Online and (the Feeling of Being) Informed: Online News Usage Patterns and Their Relation to Subjective and Objective Political Knowledge

Abstract

As online news today is an important source of political information and available in vast quantities, understanding its use and its impact on citizens' political knowledge is vital. The aim of the present study is to identify different usage patterns of online news and their relation to individually perceived (i.e., subjective) and actually measurable (i.e., objective) political knowledge. To do so, we conducted an online survey of German online news users (n = 396), investigating characteristics of their online news usage as well as their subjective and objective political knowledge. Latent class analysis revealed six distinct usage patterns, of which a usage pattern drawing heavily on social media and push accesses as a source of news (e.g., Facebook newsfeed, email newsletter) and being rather highly driven by entertainment needs has been found to be associated with an overestimation of one's own political knowledge (*illusion of knowing*). The potential negative implications of such an illusion of knowing are discussed against the backdrop of the democratic ideal of informed citizens.

Keywords: online news, political knowledge, illusion of knowing, latent class analysis (LCA)

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Online and (the Feeling of Being) Informed: Online News Usage Patterns and Their Relation to Subjective and Objective Political Knowledge

To take part in the societal and political discourse in a democratic society, each citizen needs at least some extent of political knowledge, whether it be knowing the candidates, political parties, and their program in the context of elections, or being aware of the issues of the day. News is the main provider of this kind of information, currently giving access to information nearly anytime and anywhere due to the widespread use of online media as a source of news (Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2018).

This increasing importance of online media goes along with the "transition from low to high-choice media environments" (Aelst et al., 2017, p. 4; see also Prior, 2007), allowing users to access and consume news in a myriad of different ways. Not only can users receive news by directly accessing a news company's website, but also through online intermediaries like search engines, news aggregators, or social media. In addition to such forms of intentional news usage, news can be encountered incidentally as well (e.g., Bode, 2016). In particular, social media like Facebook facilitate such incidental news exposure, as users are not only exposed to news they have actively searched for, but also to news others have shared or interacted with (Bode, 2016; Choi, 2016; Karnowski, Kümpel, Leonhard, & Leiner, 2017; Kümpel, 2018; Oeldorf-Hirsch, 2018; Weeks, Lane, Kim, Lee, & Kwak, 2017).

Considering the case of Germany, with its broad media environment and a plethora of (online) news media, citizens should thus be adequately informed and in the know about basic political facts and current affairs. Nevertheless, according to a representative survey in July 2017, more than half were not even able to correctly answer simple questions about Germany's political system (Zeit Online, 2017). However, 75% of the respondents still considered themselves well-informed about politics.

Hence, individual misperceptions of political knowledge are apparent, resulting in a discrepancy between individually perceived (i.e., *subjective*) and actually measurable (i.e., *objective*) political knowledge (Hollander, 1995; In der Au, Wieland, & Zeitler, 2017; Weber & Koehler, 2017). Based on these findings and given the importance as well as the widespread use of online news in Germany (Hölig & Hasebrink, 2018), we take a closer look at the relationship between such discrepancies and online news usage. Specifically, we ask how such knowledge misperceptions relate to different online news usage patterns. To address this question, we first seek to identify different usage patterns of online news based on gratifications, news habits, as well as on modes of navigation and different modes of access. Based on this, the identified usage patterns are analyzed in terms of their relation to subjective and objective political knowledge.

Online News Usage Patterns and Political Knowledge

To derive characteristics that are key to the examination of different usage patterns of online news, we rely on Atkin's (1973) *informational utility approach*. This approach, originally developed to describe general information-seeking behavior, can be applied as a theoretical framework to explain specific information-seeking behavior like the use of online news as well. Based on this theoretical framework, we not only review existing research on instrumental needs and gratifications of information seeking, but also establish connections to relevant related concepts, such as habits of online news usage. Given the nature of online information environments, we furthermore address online navigational styles as well as different modes of access as pertinent aspects when investigating online news usage.

Identifying Usage Patterns of Online News

To understand users' social and psychological needs when deciding on which media to use, we draw on Atkin's (1973) *informational utility approach.* Here, the central assumption is that "an individual will select a mass media message when he estimates that the

message reward value exceeds the expenditures incurred in obtaining it" (Atkin, 1973, p. 206). Such reward value can comprise the gratification of *informational needs*, for example in terms of serving *surveillance needs*, that is, being up to date on relevant issues of the day that (potentially or actually) affect one's own welfare. Gratifications of such informational needs do not necessarily arise directly, but rather in the long run, for example when one is able to take part in discussions with friends on recent affairs based on information derived from a piece of news covering the respective topic. In contrast, *consummatory gratifications* are defined as "transitory mental or emotional responses providing momentary satisfaction at an intrinsic level" (Atkin, 1985, p. 63), thus taking place immediately during media use. Examples of consummatory gratifications are *entertainment*, *fighting boredom*, and *escaping* everyday life problems. As Atkin (1973) pointed out, the selection of informational media content can be based both on instrumental needs like surveillance seeking and on the search for consummatory gratifications like entertainment or escapism.

Several studies have identified correlations between the usage of online news and instrumental needs like the need for surveillance (Diddi & LaRose, 2006; Kaye & Johnson, 2002). Moreover, this need proves to be relevant not only for online news reading, but also for news posting and endorsing (Choi, 2016). Apart from that, research shows that online news is used for the sake of consummatory gratifications, among others to escape everyday life problems, to fight boredom, or to bridge waiting times (Costera Meijer & Groot Kormelink, 2015; Diddi & LaRose, 2006; Ferguson & Perse, 2000).

Both types of motivations to use (news) media are based on users' active and conscious evaluations of their instrumental or consummatory needs and the gratifications connected with the decision to use the respective media. While the informational utility approach (Atkin, 1973) explicitly takes into account the cognitive processing of these evaluation decisions, we would argue that, after having undergone that process several times,

habits will often take the place of such conscious decisions (Bayer & Campbell, 2012; LaRose, 2010; LaRose & Eastin, 2004; Schnauber-Stockmann & Naab, 2018; Wood, Quinn, & Kashy, 2002). Therefore, the concept of habits constitutes a valuable extension of the informational utility approach (Atkin, 1973), as the habitual performance of news use behavior can be traced back to the same instrumental or consummatory needs and gratifications described there. Especially in the context of online news, habits prove to be relevant, as the vast abundance of information available impedes conscious selection in every single decision situation and therefore promotes the formation of news habits (Diddi & LaRose, 2006). Accordingly, habits are particularly relevant for using online news compared to using traditional media like television (Choi, 2016; Diddi & LaRose, 2006; Oulasvirta, Rattenbury, Ma, & Raita, 2012; see also Yadamsuren & Erdelez, 2011).

In addition to individual needs, gratifications, and news habits, and given the nature of online high-choice information environments (Aelst et al., 2017), aspects like navigational styles and different ways of accessing online news must be considered as well when analyzing patterns of online news usage. Here, navigation refers to a process that can be considered a sequence of selection decisions influenced by situational, motivational, cognitive, and personal factors (Stark, Magin, & Jürgens, 2014, p. 31). Again, Atkin's (1973) informational utility approach provides a useful framework for distinguishing different *modes of navigation* in the context of informational media use. According to Atkin (1973), information is selected either based on *information seeking* or on *occasional information yielding,* the former including active and directed *information search*ing. Cove and Walsh (1988) refer to such navigation behavior as *search browsing*, which describes a structured activity in which the desired goal is known (see also Choo, Detlor, & Turnbull, 2000). Occasional information yielding, on the other hand, "occurs when the individual is exposed because avoidance expenses exceed the seeking expenses" (Atkin, 1973, p. 238) and is also

termed *undirected browsing*, referring to a state where the user has no specific goal and only little focus (Choo et al., 2000, p. 3). This mode of navigation resembles a phenomenon that Tewksbury and colleagues (2001, p. 533) refer to as *incidental news exposure*, that is, encountering current affairs information as a byproduct of other online activities. Currently, such incidental exposure to news content is particularly likely in social media environments where news overlaps with updates from friends, sponsored content, or event notifications (e.g., Kim, Chen, & Gil de Zúñiga, 2013; Kümpel, 2018; Oeldorf-Hirsch, 2018). Taken together, these modes of navigation represent a continuum between search browsing (where the goal is known) and serendipitous browsing, which is "purely random" (Catledge & Pitkow, 1995, p. 1066).

Aside from different navigational modes, online news use patterns are also to be differentiated regarding the multitude of *modes of access*, each of which is associated with a different level of user activity needed to access news. Given this multitude of ways news can be encountered online, differentiating modes of accessing information is another aspect we add to Atkin's (1973) approach to apply it to the use of online news. Push-access allows for receiving information without having to search for it (Kendall & Kendall, 1999; Schweiger, 2016, p. 312), as is the case with news in one's Facebook newsfeed, push alerts by news apps, or email newsletters by news providers. Pull-access, on the other hand, requires a user's active engagement, for example, when accessing a news website or a news aggregator's website. Besides these direct forms of access, pull-access to online news can also be mediated by search engines that can be used either to look for specific content (*information-oriented*) or for specific providers (*navigation-oriented*) (Broder, 2002). The same applies to social media, such as Facebook, where news cannot only be encountered in one's newsfeed, but also be accessed directly via news providers' fan pages. As already mentioned at the outset, Germany has a broad media environment with online media playing an important role in

news consumption—via news websites, aggregators, search engines, and social media. For example, 24% of German Internet users use Facebook[1] for news on a regular basis, 10% of German Internet users do so with the aggregator Google news, and likewise 10% of them receive push alerts on current events on a regular basis (Hölig & Hasebrink, 2018, pp. 36, 37, 43; Newman et al., 2018).

Apart from all the aforementioned aspects that focus on the quality of news use, any usage pattern can also be described based on more quantitative aspects, such as the mere frequency of use. Bringing these theoretical reflections and peculiarities of online news use together, we first want to investigate:

> RQ1: What usage patterns of online news can be identified based on the frequency of use, motivations, news habits, online navigational styles as well as modes of access?

News Use and Political Knowledge

In the second part of our investigation, we examine a construct that is generally considered related to the use of news and whose presence among citizens at least to a certain extent is essential for the proper functioning of a democracy: political knowledge (Berelson, Lazarsfeld, & McPhee, 1954; Eveland Jr & Hutchens, 2008). However, previous studies do not consistently show positive effects of online news use on political knowledge (Dimitrova, Shehata, Strömbäck, & Nord, 2011; Kenski & Stroud, 2006; Kruikemeier, Lecheler & Boyer, 2018). At the same time, however, users who consult social media like Facebook as a primary source of news subjectively feel themselves being well informed (Müller, Schneiders & Schäfer, 2016), while such subjective assessments do not necessarily match objectively existing knowledge (Cacciatore et al., 2018; In der Au, Wieland & Zeitler, 2017).

[1] Other social media outlets like Twitter are not only considerably less used as a source of news (5% of German Internet users use it for news regularly) but can also be regarded more as a kind of niche service, for example for journalists (Hölig & Hasebrink, 2018, p. 43).

Whereas many definitions of political knowledge are in agreement on its general importance and its basal function in democratic societies, there is no consistent conception of the extent and depth in which it should be present. Different approaches focus on, for example, knowledge enabling reasoned decisions on political alternatives (Clarke & Fredin, 1978) or knowledge about the government and its actions (Barber, 1972; see also Delli Carpini & Keeter, 1993). Furthermore, scholars differentiate between factual knowledge (e.g., about political issues, protagonists, or events) and structural knowledge. While factual knowledge refers to "the number of political facts or concepts stored by an individual," structural knowledge involves "the ability to connect and relate these facts or concepts" (Eveland & Hutchens, 2008, p. 3716). Synthesizing these thoughts, Maier (2009) conceptualized knowledge on issues, protagonists, and patterns as three central categories of political knowledge. However, he also noted that there are no universally accepted indicators for measuring political knowledge.

Contrary to the many ideas about what and how much political knowledge citizens need, the emergence of political knowledge is far less controversial. Following Bennett, Flickinger, Baker, Rhine, and Bennett (1996, p. 11), two factors prove to be relevant on an individual level: "the opportunity to acquire information, and motivation to learn and retain it." In terms of opportunities, both traditional media like television and newspapers and online media play a vital role in providing the public with (political) information (Beam, Hutchens, & Hmielowski, 2016; Kruikemeier, Lecheler, & Boyer, 2018; C. S. Park & Kaye, 2018; Shehata, Hopmann, Nord, & Höijer, 2015; Xenos et al., 2018).

There are different views on how the abundance of information on the Internet affects the acquisition of political knowledge. On the one hand, the plethora of information can contribute substantially to knowledge acquisition (Beam et al., 2016; Bode, 2016; Drew & Weaver, 2006; Eveland Jr, Seo, & Marton, 2002; Eveland, Hayes, Shah, & Kwak, 2005). For

example, while television and printed newspapers proved to be better in terms of the recall of news stories, online newspapers were superior for structuring the respective knowledge (Eveland Jr et al., 2002). On the other hand, scholars argue that greater media choice online leads to increased entertainment use and lessened use of political news—especially for users who are less interested in politics (Prior, 2005).

Apart from these objectively measurable components, the subjective assessment of individual knowledge levels constitutes a second component of (political) knowledge that is often disregarded. *Subjective knowledge* represents a metacognition that can be described as "knowledge about one's own knowledge" (C. W. Park, Gardner, & Thukral, 1988, p. 401) and is discussed in the literature as *perceived knowledge* (Brucks, 1985; C. W. Park et al., 1988) or *feeling of knowing* (Schacter, 1983). However, such a perception does not have to correspond to the actual amount of knowledge stored in one's memory, but can result from a mere familiarity with the respective topic as well (C.-Y. Park, 2001). In other words, subjective knowledge deals with "what we think we know" (Carlson, Vincent, Hardesty, & Bearden, 2009, p. 864), while objective knowledge refers to knowledge that actually exists. In many cases, a mismatch between these two measures can be observed. Such gaps between subjective and objective political knowledge are termed *illusion*s *of knowing* (Glenberg, Wilkinson, & Epstein, 1982, p. 597). Generally, this imbalance refers to an overassessment of individual knowledge, that is, the tendency to overestimate one's own expertise or awareness of particular issues or topics (Epstein, Glenberg, & Bradley, 1984).

Given the importance of political knowledge for the functioning of a democracy, an imbalance between actual and perceived knowledge must be perceived as dysfunctional. Such mismatches require special attention and have thus already been investigated in the past. Hollander (1995) examined the relationship between perceived and actual campaign knowledge in the context of nontraditional news coverage (e.g., talk shows) during the 1992

United States presidential election. He found that illusions of knowing are especially prevalent among formally less-educated viewers, who perceive themselves as being informed by talk shows, but do not display the respective levels of actual knowledge. This pertains to different media in varying degrees: while news users who mainly rely on newspapers as a source of news show no such illusion of knowing, respondents relying mainly on television tend to overestimate their political knowledge (C.-Y. Park, 2001).

Investigating the relationship between subjectively perceived and actually existing political knowledge is particularly interesting when considering the relevance of social media as sources of news, where news content can be both searched for intentionally as well as discovered incidentally (Bode, 2016; Choi, 2016; Karnowski et al., 2017; Kümpel, 2018; Müller, Schneiders, & Schäfer, 2016; Oeldorf-Hirsch, 2018). Initial findings on the link between the use of Facebook for news and subjective and objective political knowledge suggest that Facebook use is not related to objective political knowledge (Cacciatore et al., 2018; In der Au et al., 2017). On the other hand, subjectively perceived knowledge on political and societal issues seems to be positively associated with the use of Facebook for news (In der Au et al., 2017; Müller et al., 2016).

Taken together, these results indicate that using (news) media does not necessarily lead to the acquisition of political knowledge, but instead can foster a misperception of one's individual knowledge (Cacciatore et al., 2018; Hollander, 1995; In der Au et al., 2017; C.-Y. Park, 2001; Weber & Koehler, 2017). As it should be obvious that the use of online news does not per se lead to an illusion of knowing, we would argue that such a mismatch may rather be supported by some specific patterns of usage and their characteristics. For example, research on media multitasking during political news consumption has revealed relationships between such usage patterns and an overestimation of factual political knowledge (Ran, Yamamoto & Xu, 2016). Beyond that, studies focusing explicitly on effects of using social

media like Facebook for news found an impact on overestimating one's actual available knowledge (Cacciatore et al., 2018; In der Au et al., 2017). Building on these findings and reflections, we want to investigate the nexus between using online news and political knowledge in more detail by examining the role played by different usage patterns of online news in the context of a potential mismatch between subjective and objective political knowledge, thus asking:

> RQ2: How do different usage patterns of online news contribute to an illusion of knowing?

Method

Design and Sample

To answer these research questions, we conducted an online survey among German Internet users in July 2017. Participants were recruited via a non-commercial online access panel (*SoSci Panel*). Although lacking representativeness, the panel provides more heterogeneity than regular student convenience samples, especially regarding education, age, and gender (Leiner, 2016). Participation in the study was voluntary, unpaid, and participants were guaranteed complete confidentiality regarding the obtained data. As an incentive to take part, participants had the opportunity to be included in a lottery of four vouchers, worth 50 euros each, for an online retail store.

An email containing the link to the online questionnaire was delivered to 2,828 panelists. In total, 562 followed the invitation, resulting in a response rate of approximately 20%. After filtering out all participants who did not finish the entire questionnaire, did so unrealistically fast (less than 120 s), or opened another browser window while answering the political knowledge quiz (see below), the data of 396 participants could be used for analysis.

Demographic characteristics of the sample included age (M = 41.6, SD = 15.5), gender (48% female), and educational level (54% with a university degree, 26% with a higher

education entrance qualification, and only 15% with lower educational qualifications). Thus, the sample does not differ substantially from the German internet user population, except for an extraordinarily high formal education.[2] Considering the use of political online news, participants can be described as highly interested as well. When asked about their frequency of political online news usage, 39% stated that they do so several times per day.

Measures[3]

Measures in the first part of the questionnaire were focused on participants' online news usage behavior as well as on subjective political knowledge. The *frequency of online news use* was assessed by asking how often participants usually read online news articles covering political topics using an eight-point scale ranging from "never" to "several times a day" (*Md* = 7, *Mo* = 8). The importance of different *modes of access* to news was assessed by asking participants how often they use various options (e.g., directly accessing a news website, directly accessing a news aggregator, using a search engine, accessing news content via Facebook[4]), using a five-point scale ranging from "never" to "very often," with directly accessing news websites being the most common way ($M = 3.80$, $SD = 1.44$). Furthermore, topic-related queries using a search engine ($M = 3.02$, $SD = 1.24$) as well as directly accessing news aggregators ($M = 2.84$, $SD = 1.50$) were most prevalent among the participants.

Following Diddi and LaRose (2006), surveillance ($\alpha = .70$, $M = 4.02$, $SD = .81$), escapism ($\alpha = .72$, $M = 1.62$, $SD = .77$), boredom ($\alpha = .81$, $M = 2.48$, $SD = 1.21$), and entertainment ($\alpha = .72$, $M = 3.00$, $SD = .97$) were assessed as relevant *motivations and*

[2] 62% of German Internet users are between 14 and 49 years old and 48% are female; 37% of German Internet users have a higher education entrance qualification and 63% have lower educational qualifications (*AGOF - digital facts 2017-03*, 2017).
[3] The questionnaire was administered in German. All items discussed in the methods section represent English translations of the original items.
[4] Facebook was chosen because it is the most important used social media outlet for news in Germany, whereas outlets like Twitter do not play a significant role in online news usage in Germany (Hölig & Hasebrink, 2018, p. 43).

gratifications of online news usage, using a five-point scale from "does not apply at all" to "does fully apply." Likewise, again following Diddi and LaRose (2006), news *habits* (α = .79, M = 2.76, SD = 1.15) were measured by assessing participants' agreement to items that focused on their reasons for using online news (e.g., "Because it's part of my daily routine," "Because it's a habit of mine"). As a last component of online news usage patterns, several items covered the *navigational modes* directed (α = .71, M = 3.30, SD = .91) and undirected browsing (α = .91, M = 2.71, SD = 1.09), building on conceptualizations by Cove und Walsh (1988).

Participants' rating of their *subjective political knowledge* (α = .92, M = 2.93, SD = .95) was assessed using a five-point scale from "does not apply at all" to "does fully apply" with items like "I know a lot about politics" or "I classify myself as an expert in politics," following Ran, Yamamoto, and Xu (2016). The second part of the questionnaire consisted of a quiz containing a shortened version of the Hohenheim Inventory of Political Knowledge (HIP; Trepte, Loy, Schmitt, & Otto, 2017) to measure the *objective political knowledge* of the participants. The 27 questions covered both basic political knowledge and current events knowledge on national, supranational, and international level. Correct answers were summed up in an index ranging from 0 to 27 (M = 20.72, SD = 3.71).

Results

To answer our research questions, we first identified different patterns of online news usage using latent class analysis (LCA; software package Latent GOLD; Vermunt & Magidson, 2017). In a second step, we assigned each participant to the online news usage pattern that most likely governs his or her online news usage. Latent class analysis has several advantages over traditional clustering techniques, particularly as variables at each level of measurement can be included and combined for analysis. Furthermore, identifying the exact number of clusters is less arbitrary than in traditional cluster analysis, as LCA

constitutes a model-based approach and provides statistical tests to decide on the most appropriate number of clusters.

As outlined above, online news usage patterns were identified based on the frequency of use, motivations (instrumental needs and consummatory gratifications), news habits, and navigational styles (modes of navigation and modes of access to online news) and then compared regarding users' sociodemographic characteristics (see Tables 2 and 3)

To identify the number of clusters, we first calculated and compared the one- to 10-cluster solutions. As most of the analyzed variables are continuous, model fit should not be assessed based on a likelihood-ratio test, but rather on the Bayesian information criterion (BIC) (Magidson & Vermunt, 2004). In general, the solution including the fewest parameters to be estimated, and the lowest BIC is considered the most suitable. In our case, the six-cluster solution met this criterion (see Table 1).

Table 1
Information Criteria for the One- to 10-cluster Solutions for Online News Usage Patterns

	LL	BIC(LL)	AIC(LL)	Npar	CE
1-Cluster	-10274.85	20752.98	20617.70	34	0.00
2-Cluster	-9095.93	18604.40	18329.86	69	0.00
3-Cluster	-8683.11	17988.02	17574.22	104	0.01
4-Cluster	-8222.09	17275.24	16722.18	139	0.01
5-Cluster	-8109.66	17259.65	16567.33	174	0.01
6-Cluster	**-7637.33**	**16524.24**	**15692.66**	**209**	**0.03**
7-Cluster	-7599.09	16657.02	15686.17	244	0.02
8-Cluster	-7463.29	16594.69	15484.58	279	0.03
9-Cluster	-7359.97	16597.30	15347.93	314	0.03
10-Cluster	-7163.34	16413.31	15024.68	349	0.02

Note. LL = log likelihood, BIC = Bayesian information criterion, AIC = Aikake information criterion, Npar = number of parameters, CE = classification error.

Based on the LCA, there are specific probabilities of the different parameter values integrated in the analysis for each cluster by which the different clusters can be described (see Table 2). To obtain an additional impression of the participants showing the respective usage pattern, a description for each of the six clusters is also given based on the sociodemographic features age, gender, and formal education (see Table 3). In the following, the six clusters are

presented in order of increasing frequency of online news use.[5] The naming of the clusters follows (with one exception) the basic principle: extent of the *frequency of use* + users, prefixed by that very feature selected from *instrumental needs* and *gratifications*, news *habits*, and *modes of navigation* most characteristic of the respective cluster.

Description of Clusters

Cluster 1: Light users. This online news usage pattern stands out due to the lowest frequency of online news use. *Light users* therefore draw on online news comparatively seldom and without being strongly driven by instrumental needs and consummatory gratifications or news habits. When using online news, they mainly do so by heading directly to a news provider's website, whereas search engines or email newsletters do not constitute relevant modes of access to news for these users. Respondents in this usage cluster are on average 41.91 (SD = 16.19) years old.

Cluster 2: Incidentally stumbling casual users. For participants showing this online news usage pattern, incidental encounters represent the most important access to online news. Hence, this cluster shows the highest score for incidentally stumbling across news in the Facebook newsfeed, while the frequency of directly accessing a news provider's website is least pronounced among all six clusters. In accordance with this, *incidentally stumbling casual users* show the highest frequency of applying the navigation mode of undirected browsing. In terms of age, respondents showing this online news usage pattern are the youngest group among the six clusters (M = 34.04, SD = 13.60) and are predominantly female.

Cluster 3: Focused casual users. This online news usage pattern is characterized by a moderate frequency of online news use and a likewise moderate importance of all

[5] For additional information on the parameter estimates of the model indicators as well as measures of significance and R^2 see Table S1 in the supplemental material.

investigated motives and gratifications. When using online news, *focused casual users* rather tend to execute the navigation mode of directed browsing instead of encountering news just by chance. Nevertheless, they also rely on push-accesses to news, which is reflected in their comparatively pronounced use of email newsletters. This cluster represents the oldest among the six clusters identified (M = 51.60, SD = 13.87).

Cluster 4: Focused frequent users. Participants showing this pattern of online news usage tend to use online news quite frequently, but none of the analyzed motives or gratifications seem to play an outstanding role for that. Remarkably, the *focused frequent users* score lowest for the navigation mode of undirected browsing, indicating that they encounter news in an incidental fashion rather infrequently. They also score low for all kinds of push-access to news (newsfeed on Facebook, push alerts, newsletter via email). When using online news, *focused frequent users* rather directly access websites of news providers (e.g., leading German news websites, such as www.spiegel.de or www.bild.de). In sum, the avoidance of push-accesses to news and the preference for direct and, in a way, more traditional ways of using online news is distinctive for this cluster. The usage cluster of the *focused frequent users* constitutes the second eldest (M = 44.29, SD = 14.28).

Cluster 5: Entertainment-oriented frequent news receivers. Participants showing this usage pattern of online news constitute the smallest cluster. Not only do they use online news quite frequently, but they are also rather strongly driven by entertainment needs as well as by news habits. Furthermore, compared to all other clusters, escapist gratifications come into play for this usage pattern of online news. Regarding different modes of access, *entertainment-oriented frequent news receivers* draw heavily on push accesses to news like encountering them in their Facebook newsfeed or receiving email newsletters. *Entertainment-oriented frequent news receivers* constitute the second youngest cluster (M = 37.50, SD = 15.90) and are predominantly male.

Cluster 6: Habitual heavy users. As indicated by the name, this usage pattern is characterized by the highest frequency of online news use among all identified clusters. Furthermore, the major importance of all investigated motives and gratifications for this cluster is noticeable, as is the high score for habitual use of online news. Concerning the different modes of access to online news, *habitual heavy users* prefer directly accessing websites of news providers or news aggregators as well as information-oriented use of search engines. Furthermore, they also draw on push-accesses like incidental encounters with news in their Facebook newsfeed or push alerts on their smartphone. *Habitual heavy users* are mainly male and on average 38.60 (*SD* = 14.55) years old.

Table 2
Description of Online News Usage Patterns Based on LCA Cluster Variables

	Cluster 1 (n = 74)	**Cluster 2 (n = 52)**	**Cluster 3 (n = 40)**	**Cluster 4 (n = 119)**	**Cluster 5 (n = 32)**	**Cluster 6 (n = 78)**
Frequency of online news use[1]						
up to three times a month	24%	15%	15%	13%	18%	0%
up to several times a week	43%	42%	44%	36%	32%	16%
up to several times a day	34%	43%	41%	52%	50%	84%
Instrumental needs & gratifications[2]						
surveillance	3.56	4.11	3.98	3.96	4.07	4.49
escape	1.33	1.51	1.32	1.59	2.13	1.97
boredom	2.41	2.62	1.74	2.42	2.64	2.85
entertainment	2.74	2.97	2.68	2.84	3.21	3.60
News habits[2]	2.36	2.69	2.31	2.56	2.97	3.66
Modes of navigation[3]						
directed browsing	2.89	3.41	3.47	3.30	3.68	3.36
undirected browsing	2.87	3.30	2.56	2.30	3.18	2.76
Modes of access[4]						
direct hit (news website)	3.32	2.94	3.86	3.84	3.26	5.00
direct hit (aggregator)	2.50	2.97	2.82	2.83	3.14	2.97
via search engine to news website	1.00	2.62	2.13	2.21	2.79	2.38
via search engine to aggregator	1.00	2.25	1.78	1.71	2.53	1.76
information-oriented query with search engine	2.23	3.70	3.18	2.81	3.65	3.26
Facebook page of news provider	2.03	3.00	1.00	1.00	3.25	2.13
Facebook newsfeed	2.86	3.78	1.00	1.26	3.76	2.79
push alerts	2.34	2.06	2.42	1.00	2.90	2.77
email newsletter	1.00	1.00	3.12	1.00	3.51	2.42

Note. Cluster 1 = light users, Cluster 2 = incidentally stumbling casual users, Cluster 3 = focused casual users, Cluster 4 = focused frequent users, Cluster 5 = entertainment-oriented frequent news receivers, Cluster 6 = habitual heavy users.
n_{total} = 395.
[1] conditional probabilities, for example: When belonging to cluster 1, probability of drawing on online news up to three times a month is 24%.
[2] all scores are means, scale ranging from 1 (does not apply at all) to 5 (does fully apply).
[3] all scores are means, scale ranging from 1 (never) to 5 (almost always).
[4] all scores are means, scale ranging from 1 (never) to 5 (very frequently).

Table 3
Description of Online News Usage Patterns Based on Social Demographics

	Cluster 1 (n = 74)	Cluster 2 (n = 52)	Cluster 3 (n = 40)	Cluster 4 (n = 119)	Cluster 5 (n = 32)	Cluster 6 (n = 78)	F
Age	41.91[a, c]	34.04[c]	51.60[b]	44.29[a, b]	37.50[a, c]	38.60[a, c]	8.39***
Gender[1]	.49	.62	.45	.52	.38	.38	1.83
Formal Education[2]	.77[a]	.83	.80	.88	.81	.95[b]	2.82*

Note. Cluster 1 = light users, Cluster 2 = incidentally stumbling casual users, Cluster 3 = focused casual users, Cluster 4 = focused frequent users, Cluster 5 = entertainment-oriented frequent news receivers, Cluster 6 = habitual heavy users.
Mean values with different superscripts differ significantly after post-hoc tests according to Scheffé (age) and Games-Howell (gender, formal education). * < .05, ** < .01, *** < .001.
[1] Dummy-coded (0 = male, 1 = female).
[2] Dummy-coded (0 = no higher education entrance qualification, 1 = higher education entrance qualification or higher).

Usage Patterns of Online News and Discrepancies Between Subjective and Objective Political Knowledge

In a second step, we analyzed the association between the identified usage patterns of online news and potential illusions of knowing, that is to rate one's own political knowledge higher than it actually is. To determine whether there are such illusions for the different usage patterns identified, we first *z*-standardized measures of subjective and objective political knowledge, as the two constructs were measured on different scales. *Z*-standardization enables the comparison of constructs measured on different scales without loss of information as it is a mere re-expression of the original measurements as deviations from the mean in standard deviation units (Hayes, 2005). Then, a difference variable was calculated from the *z*-standardized measures of subjective and objective political knowledge. We found participants in the clusters of *entertainment-oriented frequent news receivers* and *habitual heavy users* to show higher scores for subjective than for objective political knowledge. To analyze which factors contribute to such an illusion, we conducted an analysis of variance building on the general linear model, predicting differences in the knowledge difference variable from sex, formal education as well as the respective usage patterns while controlling for age. Relying on a significance level of .10, different usage patterns of online news turned out to be a

significant predictor of a discrepancy between subjective and objective political knowledge, $F(5, 384) = 2.17$, $p = .057$, partial $\eta^2 = .027$. The same applies to formal education $F(2, 384) = 10.62$, $p < .001$, partial $\eta^2 = .052$. Therefore, we can conclude that the usage patterns of *entertainment-oriented frequent news receivers* as well as *habitual heavy users* show a more nuanced illusion of knowing than the usage pattern of the *focused casual users* that served as the reference category (see Table 4).

Table 4
Predictors of the Discrepancy Between Subjective and Objective Political Knowledge

	B	*p*	*F*
Intercept	−.595	.005	
Sex	.110	.261	1.27
Age[1]			1.30
16–31 years	.145	.247	
32–49 years	−.040	.744	
Formal Education[2]			**10.62*****
Lower education qualifications	1.016	.000	
Middle education qualifications	.340	.001	
Online news usage pattern[3]			**2.17**†
Entertainment-oriented frequent news receivers	.585	.012	
Focused frequent users	.154	.382	
Incidentally stumbling casual users	.100	.634	
Light users	.246	.197	
Habitual heavy users	.416	.031	

Note. $n = 395$. †p = .057, ***p < .001.
[1] Reference category is 50–80 years.
[2] Reference category is high education (e.g., university degree).
[3] Reference category is the usage pattern of focused casual users, as it shows no illusion of knowing.

Discussion

The present study attempted to explore the relationship between different online news usage patterns and online news users' subjective and objective political knowledge. To investigate this relationship, we first identified different usage patterns of online news based on individual needs and gratifications, news habits, as well as on different navigational styles, that is, modes of navigation and of access to online news.

Based on LCA, six different clusters representing different usage patterns of online news could be identified. *Light users* stand out due to the comparatively lowest frequency of online news use as well as their relative restraint regarding all measured needs and

gratifications. *Incidentally stumbling casual users* are characterized by primarily coming across news en passant instead of deliberately searching for them, while the usage pattern of *focused casual users* is associated with the importance of both directly accessing news via a news provider's website as well as drawing on push alerts or email newsletters. *Focused frequent users*, however, also prefer direct access to online news, but are additionally characterized by their avoidance of such push accesses. *Entertainment-oriented frequent news receivers* are comparatively strongly driven by entertainment gratifications as well as news habits and stand out due to the high frequency of encountering news in the Facebook newsfeed or receiving them via email newsletters. Finally, the online news use of *habitual heavy users* can be characterized as motivated by strong surveillance needs as well as by news habits.

Considering our second research question, we found that—despite the strong influence of formal education—different usage patterns of online news might play a role in the emergence of an illusion of knowing. Notably, such a tendency was found for the usage patterns of *entertainment-oriented frequent news receivers* and *habitual heavy users*, which are comparatively strongly driven by entertainment and escapist gratifications as well as news habits, indicating a relation between such usage patterns of online news and an overestimation of one's own political knowledge. Furthermore, *entertainment-oriented frequent news receivers* rely heavily on social media and push accesses as a source of news (e.g., Facebook newsfeed, email newsletter). Pronounced use of such comparatively newer forms of news consumption thus appears to favor the emergence of a mismatch between subjective and objective political knowledge.

The findings, however, should be interpreted with caution due to the study's inherent limitations. First, the composition of the sample hampers the generalizability of our results, as the participants are not representative of German online news users. Nonetheless, we argue

that finding indications of an illusion of knowing in our highly educated sample clearly hints at the existence of this problem in the overall population as well. Having said that, we explicitly point out that the indication of an illusion of knowing found in the present study for the usage pattern of *entertainment-oriented frequent news receivers* or *habitual heavy users* undoubtedly requires further validation in future studies. Second, due to the cross-sectional nature of our data collection, users (i.e., the individual respondent) and usage patterns are perfectly confounded. Following our logic, this should not be problematic, as usage patterns represent persistent behavioral strategies governing users' online news usage. Future research should nonetheless clarify to what extent users are persistent in following these strategies or rather vary across strategies according to situational needs. Third, as the Hohenheim Inventory of Political Knowledge does not take into account structural political knowledge, we disregarded this component of political knowledge that would be helpful for a comprehensive assessment of the construct in forthcoming studies.

However, also in light of these restrictions, the findings tie in with previous research on news use and political knowledge by providing more detailed insight into the connections between the use of online news and possible illusions of knowing. As prior research suggests, the use of online news is not necessarily associated with strong effects on political learning and gains in knowledge (Dimitrova et al., 2011, Kenski & Stroud, 2006). On the contrary, specific ways of using social media like Facebook as a source of news can even have a negative impact on political knowledge levels (Cacciatore et al., 2018). Incorporating this latter finding, our results hint that such a negative impact could come in the form of overestimating one's available knowledge, especially when online news use is comparatively strongly driven by entertainment and escapist gratifications as well as habitual use. But notably, this tendency towards an illusion of knowing only emerges for *some* usage patterns, what could also explain previous inconsistent findings regarding the association between the

use of online news and political knowledge. Nevertheless, our findings point to a serious problem being highly relevant in today's information environment: Especially younger and predominantly male users receiving news mainly via push accesses like their Facebook newsfeed or email newsletters seem to be vulnerable to overestimating their own political knowledge.[6]

Hence, our results allow us to draw initial conclusions about the relation of such a usage pattern of online news to subjective and objective political knowledge. Thereby, the findings build on already existing insights on the connection between (online) news use and illusions of knowing (In der Au, Wieland, & Zeitler, 2017; Weber & Koehler, 2017). Moreover, our study expands these findings by identifying different usage patterns of online news and their specific relationship with subjective and objective political knowledge. Analyzing these relationships and potential illusions of knowing is especially relevant against the backdrop of changing news habits. News exposure is increasingly shifting from traditional sources (e.g., television, newspapers) to mediated ways of access, increasing incidental news exposure and a news-finds-me perception (Boczkowski, Mitchelstein, & Matassi, 2018; Gil de Zúñiga, Weeks, & Ardèvol-Abreu, 2017). Particularly younger users use Facebook as their primary source for news about political issues and events (Müller et al., 2016, p. 431; Newman et al., 2018, p. 14). The present findings highlight that such a form of news use—in which encounters with news are not mainly sought intentionally, but rather acquired as a byproduct of other activities—may be accompanied by problematic effects, such as overestimating one's knowledge. Furthermore, the importance of using news for entertainment and escapist purposes in this usage pattern seems to be of relevance, as such a

[6] As empirical research consistently finds that men overestimate their intelligence and abilities while women underestimate them (e.g., Cooper, Krieg, & Brownell, 2018; Jansen, Schroeders, & Lüdtke, 2014), we tested for this to ensure that the differences found are actually due to news usage patterns instead of a mere gender effect. However, no significant difference in discrepancies of subjective and objective knowledge emerged between women ($M = .04$, $SD = 1.03$) and men ($M = -.04$, $SD = .94$) in our sample ($t(394) = -.86$, $p = .39$).

motivation might foster a more superficial processing of news content, which in turn might contribute to the emergence of a mismatch between individually perceived and objectively available political knowledge. In addition, future research should therefore consider the mediating factor of information processing when examining the relationship between news usage and objective and subjective political knowledge. Furthermore, it can be assumed that factors like topical interest or stable personality traits might also influence whether individuals tend to overestimate their political knowledge. As political knowledge may be tied to issues of social desirability, people with a strong need for approval may be more inclined to assess their knowledge as being more comprehensive than it actually is (Mondak, 1999). The part played by such personality traits is an interesting starting point for future research in the context of online news usage and illusions of knowing.

From a normative perspective, political knowledgeability of all members of a society is a basic prerequisite for a functioning democracy. Against this backdrop, an illusion of knowing is harmful because it entails the danger of citizens becoming increasingly uninformed or even misinformed. Thus, an overestimation of one's actually acquired knowledge could possibly be accompanied—either as an antecedent or as a consequence—by a less pronounced or more superficial news use, as users perceive themselves as already sufficiently informed. Resulting insufficient levels of objective political knowledge are, on the one hand, problematic with regard to the participation of citizens in the political opinion-forming and decision-making process, which is vital for every democracy. On the other hand, overestimating one's own political knowledge could not only weaken further comprehensive use of information (Hollander, 1995), but could ultimately also be associated with an increased susceptibility to false information or fake news (Pennycook & Rand, 2018), which may have even more detrimental effects for democratic processes than a mere lack of knowledge. In future research, longitudinal data could contribute to further enhancing the

understanding of the links between overestimating one's knowledge, information use, and susceptibility to false information. Furthermore, experimental settings seem necessary to investigate the potential impacts of an illusion of knowing.

Despite this need for further research, we want to emphasize that—to avoid illusions of knowing—push access to or incidental encounters with news should never substitute active engagement with news (Aelst et al, 2017; Gil de Zúñiga et al., 2017). Hence, journalists and media organizations alongside with media educators should work on fostering users' active engagement with the news.

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