social media (no news-related *explicit* personalization), and b) thus unlikely to be targeted with algorithmic recommendations centering around news (no news-related *implicit* personalization). Although these self-reinforcing processes crop up across the range of news types, the implications are particularly relevant when focusing on the democratic effects of consuming political news (see also Edgerly & Vraga, 2020a; Matthes et al., 2020).

Of course, the personalization of news experiences is nothing entirely new. Beniger (1987) points out that personalization efforts could already be observed in the early 19th century

with “innovations as the specialized magazine, targeted mass mailing, neighborhood edition newspaper, and phone-in radio show” (p. 353). But even if one assumes that traditional media have, by and large, provided identical (news) content to all consumers, one could argue that the self-determined selection of a specific TV news program or newspaper in the high-choice media environment is a form of explicit personalization as well. Along these lines and almost 25 years ago, Katz (1996) has lamented that TV has lost its role as a central civic space and that “one can no longer be certain that one is viewing together with everybody else or even anybody else” (p. 24). However, in comparison with traditional media, being exposed to a personalized selection of content is hardly a *choice* on social media. Building on user profiles generated on the basis of explicitly registered and implicitly determined preferences, social media architectures are designed to sustain people’s attention, thus striving “to show news that is interesting to users” (Kozyreva et al., 2020, p. 115). Accordingly, personalization is a key feature of the news experience in social media environments, unparalleled by any form of personalization in both traditional and ‘non-social’ online news media.

Incidentalness of the News Experience

In addition to being highly personalized, the news experience in social media information environments can generally be described as *incidental*. This framework component strongly builds on the idea of incidental news exposure (INE), which has received renewed attention with the increasing use of social media for news. It was both defined as users encountering current affairs information “while they are not consciously looking for it” (Ahmadi & Wohn, 2018, p. 2) as well as a secondary activity, “something which accompanies a major activity, often as a by-product of pursuing the latter” (Boczkowski et al., 2018, p. 3524). However, as Karnowski and colleagues (2017) note, INE is not an online phenomenon and “has been discussed long before

the advent of the Internet” (p. 43). Examples from non-online environments include viewing a news ticker on public transport screens, seeing the last minutes of a newscast while awaiting one’s favorite TV show, or noticing a headline while passing a newspaper vending machine. This type of ‘offline incidentalness,’ however, differs from the one experienced in social media, which is heavily dependent on the aforementioned processes of implicit and explicit personalization (see further: Kümpel, 2020; Thorson, 2020).

Focusing on the social media news experience, we can differentiate two levels of incidentalness: First, encountering news can be conceptualized as an incidental experience when considering (1) *usage motives*. According to data from the Reuters Institute Digital News Report (Newman et al., 2018), only between a fifth and a third of German (22 %), UK (26 %), and US-American (32 %) online users who claim to use social media for news even follow the page of a news provider. Thus, while some users may intentionally visit social media to inform themselves about current events, news does not seem to be something that the average user is actively looking for (see also Feezell, 2018, p. 484). However, usage motives may very well influence how users process and engage with (political) news. Building on a survey with adolescents, Heiss and colleagues (2019) conclude that users “may have to intentionally expose themselves to political content [on social media] and elaborate on this content in order to increase their political engagement” (p. 14, see also Matthes et al., 2020).

Second, individual usage motives aside, there is a (2) *situational* incidentalness: Even users who have explicitly expressed their interest in being exposed to news once (e.g., by following a news provider), do not know how many news posts will be featured in their feeds when they login to their accounts. This is also the key difference between social media and other online platforms that have been characterized as encouraging INE (e.g., portal sites, sites of

webmail providers, see Tewksbury et al., 2001), as these sites always feature snippets of news. Consequently, the likelihood for stumbling upon news may differ from one usage episode to another, even if the explicit personalization of one's feed allows some degree of control about this situational incidentalness.

Non-Exclusivity of the News Experience

Closely linked to the incidentalness of the news experience is the fact that news makes up only *one* part of the social media information environment (Kümpel, 2019b, p. 168; Matthes et al., 2020, p. 1037)—and for most users only a small² one, especially when considering hard news. While many researchers have described social media as a space in which “political information mixes with updates about pets and babies” (Bode, 2016, p. 29) or as a context “where pictures of cats, parties, celebrities and socially oriented updates irregularly but continuously are being mixed up with news stories” (Bergström & Belfrage, 2018, p. 585), this non-exclusivity of the news experience and its implications are usually not the focal points of empirical research. However, to adequately investigate social media news use and its outcomes, we certainly need to know what the blend of personal social information, entertaining memes, and political news means for users' attention towards and engagement with current affairs information (see also Matthes et al., 2020, pp. 1037–1038).

Building on systematizations of different stages of news exposure (Ohme & Mothes, 2020; Vraga et al., 2019), it is sensible to differentiate three stages of news exposure on social media: (1) The initial *contact* with news posts in one's feed, (2) the *attention* dedicated to a specific news post, and (3) actual *engagement* (i.e., clicking on and further interacting with the post). Considering the virtually endless number of choices in social media feeds, the question of

² In January 2018, Facebook CEO Mark Zuckerberg has stated that he expects “news to make up roughly 4% of News Feed” (Zuckerberg, 2018).

which news posts capture users' attention is of particular importance. Since measuring attention is methodologically challenging, there are only a handful of studies that have tried to address this in the context of social media news use (Bode et al., 2017; Ohme & Mothes, 2020; Sülflow et al., 2019; Vraga, Bode, & Troller-Renfree, 2016). The stream of posts created for these studies, however, usually does not represent the whole range of content that is available in a typical social media feed, thus recreating the idea of non-exclusivity only to an extent. Exclusively focusing on Facebook, the results of the mentioned studies nevertheless offer some insights into what a mixed, non-exclusive information environment does to people's attentiveness. Ohme and Mothes (2020) found that participants with a higher level of political interest dwelled longer on journalistic news posts than on entertainment posts, reflecting the self-reinforcing effects described above for the question of who even gets exposed to (political) news on social media. Similarly, Bode and colleagues (2017) found that people are quite efficient in identifying political content and subsequently skipping over it if they are not interested. Using the same dataset, Vraga and colleagues (2016) furthermore show that different post topics allocate different amounts of attention and that users spent the most time looking at picture posts, followed by link posts, and status updates. There is, however, still a lot to unpack when it comes to the non-exclusivity of the news experience: What influences attention to news posts in strictly (audio-)visual social media such as Instagram? How does the presence of actual *personal* social information (e.g., friends announcing their wedding)—that is usually not part of experimental studies due to ethical and practical concerns—change the attention towards news in a feed? These and other questions prompted by the PINGS framework require further consideration.

While one might recognize a kind of non-exclusivity when thinking about a typical TV channel, where news could be preceded by cartoons and followed by a crime drama, the social

media information environment certainly offers a unique mixture of social information, entertainment, sponsored content, practical advice, and various types of news. As such, non-exclusivity is another distinctive feature of the news experience in social media.

Granularity of the News Experience

Whereas the non-exclusivity of the news experience primarily refers to the positioning of news in the broader social media environment, granularity calls attention to the fact that using news or interacting with news on social media usually happens in relation to *single* pieces of content, for example, when clicking on a link to an article by The New York Times on Twitter, or liking a political image quote on Instagram. Indeed, on social media, news stories can “be easily separated from their original placement to circulate independently, get rebundled with other items, or be chopped into free-floating snippets to be shared apart from the whole story” (Carlson, 2020, p. 236). Schweiger (2017) has labeled this phenomenon ‘granularized news exposure’ (translated from German “granularisierter Nachrichtenkontakt”), thereby emphasizing both the dominance of the so-called “snack news” format (e.g., news teasers/headlines or picture posts, see Schäfer, 2020) as well as the move away from using integrated news services such as an entire newspaper or even the front page of its online version. Others have used the term “unbundling” (e.g., Hermida, 2016, p. 89) to highlight how social media have challenged the idea of consciously curated journalistic products and obviated the need for relying on selected news providers (see also Carlson, 2020). Looking at the possible effects of this granularized news experience, findings are somewhat mixed. Although research in the domain of political news suggests that even single news posts or teasers contain a certain amount of information and might thus be able to provide users with “a little bit of knowledge” (Anspach et al., 2019; see also Bode, 2016), substantial knowledge effects require more than skimming over posts (Lee &

Kim, 2017). In addition, even for hard news ‘junkies’ it seems unlikely to get a comprehensive overview of the latest developments solely from their social media feeds (Schweiger, 2017, p. 82). There is also the threat of users mistaking mere exposure to snack news with being informed about an issue or event (Leonhard et al., 2020; Schäfer, 2020). Research suggests that this feeling of being informed could lead to detrimental effects such as perceiving social media as a good substitute for other news sources (Müller et al., 2016), eventually leading to neglecting non-personalized and journalistically curated products.

Thinking about news use in more general terms, one might argue that people have always interacted with single pieces of news content. In fact, there are probably only a few people that regularly read *all* the articles in a newspaper or *all* pieces that are featured on the front page of a news site. However, as Schweiger (2017) points out, even if one does not read a single article thoroughly, it is still possible to get a rough overview of the current news situation by skimming over these journalistically curated products. Through placement and visual presentation, they also provide their recipients with a sense of meaning and relative importance (see also Carlson, 2020, p. 236). This contextual information is missing in a social media feed, where a front-page story with big letters and eye-catching pictures is just another post among countless others. Furthermore, personalization routines and non-exclusivity make it highly unlikely that a typical user gets a rundown of news events that is comparable to (online) newspapers or TV newscasts.

Sociality of the News Experience

The fifth and last component of the PINGS framework is concerned with the increased sociality of the news experience, expressed in the inevitable connection of news with various types of social information and recommendations. Again, highlighting this component as a particularity of social media information environments is not intended to suggest that ‘old’ forms

of news experiences are *unsocial*. Being confronted with news and discussing news has always been a social affair: Whether it is families watching the evening news together or colleagues discussing breaking news during lunch hour. With regard to the dissemination of news, research on news diffusion has repeatedly confirmed the key role of interpersonal communication, particularly when issues are emotionally charged (e.g., Ibrahim et al., 2008). However, on social media, being confronted with news *necessarily* means being confronted with social information—even without direct social interactions. When imagining a social media user turning to their feed in the middle of the night and being exposed to a news article posted by their best friend, commented by ten others, and shared by three more, it becomes apparent why news cannot be unsocial in social media information environments. Even a post that has not received any likes, comments, or shares ultimately contains social information, namely that the post—at least at the time of viewing—has not yet provoked any engagement from others.

On social media, social information is located on two levels, with users being simultaneously exposed to (1) *aggregated* recommendations such as the number of likes or shares, and (2) *personal* recommendations by friends, family, and acquaintances. Looking at the effects of aggregated recommendations first, a literature review suggests mixed effects of these “popularity cues” on users’ evaluations and selection behavior, depending both on user characteristics (e.g., need for cognition, involvement) and contextual factors (e.g., general post characteristics, see Haim et al., 2018). Crucially, the effects seem to be dependent on implicit or explicit reference points to enable users to determine whether, for example, 1,000 likes on a news post are a lot or little (ibid.). Overall, while aggregated recommendations might offer some guidance for users’ engagement decisions by changing the heuristics people utilize (Messing & Westwood, 2014, p. 1056), research suggests that personal recommendations carry more weight.

The social contacts in a given users' social media network not only influence with which news the user is confronted but also how this piece of information is perceived and interpreted. The visible behavior of friends surrounding news posts thus acts as another source layer, in addition to the original media source (Oeldorf-Hirsch & DeVoss, 2020). A number of recent studies show that this additional layer positively influences news-related selection decisions and information-seeking behavior on social media—particularly when the friend source is a strong tie, positively evaluated, and/or perceived as an opinion leader (e.g., Kaiser et al., 2018; Karnowski et al., 2017; Kümpel, 2019a; Messing & Westwood, 2013; Turcotte et al., 2015).

Considering these findings, personal social information was often described as an opportunity to motivate users who lack the intrinsic motivation to engage with news content. But how likely is it—especially outside of experimental settings—that users uninterested in news actually receive news recommendations? A recent study on news tagging practices found that “news junkies are unlikely to tag their uninterested friends in news stories” (Kümpel, 2019a, p. 390), suggesting that personalized/direct news recommendations are only given if the friend is already perceived as being interested in the topic. The ‘in-principle’ opportunities provided by personal recommendations thus seem to be limited by users’ actual social media news practices. However, regardless of the motivational potential of social news recommendations, sociality is, without a doubt, fundamental to experiencing news in social media information environments.

Measuring and Observing News Use in Social Media Information Environments

The framework components themselves already point to the problems associated with studying social media news use empirically. As a result of personalization routines, each user is confronted with a unique and highly dynamic selection of content, constantly changing with every new login and usage situation. Grossly simplified, with every improvement of a study’s

external validity (i.e., coming as close to natural social media [news] use as possible), its internal validity is likely to suffer. Given this, it is often inevitable to focus investigations on selected characteristics of social media information environments. Accordingly, in this section, I aim to present some ways to shed light on the five framework components in empirical research.

Personalization

The most natural—albeit laborious and ethically challenging—way to deal with the fact that news experiences are personalized, is to conduct research that works with people’s own social media accounts. For example, a combination of naturalistic observations and self-confrontation interviews offers insights into how social media users navigate their feeds, the contextual dynamics of their (news) use, as well as the individual considerations that shape engagement with personalized content (e.g., Kümpel, 2019b). Other options include combining tracking and survey data (e.g., Möller et al., 2019), or connecting digital trace data with users’ self-reports (e.g., Thorson et al., 2019). Relying on participants’ provision of their Facebook data archive—including information about their Facebook activity, page likes, or advertisement-related categorizations of their accounts—, Thorson and colleagues (2019) are able to show that users who are algorithmically classified as interested in news and politics are more likely to be exposed to news content. Digital trace data might thus be “a fair proxy for what Facebook ‘knows’ about each user’s topical interests” (ibid., p. 11). As most social media platforms now provide their users with the opportunity to download the information collected about them (“data download packages,” see Boeschoten et al., 2020), these data can be used to ‘reverse engineer’ personalization routines and processes of algorithmic interest classification—at least to some degree. Of course, such designs not only require the willingness of research participants, but also a comprehensive briefing and careful handling of the provided data. Yet another way to uncover

personalization routines *without* requiring access to real social media accounts is agent-based testing, a systematic computational data-capturing approach aimed at simulating human behavior through automated virtual agents. With a focus on Google News, Haim and colleagues (2018) have created prototypical personas with different sociodemographic characteristics and interests, simulated keyword-based searches by these personas, and stored all generated results pages. A comparable approach might be realized in social media environments by setting up differently behaving personas/accounts and recording the outcome in feed composition or displayed advertisements.

Incidentalness

The mentioned disparities in incidental news exposure on social media are best addressed with the methods discussed in the previous section (e.g., with large-scale tracking data, see Scharkow et al., 2020), because they are largely a result of explicit and implicit personalization. Focusing more closely on the *experience* of incidentalness (i.e., what [news] content in one's feed is perceived as accidental vs. fairly expectable?), mobile (forced) experience sampling studies might provide a solution (e.g., Karnowski et al., 2017). Similar to Karnowski and colleagues (2017), researchers could ask participants to log in to their social media accounts and give information about "the first post that contained news" (ibid., p. 46), specifically asking about whether this encounter was perceived as expected (e.g., because the user follows the news provider) or as coincidental in the narrower sense. Such an approach would also be particularly suitable to uncover the type of situational incidentalness described above.

For 'regular,' retrospective survey studies on INE, it might prove fruitful to not simply ask participants about how often they come across news when they have been going online for another purpose but to acknowledge that incidental news exposure is more continuous,

depending on previous behaviors and algorithmic interest classification. Accordingly, the phenomenon might best be reflected by developing multiple indicators that point to a user being more or less likely to ‘stumble’ upon news in their feed (see also Kümpel, 2020; Thorson, 2020).

Non-Exclusivity

To grasp the non-exclusivity of news experiences, researchers might once more consider working with people’s own social media accounts in observational studies or relying on tracking data (see above). Furthermore, non-exclusivity seems particularly crucial to consider in experimental research on social media news use. Given that a) a feed full of news posts is a rather rare sight for most users, and b) a mixed information environment likely changes the amount of attention users are willing to give to news, it is advisable to create scenarios in which news posts are not the only option for engagement (for such an approach see Bode et al., 2017; Vraga, Bode, & Troller-Renfree, 2016). Additionally, to study the idea of non-exclusivity in an even broader context than just in the realm of social media, analyses of people’s *screenome*—defined as the “unique individual record of experiences that constitute psychological and social life on digital devices with screens” (Reeves et al., 2019, p. 3)—could offer valuable insights. Such a comprehensive perspective on people’s information ecology is of particular importance, as it must be assumed that users are not only affected by non-news content in the social media feed itself, but also by external distractions such as notifications from other apps, incoming calls, or text messages. Acknowledging that news experiences are in constant competition to other, oftentimes more entertaining options, should be considered when designing studies on social media news use. If that is not feasible, the implications of a non-exclusive news environment should at least be kept in mind when interpreting the results, especially when dealing with manipulated stimuli.

Granularity

The granularity of news experiences is probably the component of the framework that is hardest to investigate adequately. While it is comparatively straightforward to measure the differential effects of being exposed to just a news teaser/post vs. a full journalistic piece (e.g., Lee & Kim, 2017; Schäfer, 2020), such a study design is not really at the heart of what granularity entails. Questions triggered by this component are rather concerned with how broad and diverse in content encountered news posts are. One possibility to address these questions is to use a browser plug-in that automatically collects all posts that are available in a user's social media feed (such a plug-in for Facebook is presented in Haim & Nienierza, 2019). To protect the privacy of the users, the plug-in developed by Haim and Nienierza (2019) only collects *public* posts (e.g., from news pages, meme accounts) as well as contextual information such as the number of popularity cues or the post's position in the feed. In a subsequent step, the collected posts can be subjected to content analyses to determine to what kind of news posts participants were exposed to and whether these offer a comprehensive overview or, on the contrary, just focus on specialized topics or issues. With regard to news providers and possible platform differences, it would also be possible to analyze a) which news make it to different social media *at all*, and b) whether these are presented and framed differently. From an audience perspective, even more insights might be generated by an approach similar to Doris Graber's seminal work *Processing the News* (Graber, 1984): Relying on a combination of a news diary, in-depth interviews, and an analysis of the posts reported in the diary could help to better understand subjective reactions to social media news posts as well as how people process and make sense of granularized news encounters.

Sociality

While non-personalized (e.g., news sharing by fictional individuals) and aggregated social information (e.g., number of likes on a news post) are easy to manipulate in experimental studies, working with personalized social information is more challenging. In the past, some researchers have used the application programming interface (API) of social media platforms to extract information about participants' interactions with friends, thus being able to infer tie strength without relying on self-reported measures and to (semi-)automatically create personalized stimuli (e.g., Messing & Westwood, 2013; Turcotte et al., 2015). However, in recent years, API access has become severely restricted, curtailing API-related social media research. To study the effects of personalized social information without obliging participants to grant direct access to their accounts, experimental researchers have thus started to come up with alternative methods to create stimuli featuring the names of participants' actual contacts. A popular approach is asking participants to list the names of their (least) close friends (e.g., Kaiser et al., 2018; Oeldorf-Hirsch & DeVoss, 2020) or—to avoid the problems associated with such free recall (e.g., predominantly remembering strong ties)—work with task-based name generators (e.g., Kümpel, 2019a). When conducting observations or using tracking data it is usually not possible to determine the relationship between a news-sharing friend and the exposed user without further self-report measures. On the other hand, if researchers are interested in social influence in more general terms, inferences might also be drawn from network analyses and patterns of information dissemination (e.g., Garcia et al., 2017).

Platform Differences and the Interplay of the Framework Components

Thus far, the components of the PINGS framework were mainly discussed in isolation and without explicitly acknowledging the extent to which they are characteristic for different

social media platforms. However, in order to grasp users' actual experiences with news, it is important to not just consider the individual attributes but their interconnectedness. Indeed, it is only in combination that personalization, incidentalness, non-exclusivity, granularity, and sociality create users' social media news experiences. For example, whether a user 'stumbles' upon (*incidentalness*) and engages with a news post in their feed depends not only on how they have customized their network (*personalization*), what their friends post or the majority of users are interested in (*sociality*), but also on the ability of the single post (*granularity*) to attract the user's attention amid a diverse blend of content (*non-exclusivity*).

While the PINGS framework is largely platform-independent and applicable to most current social media sites, the five attributes are mixed differently on different platforms, suggesting that their significance for news-related outcomes varies as well. Indeed, one should not think of the framework components in binary terms (e.g., a news experience being social or not), but more as a matter of degree—especially from the users' perspective. For example, it might be more important for a user's willingness to engage with a news post if two of their best friends shared it compared to the post having 25,000 likes by unknown others. Moreover, we can also think of different social media platforms as providing more or less personalized, incidental, non-exclusive, granular, and social news experiences. Regardless of user behavior, Twitter seems to be a platform that is generally more "newsful" (Ju et al., 2014) and—through its 'trending topics' section—one that often features the news of the day (Boukes, 2019, p. 37). Accordingly, it might be easier for users to stumble upon current affairs information on Twitter—even if they are not interested in it. Instagram, on the contrary, has a feed that is organized in a way that users, apart from advertisements, only see content from accounts and hashtags they follow while more serendipitous encounters are confined to the heavily

personalized ‘search & explore’ section. Furthermore, given the uniform visual presentation of posts as square tiles on Instagram, it might be even harder for news posts to compete against personal photos by friends or the aestheticized content of influencers. Considering the different digital architectures of social media platforms is thus crucial to make sense of users’ news experiences and the effects of social media news use. The PINGS framework allows researchers to locate every platform on a spectrum (e.g., being high in personalization, low on sociality, etc.) and to theorize about how the mix of the five attributes might consequently affect the outcomes of using news.

Although the PINGS framework is largely user-centric and focused on the experiences of individual users, it also asks us to think about the wider societal implications of using news on social media. What does it mean for a society’s social cohesion or overall information supply when citizens increasingly experience news in a personalized, incidental, non-exclusive, granularized, and social fashion? There is evidence that not only is (news) content increasing in volume, but that the span of collective attention towards specific topics has gotten narrower (Lorenz-Spreen et al., 2019)—a dynamic that might partly result from social media information environments in general and characteristics such as non-exclusivity and granularity in particular (see also Kozyreva et al., 2020, p. 125). Moreover, considering the focus on *journalistic* news content in this article, one might scrutinize how users’ experiences with news on social media affect journalism in a kind of ongoing feedback loop, influencing, for example, journalists’ role conceptions or their production and distribution routines (e.g., Vázquez-Herrero et al., 2020; Xia et al., 2020).

Conclusion

The scholarly debate about the uses and effects of news in social media information environments is lively and continuing, producing insights into how people are exposed to news, how they engage with encountered news content, and, not least, how they are affected by news on social media. This article benefits this debate by introducing the PINGS framework, which systemizes news experiences in social media information environments and can be used to guide research on the conditions, opportunities, and challenges of using news on these platforms. Recognizing that news experiences are simultaneously personalized, incidental, non-exclusive, granularized, and social, is crucial to understand how people navigate social media information environments and what they are (un)able to gain from their use. Being platform-independent and focused on high-level attributes, the PINGS framework offers a robust and fairly persistent structure to examine social media news uses and related outcomes. Moreover, it helps to recognize both intentional and unintentional blind spots in extant empirical research: For example, did an experiment account for the fact that news posts are mixed with other types of content on social media? Do survey measures of incidental news exposure take into consideration that stumbling upon news is not a universal experience? And do content analyses of social media news posts acknowledge how the number of likes or comments influence the visibility of a post and, consequently, its impact on users? A greater focus on these issues could provide insights that account for what it means to use news in the current media environment.

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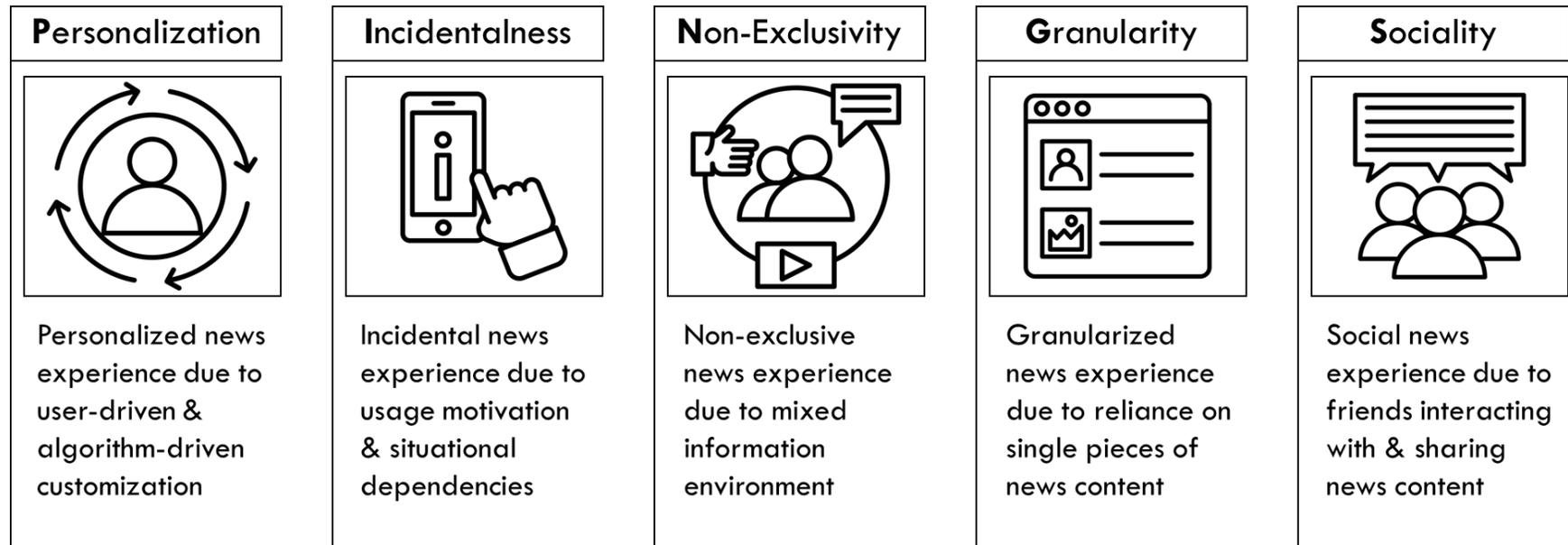
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Figure 1

The PINGS Framework and its Components



Note: Icons created by users “Vectors Market” and “Edwin PM” from *thenounproject.com*.