



# How News Websites Refer to Twitter: A Content Analysis of Twitter Sources in Journalism

Sanja Kapidzic, Christoph Neuberger, Felix Frey, Stefan Stieglitz & Milad Mirbabaie

To cite this article: Sanja Kapidzic, Christoph Neuberger, Felix Frey, Stefan Stieglitz & Milad Mirbabaie (2022) How News Websites Refer to Twitter: A Content Analysis of Twitter Sources in Journalism, Journalism Studies, 23:10, 1247-1268, DOI: [10.1080/1461670X.2022.2078400](https://doi.org/10.1080/1461670X.2022.2078400)

To link to this article: <https://doi.org/10.1080/1461670X.2022.2078400>



© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 02 Jun 2022.



Submit your article to this journal [↗](#)



Article views: 3280



View related articles [↗](#)






View Crossmark data [↗](#)



Citing articles: 3 View citing articles [↗](#)

# How News Websites Refer to Twitter: A Content Analysis of Twitter Sources in Journalism

Sanja Kapidzic<sup>a</sup>, Christoph Neuberger<sup>b</sup>, Felix Frey <sup>c</sup>, Stefan Stieglitz <sup>d</sup> and Milad Mirbabaie <sup>e</sup>

<sup>a</sup>Survey Design and Methodology, GESIS – Leibniz-Institute for the Social Sciences, Mannheim, Germany;

<sup>b</sup>Free University Berlin, Institute for Media and Communication Studies, Berlin, Germany, Weizenbaum Institute for the Networked Society, Berlin; <sup>c</sup>Institute of Communication and Media Studies, Leipzig University, Leipzig, Germany; <sup>d</sup>Professional Communication in Electronic Media/Social Media, Universität Duisburg-Essen, Duisburg, Germany; <sup>e</sup>Faculty of Business Administration and Economics, Paderborn University, Paderborn, Germany

## ABSTRACT

The study presents the results of a standardized content analysis comparing the use of Twitter as an information source on the websites of five news media types (quality newspapers, a tabloid newspaper, weekly magazines, broadcasters, and internet only). The theoretical assumption behind the study is that the adoption of Twitter as a source follows the established practices of a particular media type. All articles published online by ten German news media in a period of one month were collected ( $n = 21,823$ ). A subset of articles containing Twitter-related keywords ( $n = 496$ ) and 375 tweets cited in these articles was explored in detail. Our focal analysis of  $n = 287$  articles using Twitter as an information source revealed systematic differences between both media types and article topics regarding the number and style of Twitter references as well as the types of accounts cited. We found that the tabloid paper incorporated the highest number of tweets per article, incorporated tweets primarily in articles on human interest and gossip and cited non-elite sources more often than other media types. Quality papers, weekly magazines, and broadcasters used tweets as sources primarily in articles on politics and economy and cited public actors, such as politicians or officials, more frequently.

## KEYWORDS

Journalism; Twitter; sources; media types; topics; normalization

Social media as a source in journalism are an ambivalent affair. On the one hand, they can be a valuable source, e.g., for eyewitness accounts or citizen voices to increase the diversity of sources (Fisher 2018). On the other hand, misinformation is spread through social media and can get included into journalistic reporting (Lukito et al. 2020). In light of the deliberate dissemination of false information and rumors on social media platforms (Quandt 2018), their use as sources deserves special attention. Journalistic norms dictate how sources are sought out, verified, and incorporated into reporting (Lecheler and Kruike-meier 2016, 158). In this vein, the norm of transparency requires journalists

**CONTACT** Sanja Kapidzic  [sanja.kapidzic@gesis.org](mailto:sanja.kapidzic@gesis.org)

© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

to disclose their sources (Phillips 2010). Therefore, the question arises of whether journalists are prepared to disclose their use of social media as sources in their reporting. Several studies have content analyzed news articles to see how and to what extent information found on social media is integrated explicitly as a source in journalistic content (Bane 2017; Broersma and Graham 2013; English 2016; Hine 2020; Hladík and Štětka 2017; Lukito et al. 2020; Moon and Hadley 2014; Nordheim, Boczek, and Koppers 2018; Paulussen and Harder 2014; Skogerbø and Krumsvik 2015; Wallsten 2015). However, broad comparative studies are lacking. For the most part, available studies concentrate on a few offerings of the same media type. Therefore, it is difficult to assess under what conditions journalists refer to Twitter as a source. Two central variables in this context are the medium and the topic covered. The theoretical assumption of the present study is that the adoption of Twitter as a source follows the practices of a particular media type, especially with regard to topic. This would correspond to a strategy of normalization.

We aim to contribute to the body of research by exploring the use of tweets as a cited source in German news articles along the dimensions of media type and news topic. Extending previous research, we provide a systematic comparison of the use of Twitter as a source by five types of news media ranging from quality newspapers to broadcasters. To this aim, we collected all articles published online by ten German news media (quality newspapers, tabloid newspaper, weekly magazines, broadcasters, online-only site) in September 2015 ( $n = 21,823$ ). We used content analysis to analyze social media references in news content in a randomly selected subset of the 1,222 articles containing Twitter-related keywords ( $n = 496$ ). Furthermore, we explored in detail 375 tweets functioning as sources in these articles as well as the tweet authors. We analyzed the functions of references to Twitter, cited user types and topics, and the use of Twitter as a sole source in reporting.

## Social Media as (Cited) Source in Journalism

Surveys of journalists and media outlets show that journalists frequently use Twitter and other social media for different forms and purposes of research like finding topic ideas, statements of eyewitnesses and sources for further investigation in other communication contexts, rapid information collection in case of crisis, continuous monitoring of prominent sources, or building and fostering of expert networks (e.g., Boesman, d'Haenens, and Van Gorp 2015; Gulyas 2013, 2017; Hedman 2015; Rogstad 2014; Santana and Hopp 2016; Willnat, Weaver, and Cleveland 2017, 306–309; Neuberger, Langenohl, and Nuernbergk 2014). The use of social media for sourcing changes the relationship between the journalist and their source (Fisher 2018). Traditionally, journalists interact with their sources directly. When using information found on social media, however, journalists are generally not in contact with the source and merely use information posted by the user they cite (Broersma and Graham 2013, 449). This is difficult to reconcile with the traditional journalistic process of information collection and verification (Hermida 2010, 300).

The use of social media in journalistic research is ambivalent and often risky. The question therefore arises as to whether their use is always disclosed, as would be required by the transparency norm. The disclosure of social media sources cannot be proven as this would require comparing source use with source transparency. However, no such

studies are available. However, it can be determined that social media are seldom referred to as a source in journalism. In 2010, only 1.5% of foreign news articles featured a social media source according to a content analysis of four Belgian newspapers (Van Leuven, Deprez, and Raeymaeckers 2014, 862). In local election campaigns in Norway in 2011, almost no references in newspapers could be found to social media postings by or concerning candidates (Skogerbø and Krumsvik 2015, 357). “Social media may have been sourced but not mentioned in news articles”, because “sourcing social media is likely to be considered a less credible journalistic method than quoting candidates directly in interviews” (Skogerbø and Krumsvik 2015, 361).

A longitudinal study of three quality newspapers (The New York Times, The Guardian, *Süddeutsche Zeitung*) and their use of Twitter (2006–2016) and Facebook (2004–2016) as sources showed an almost continuous increase at an overall low level (NYT <4%, Guardian <5%, SZ <2%; Nordheim, Boczek, and Koppers 2018, 816–817). The upward trend is confirmed by another analysis of three British newspapers (The Sun, Daily Mail, The Guardian) for the time period 2007–2014 (Hine 2020, 686–687). Due to growing criticism of the quality of social media, this upward trend may have come to an end by now. However, more recent longitudinal studies exploring this are lacking.

### Use of Elite and Non-Elite Twitter Sources in the News

An important dimension of tweets that are used as sources are the users that are cited. Social media offer the opportunity for news media to expand the diversity of sources and include ordinary people more often. But this broader availability of sources is ambivalent for journalism because the audience members can also access them, which means that journalistic exclusivity is lost. However, elite sources also dominate among the tweets cited. Broersma and Graham (2013, 567) found that celebrities, athletes, and politicians were the most cited author groups. An analysis of articles from US newspapers and television stations revealed that the Twitter accounts of politicians were the most frequently cited sources, both on television and in newspapers (Moon and Hadley 2014, 299). A study of the four most widely circulated American newspapers and the wire service Associated Press in 2012 showed that about one half of the cited tweet authors were politicians. Celebrities, media professionals, and “average users” reached a share of less than 10% (Wallsten 2015, 33–34). This result is confirmed by Bane (2019, 199), who found that in 2016/17 three-quarters of Twitter quotes in The New York Times and The Washington Post were official sources. In her analysis of British newspapers in the years 2007–2014, Hine (2020, 690) also found that “public figures” dominated in all three cases (Daily Mail: 50%, The Guardian: 41%, The Sun: 53%). Similar results were found in another longitudinal analysis (2009–2016) of three US newspapers. Only 8% were non-official actors (Heim 2021, 14). An exception in this rather uniform picture is an analysis of Flemish newspapers, which found that 44% of the segments citing social media used citizens as a source (Paulussen and Harder 2014, 548).

Furthermore, a longitudinal study of three quality newspapers showed stark and similar differences between Twitter and Facebook: “The elite focus of Twitter references intensifies, whereas Facebook sources feature both elite and non-elite voices at similar levels” (Nordheim, Boczek, and Koppers 2018, 817–818). An analysis of tweets from US journalists confirmed that official sources were tweeted more often than unofficial

sources, such as citizens, who functioned as sources in only 4.5% of tweets (Artwick 2014, 1119). Furthermore, 70% of all cited accounts were verified. This is confirmed by the study of Paulussen and Harder (2014, 546), which also showed that only 13.5% of articles citing social media did not cite an additional source (Paulussen and Harder 2014, 546).

In sum, journalists prefer to cite already known, official and elitist sources. To limit the risk, they tend to use verified accounts or cite social media only as an additional source. This indicates a normalization of their sourcing practices, following professional norms.

## Differences in the Use of Twitter by Media Type and News Topic

The aim of the present study is to draw a systematic comparison of the use of Twitter as a source on the websites of five news media types in Germany. The study focuses on the use of Twitter sources along two dimensions: media type and news topic. The theoretical assumption behind the study design is that the adoption of Twitter as a source follows the practices of a particular media type, which is especially reflected in the selection of topics. This would correspond to a strategy of normalization (Singer 2005). “Normalization” initially referred to the transfer of traditional journalistic norms and practices from mass media to social media such as Twitter (Lasorsa, Lewis, and Holton 2012; Lewis and Molyneux 2018) and blogs (Singer 2005). We expect that this will also be the case if tweets are used as sources on media websites.

### Media Type

So far, differences between media types have not been thoroughly investigated, because in most cases only newspapers were analyzed (Broersma and Graham 2012, 2013; Heim 2021; Hine 2020; Nordheim, Boczek, and Koppers 2018; Paulussen and Harder 2014; Skogerbø and Krumsvik 2015). Broersma and Graham (2013), for example, compared British and Dutch tabloids and broadsheets (2007–2011). In accordance with these newspaper formats, tabloids more often cited tweets in soft news, sourced celebrities and athletes, and used tweets as triggers for news stories. Paulussen and Harder (2014) investigated two Flemish quality newspapers (2006–2013) and their references to three social media platforms. They found that social media were seldom mentioned as the only source. Only in a few cases, newspapers were compared with alternative websites (Bane 2019), television news (Moon and Hadley 2014), and a wire service (Wallsten 2015). Only Hladík and Štětka (2017) have drawn a broad comparison between media types, namely between newspapers, television, and radio stations from the Czech Republic. They considered referrals to Twitter, Facebook, and YouTube, but did not report results separately for the platforms. Therefore, the study is not suitable for comparison here. A variety of media were also included in a content analysis of cited tweets that looked specifically at how a Russian agency influenced U.S. media (Lukito et al. 2020).

Results of previous studies are compared in detail in the results section. We add to this research a broad overview of several media types (quality daily newspapers, a tabloid newspaper, weekly magazines, public service and private broadcasters), whose websites were studied. Our theoretical assumption is that the practices of the media types are also found on the internet. Thus, it can be assumed that the tweets used as sources reflect the choice of topics and actors in the media types and their compliance with journalistic

norms. For example, the tabloid newspaper is expected to cite tweets more frequently than other media, to use them especially in “soft news”, to cite non-elite persons more often, to pay less attention to verified accounts, and to use tweets more often as the only source. To explore differences in media types, two research questions were formulated:

RQ1: How are media types related to the use of Twitter as a source in published news?

Specifically, this question aims to explore differences in (a) the number of Twitter sources used per article, (b) the type of quote used, and (c) the topic of the news article. In addition, elite Twitter users (e.g., politicians, journalists) are cited as sources in published news more frequently. However, it is unclear whether the use of elite and non-elite Twitter sources is related to media type.

RQ2: How are media types related to the use of elite and non-elite sources in published news?

## Topic

The use of social media as a source tends to differ by topic. A longitudinal content analysis of three quality newspapers in two cases (The New York Times, The Guardian) showed high levels of citing Twitter in the fields of politics, culture and arts, crime, and sports (Nordheim, Boczek, and Koppers 2018, 818–821). A content analysis of tweets in articles in four Danish and four British newspapers from 2007 to 2011 revealed that the articles containing tweets were most often related to human interest (34%), sports (22%), media (14%), and politics (13%) (Broersma and Graham 2013, 454). In general, it seems that social media sources are integrated differently according to news topic.

Furthermore, an analysis of social media mentions in Flemish newspapers by Paulussen and Harder (2014, 546) points to the majority of social media sources published in the economic or technology segments of the newspapers. In addition, more than half of the articles citing social media sources were categorized as soft news (Paulussen and Harder 2014, 547). This is confirmed by Hine (2020, 691), who found “celebrity, sporting or media gossip” as the most important topic, especially in the case of tabloids (Daily Mail: 51%, The Sun: 52%, The Guardian: 32%).

There seems to be a general tendency to incorporate tweets more frequently into news that can be classified as soft news than news that can be classified as hard news. However, existing research does not paint a clear picture of the relationship between news topics and the use of tweets as sources. Therefore, we formulated two research question to explore the relationship:

RQ3: How are news topics related to the use of Twitter as a source in published news?

As with differences between media types, this question aims to explore differences among news topics in (a) the number of sources used per article and (b) the type of quote used. Furthermore, while there is a tendency to incorporate elite Twitter sources into published news more frequently, it is not clear whether differences in the use of elite and non-elite Twitter sources exist according to news topic.

RQ4: How are news topics related to the use of elite and non-elite sources in published news?

## Method

### Data

We focused on the use of Twitter sources in routine reporting to gain a broader understanding of the use of social media in ordinary circumstances. Data collection took place in September 2015. Comparing Germany with other countries, the use of Twitter as a news source was rather low in 2015: Only 4% of the German internet population used Twitter at least weekly for news. This percentage was much lower compared to countries like Spain (22%), the UK (14%), the U.S. (11%), Italy (10%), and France (8%) (Newman 2015, 26). The level of news use via Twitter in Germany did not change substantially since 2015 (2021: 6%, Newman 2021, 80). Presumably, Twitter is used disproportionately often by elites in politics and the media (Schumacher, Maurer, and Nuernbergk 2021). This exclusivity and elite orientation increase the news value of Twitter communication and thus its attractiveness as a journalistic source. A newsroom survey, conducted in 2014 in Germany, showed an intense and diverse use of Twitter as a source in journalism, compared with other social media. However, national media used Twitter more frequently for research than local and regional newspapers (Neuberger, Langenohl, and Nuernbergk 2014).

Since only a limited timeframe was selected for analysis, several topics were featured in the data more prominently and may have influenced the results (e.g., people seeking refuge in the European Union, conflicts in Syria and the Ukraine, and the parliamentary election in Greece). The chosen time frame lies at the beginning of a period that has significantly changed the role of Twitter in the political public sphere: In the year 2015, the refugee crisis started in Europe (Eberl et al. 2018). This was before the election of Donald Trump as U.S. president in 2016. The political instrumentalization of Twitter for spreading “fake news” might have led to a changed approach to Twitter in newsrooms in the meantime.

We collected news consisting of all articles published online by ten professional news media with national distribution. The websites of the news media were selected based on high reach (Arbeitsgemeinschaft Onlineforschung e.V. [agof] 2015; Newman 2015, 26) and their relevance as opinion leading media in the German public sphere. Also, news content had to be non-specialized, updated (at least) daily, and freely available (non-paywalled). In this vein, the websites of the following news media were selected: two quality daily newspapers (Frankfurter Allgemeine Zeitung – FAZ, Süddeutsche Zeitung – SZ), a tabloid newspaper (Bild), two weekly magazines (Spiegel, Zeit), which update permanently and publish only a small selection of print articles for free, one online-only site (Heise), as well as the online newscasts of two public service broadcasters (Tagesschau, Heute) and two private broadcasters (n-tv, N24).

For collecting the data from the news sites, we developed a java-based tool that collected the content of each news site by extracting data from RSS (Rich Site Summary) feeds and scraping each element in the source code of the HTML sites. As each website is different in terms of its semantic structure, we developed ten separate solutions processing different structures. Our tool retrieved each website’s RSS feed continuously, downloaded the raw HTML, parsed its DOM (Document Object Model), extracted the main text as well as other metadata using the software libraries Snacktory and Jsoup, and



aggregated and visualized the data in a self-developed frontend. Since changes in the website structures required immediate adjustments to our parsing process, we applied daily quality checks for overnight changes.

This collection process resulted in 21,823 articles. All articles containing one of seven Twitter-relevant keywords (“twitter”, “tweet”, “tweets”, and the German verbs “twittert”, “twittern”, “twitterte”, “twitterten”) in the headline or body of text were selected. Twitter-relevant keywords were found in 1,222 news articles (5.6%). Of those, 197 originated from live tickers and were excluded from analysis (Table 1). Half of the remaining articles ( $n = 513$ ) were randomly selected for content analysis to comply with coding resources. In the following coding process, however, Twitter-related terms were not found in the title or body of 17 articles. Further inspection revealed that this was possibly due to images posted on Twitter being embedded without the tweet or updates to RSS feeds between data collection and coding. This resulted in a final sample of 496 news articles for analysis. For content analysis, articles were viewed on the original sites using the collected URLs.

### Coding Procedure

The data were coded by two coders. Coder training was conducted over several weeks. Once the codebook was mastered, intercoder reliability was assessed by coding 50 articles for reference-specific variables. Furthermore, 100 tweets from material collected as part of a larger study were coded to assess reliability for the Twitter coding. Reliability was assessed using Krippendorff’s Alpha  $\alpha$ . The coders had satisfactory agreement for all variables (inter-coder reliability is presented in the next section). The lowest reliability was estimated for the topic variable ( $\alpha = .70$ ), reflecting difficulties in identifying the focal

**Table 1.** Overview of article selection for coding.

Media type outlets	Unique visitors/visits Sep 2015 <sup>a</sup>	Number of news articles		
		Mentioning Twitter	Excluding live tickers <sup>b</sup>	Random selection for coding <sup>c</sup>
<i>Quality daily</i>				
FAZ	7.31 m/143.59 m	88	87	48 (55.2%)
Sueddeutsche	9.91 m/145.46 m	149	149	81 (54.4%)
<i>Tabloid</i>				
Bild	19.17 m/1,784.38 m	233	233	120 (51.5%)
<i>Weekly</i>				
Spiegel	17.06 m/762.05 m	102	102	46 (45.1%)
Zeit	9.51 m/121.93 m	97	97	58 (59.8%)
<i>Broadcast: public</i>				
Tagesschau (ARD)	n.a.	46	46	19 (41.3%)
heute (ZDF)	n.a.	10	10	3 (30.0%)
<i>Broadcast: private</i>				
N-TV	9.79 m/312.27 m	121	121	58 (48.0%)
N24	4.78 m/58.4 m	340	144	63 (43.8%)
<i>Online-only site</i>				
Heise	6.32 m/135.24 m	36	36	17 (47.2%)
Total		1,222 (5.6%)	1025	513 (50.0%)

<sup>a</sup>According to AGOF (2015) digital facts 2015–09, which does not report figures for Tagesschau and heute.

<sup>b</sup>196 articles from live tickers were excluded from N24 and one from FAZ.

<sup>c</sup>Percentages refer to the number of articles excluding live tickers.



topic when more than one topic applied. Coefficients were around  $\alpha = .80$  for variables measuring more formal characteristics. Coder disagreements were resolved, and the rest of the sample was coded individually by the coders.

## **Data Analyses**

Data was analyzed using R (v.4.1.2) and the packages VGAM (v.1.1-5) for estimating a zero-truncated Poisson regression model and gamlj (v.2.6.1) for estimating multinomial and binary logistic regression models. Also, we conducted Pearson's  $\chi^2$ -tests of independence, followed by Bonferroni-corrected z-tests of standardized adjusted residuals to determine cells in which the expected and observed values differed significantly. We report Bonferroni-adjusted  $p$ -values ( $p_B$ ) for the respective analyses.

## **Variables**

### **News Article**

#### **Topic**

The dominant focus of an article was used to determine its topic. Coders were asked to read the entire article before coding. Topics were coded as politics, economy, disaster/catastrophes and accidents, crime, sports, environment, education, science and technology, health, religion, arts and culture, human interest, lifestyle, celebrity and gossip, mixed content, and other. Inter-coder reliability for this coding scheme was  $\alpha = .70$ . For the analyses in this paper, the 14 original categories were grouped into six broader categories to increase the number of cases per category: (a) politics and economy, (b) crime and disaster, (c) sports, (d) science, environment, education, health, religion, lifestyle, and culture, (e) human interest and celebrity gossip, and (f) mixed content/other.

#### **Type of Reference**

The first ten mentions of Twitter were coded for the type of mention within the article, distinguishing between (a) Twitter as source, (b) Twitter as company, (c) Twitter discourse as topic, and (d) (promotional) information about Twitter accounts of the news outlet or journalist. A Twitter mention was coded as "source" if tweets or Twitter accounts were mentioned or quoted as sources of information for the article in question. The code "Twitter as company" was assigned to news stories about Twitter as a company and its business. "Twitter discourse as topic" was assigned to articles about discussions taking place on Twitter without citing specific accounts and tweets. Reliability for this category was  $\alpha = .77$ .

#### **Number of Twitter References**

The number of Twitter sources in each news article was counted (up to ten references).

#### **Type of Quotation Style**

For all tweets cited as sources, the type of quotation style was coded. Quotation style was coded as (a) embedded tweet, (b) direct quote, and (c) indirect quote. Inter-coder reliability was  $\alpha = .84$ .

## Tweet as Source

### User Type

The first two Twitter accounts mentioned as sources in each article were coded for user type. The roles of actors in the public sphere were classified into six groups: (a) news media, (b) public actor, (c) private actor, (d) celebrity, (e) spam account, and (f) unclear. The user was coded as “news media” if the account belonged to a traditional news medium or was the account of a journalist clearly identifying with a mainstream news outlet. The code “public actor” was assigned to accounts of government officials, political parties, interest groups, movements, companies, other organizations or persons which function as representatives of such collective actors. Accounts were coded as “celebrity” if they represented verified accounts of celebrities (including actors, musicians, scientists, and athletes). The user was coded as “private actor” if the self-description pointed to a personal Twitter account of an unknown ordinary citizen. Private actors are non-elite sources, whereas news media, organizations, politicians, and celebrities can be considered elite information sources. Accounts that automatically forwarded tweets were coded as “spam accounts”. If none of the above could be clearly identified, the user was coded as “unclear”. Inter-coder reliability was  $\alpha = .79$ .

### Verification

Furthermore, accounts were coded for “verification”. In case the Twitter account displayed the blue checkmark indicating that it was a verified account of the person or organization it represented, the account was recorded as “verified”.

## Results

Twitter-relevant keywords were mentioned 995 times in the 496 articles coded for analysis. Of the coded articles, 88 (17.7%) only mentioned Twitter to point to the journalists’ Twitter accounts and were thus excluded from further coding. In the remaining 408 articles, another 248 references pointed to journalists’ Twitter accounts and were excluded from further analysis. Of the remaining 747 Twitter mentions, 66.0% referred to Twitter as a source, 26.0% talked about Twitter discourse as a topic, and 8.0% discussed Twitter as a business company (Table 2).

The present study focuses on references to Twitter as a source of information and therefore excluded all articles which do not cite tweets as sources. This resulted in 287 articles. Furthermore, the online-only news site contributed only five relevant articles to our sample and was excluded from the analyses. In the remaining 282 articles, Twitter

**Table 2.** Numbers and types of general Twitter references according to media type.

Media type	N articles	N references	Type of reference to Twitter		
			Source	Company	Communication
Quality daily	97	179	125 (69.8%)	11 (6.1%)	43 (24.0%)
Tabloid	68	167	133 (79.6%)	7 (4.2%)	27 (16.2%)
Weekly magazine	90	153	85 (55.6%)	14 (9.2%)	54 (35.3%)
Broadcast	138	213	144 (67.6%)	8 (3.8%)	61 (28.6%)
Online-only	15	35	6 (17.1%)	20 (57.1%)	9 (25.7%)
Total	408	747	493 (66.0%)	60 (8.0%)	194 (26.0%)

was referenced as a source 487 times and was cited as the only source in 11.7% of the articles.

RQ1 asked how media types are related to the use of Twitter as a source in published news. Specifically, the research question addressed (a) the number of Twitter sources per news article, (b) the quotation style used to cite tweets, and (c) the topic of the article referring to information from Twitter.

On average, the articles made 1.7 references to Twitter as an information source ( $M = 1.7$ ,  $SD = 1.3$ ). A zero-truncated Poisson regression with the number of references as the dependent variable and media type and article topic as predictor variables showed a significant effect of the type of news media on the number of references to Twitter sources per article,  $LR\text{-}\chi^2(3) = 23.52$ ,  $p < .001$  (Table 3). In our sample, tabloid newspaper articles contained the highest average number of tweet references ( $M = 2.2$ ,  $SD = 1.9$ ), followed by the quality dailies ( $M = 2.0$ ,  $SD = 1.6$ ), weekly magazines ( $M = 1.5$ ,  $SD = 0.8$ ), and broadcasters' articles ( $M = 1.4$ ,  $SD = 0.7$ ). Controlling for the effect of topic, tabloid articles ( $IRR = 1.47$ ,  $p < .001$ ) referred significantly more frequently and broadcaster's articles ( $IRR = 0.67$ ,  $p = .002$ ) referred less frequently to Twitter sources than the mean across all media types.

Media types also differ in the style of Twitter references: While three-quarters of all quotes in the tabloid newspaper consisted of embedded tweets, almost half of Twitter citations in news published by broadcasters were direct quotes. In addition, the tabloid newspaper rarely used indirect paraphrased quotes, while at least 20% of the references in all other media types were indirect quotes (Table 4).

A multinomial logistic regression with types of references as dependent variable and media types and news topics as predictor variables confirmed an effect of media type on types of references,  $LR\text{-}\chi^2(6) = 74.89$ ,  $p < .001$  (Table 5). For more detailed analyses of media differences, the weekly newspapers were chosen as the reference category since their use of different reference styles most closely approximated the marginal distribution across all media types and thus seemed to be the least informative (most typical) category. Comparing each media type individually to the average of all media categories, both the tabloid ( $OR = 2.75$ ,  $p < .001$ ) and the quality dailies ( $OR = 1.63$ ,  $p = .03$ ) used

**Table 3.** Zero-truncated Poisson model predicting number of Twitter references.

Effects	Estimate	SE	IRR	CI (95%)	z	p
Intercept	0.13	0.08	1.14	0.98–1.34	1.67	.094
<i>Media type</i> <sup>***a</sup>						
Tabloid	0.38***	0.11	1.47	1.18–1.83	3.43	<.001
Quality daily	<i>Ref. level</i>					
Weekly magazines	−0.27 <sup>†</sup>	0.15	0.76	0.57–1.02	−1.84	.066
Broadcast media	−0.41**	0.13	0.67	0.51–0.86	−3.06	.002
<i>Topic</i> <sup>b</sup>						
Politics & economy	−0.34*	0.14	0.71	0.54–0.93	−2.49	.013
Crime & disaster	−0.26	0.19	0.77	0.53–1.12	−1.37	.170
Sports	0.40**	0.13	1.49	1.15–1.92	3.04	.002
Science & culture	<i>Ref. level</i>					
Human interest & celebrities	0.27*	0.12	1.31	1.03–1.66	2.18	.029

Notes.  $N = 268$  articles. Model:  $\text{Log Likelihood} = -311.43$ ,  $df = 260$ ,  $LR\text{-}\chi^2(7) = 52.36$ ,  $p < .001$ . Pseudo- $R^2$  (McFadden) = .078. Contrasts were coded using effect coding, i.e., all levels of the predictors are compared to the grand mean across all media types or topics, respectively.

<sup>a</sup>Likelihood Ratio test for media type:  $LR\text{-}\chi^2(3) = 23.52$ ,  $p < .001$ .

<sup>b</sup>Likelihood Ratio test for topic:  $LR\text{-}\chi^2(4) = 19.51$ ,  $p < .001$ .

<sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 4.** Style of references to Twitter as information source according to media type.

Media type	N Art.	N Ref.	M Ref. per Art.	Type of quotation style		
				Embedded tweet	Direct quote	Indirect quote
Quality daily	64	125	1.95	74 60.7%	23 18.9%	25 20.5%
Tabloid	61	133	2.18	101 77.7%	20 15.4%	9 6.9%
Weekly magazine	56	85	1.52	41 49.4%	25 30.1%	17 20.5%
Broadcast	101	144	1.43	31 22.0%	70 49.6%	40 28.4%
Total	282	487	1.73	247 50.7%	138 28.3%	91 18.7%

Notes. Eleven (2.2%) quotes were coded as "other" for type of quotation style and not included in the analysis.

embedded tweets significantly more often than direct quotes, while broadcasters used embedded tweets significantly less frequently ( $OR = 0.27$ ,  $p < .001$ ). However, there were no significant differences between media types in the use of indirect as compared to direct quotes of Twitter content.

Finally, RQ1 asked whether the distribution of articles using Twitter as a source over news topics differed between media types. Overall, most references were embedded in articles pertaining to politics/economy (30.7%) and human interest/gossip (27.0%), the fewest in science/culture (11.4%) and crime/disaster (11.0%, see Table 6). However, the

**Table 5.** Multinomial logistic regression model predicting types of references.

Predictor	Embedded vs. direct quote		Indirect vs. direct quote	
	<i>b</i> (SE)	OR	<i>b</i> (SE)	OR
Intercept	0.66*** (0.14)	1.94	-0.37* (0.18)	0.69
<i>Media Type</i> ***				
Tabloid	1.01*** (0.23)	2.75	-0.45 (0.35)	0.64
Quality daily	0.49* (0.23)	1.63	0.45 (0.28)	1.57
Weekly	Ref. Level		Ref. Level	
Broadcast	-1.32*** (0.21)	0.27	-0.06 (0.23)	0.94
<i>Topic</i>				
Politics & economy	-0.18 (0.22)	0.83	0.11 (0.24)	1.11
Crime & disaster	Ref. Level		Ref. Level	
Sports	-0.30 <sup>†</sup> (0.25)	0.74	-0.54 <sup>†</sup> (0.30)	0.58
Science & culture	0.78* (0.39)	2.19	0.41 (0.47)	1.51
Human interest	-0.06 (0.24)	0.94	-0.25 (0.32)	0.78

Notes.  $N = 452$  references, Pseudo- $R^2$  (McFadden) = .120. Contrasts were coded using effect coding, i.e., all levels of the predictors are compared to the grand mean.

<sup>a</sup>Likelihood Ratio test for media type:  $LR\text{-}\chi^2(6) = 74.89$ ,  $p < .001$ .

<sup>b</sup>Likelihood Ratio test for topic:  $LR\text{-}\chi^2(8) = 10.55$ ,  $p = .229$ .

<sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 6.** Topic of article with Twitter quote according to media type.

Media type	Topic of article					Total
	Politics & economy	Crime & disaster	Sports	Science & culture	Human interest	
Quality daily	36 30.8%	8 6.8%	21 17.9%	34 29.1%	18 15.4%	117 100%
Adj. residual	0.0	-1.7	-0.9	6.9***	-3.3*	
Tabloid	16 12.3%	19 14.6%	16 12.3%	12 9.2%	67 51.5%	130 100%
Adj. residual	-5.4***	1.5	-2.5	-0.9	7.4***	
Weekly magazine	33 41.3%	4 5.0%	13 16.3%	5 6.3%	25 31.3%	80 100%
Adj. residual	2.3	-1.9	-0.9	-1.6	0.9	
Broadcast	57 41.9%	20 14.7%	42 30.9%	2 1.5%	15 11.0%	136 100%
Adj. residual	3.4*	1.6	3.8**	-4.3***	-5.0***	
Total	142 30.7%	51 11.0%	92 19.9%	53 11.4%	125 27.0%	463

Notes.  $\chi^2(12, n = 463) = 137.50, p < .001$ , Cramér's  $V = .32$ . 24 (4.9%) references were quoted in articles coded as "other" for topic and excluded from analysis.

\* $p_B < .05$ , \*\* $p_B < .01$ , \*\*\* $p_B < .001$ .

distribution of topics differed significantly between media types,  $\chi^2(12, n = 463) = 137.50, p < .001$ , Cramér's  $V = .32$ . An analysis of the standardized residuals revealed that whereas the proportions of references in articles pertaining to politics/economy remained within expectations in quality newspapers (30.8%,  $p_B = 1.00$ ) and weekly magazines (41.3%,  $p_B = .480$ ), they were significantly higher than expected for broadcasters (41.9%,  $p_B = .014$ ) and significantly lower for the tabloid newspaper (12.3%,  $p_B < .001$ ). In contrast, the tabloid newspaper published a significantly higher proportion of references in human interest/gossip articles than expected (51.5%,  $p_B < .001$ ), whereas quality newspapers (15.4%,  $p_B = .021$ ) and broadcasters (11.0%,  $p_B < .001$ ) used significantly less references in such articles. Broadcasters also differed from other types of media in a significantly higher proportion of references appearing in sports-related articles (30.9%,  $p_B = .003$ ) and a significantly lower proportion of Twitter references in articles on science/culture (1.5%,  $p_B < .001$ ). The highest proportion of references appearing in science/culture-themed articles was found for quality newspapers (29.1%,  $p_B < .001$ ).

In order to answer our second research question (RQ2) concerning characteristics of the cited tweets, the first two Twitter references in each article were selected for further coding. Out of the 287 articles selected for in depth analysis, 175 articles cited only one tweet. The remaining 112 articles cited two or more tweets, amounting to 399 references to Twitter as a source of information used in these articles. 24 of these cited tweets could not be found on Twitter at the time of coding nor coded from the existing material. Therefore, 375 cited tweets formed the basis for the detailed analysis of tweets cited by news media.

To address RQ2, the effect of media type on the proportion of (a) different types of Twitter users cited in the articles and (b) verified vs. unverified accounts was analyzed. The majority of cited tweets were posted by elite sources: public actors, media outlets or journalists, and celebrities (see Table 7).

However, a multinomial logistic regression with user type as the dependent and media type and topic as predictor variables revealed a significant effect of media type on the proportions of user types cited in their articles,  $LR\text{-}\chi^2(9) = 22.31, p = .008$  (Table 8). Since

**Table 7.** Number and percentage of verified vs. non-verified accounts and user types cited according to media type.

	Media type				Total
	Tabloid	Quality daily	Weekly magazine	Broadcast	
Verified accounts	60 70.6%	50 57.5%	53 72.6%	97 70.5%	260 70.5%
<i>User type</i>					
Citizen (non-elite)	15 17.4%	9 10.6%	3 4.1%	10 8.1%	37 10.1%
Public actor	21 24.4%	30 35.3%	33 45.2%	60 48.4%	144 39.1%
Media	25 29.1%	22 25.9%	16 21.9%	16 12.9%	79 21.5%
Celebrity	25 29.1%	24 28.2%	21 28.8%	38 30.6%	108 29.3%
Total (user type)	86 100%	85 100%	73 100%	124 100%	368 100%

Notes. Bivariate analysis user type vs. media type:  $\chi^2(9, n = 368) = 23.68$ , Cramer's  $V = .15$ ,  $p = .005$ .

public actors have been repeatedly identified as the dominant type of source cited in journalism, this user type was used as the reference level for the dependent variable in more detailed comparisons. For the predictor variable (media type), the quality daily newspaper category again served as the reference level, since the distribution of user types cited in the quality daily newspaper category corresponded most closely to the average

**Table 8.** Multinomial logistic regression model predicting types of users referenced.

Predictor	Celebrity vs. public actor		Citizen vs. public actor		Media vs. public actor	
	<i>b</i> (SE)	OR	<i>b</i> (SE)	OR	<i>b</i> (SE)	OR
Intercept	−3.25 (134.99)	0.04	−1.43*** (0.31)	0.24	−0.36† (0.20)	0.70
<i>Media Type</i> *** <sup>a</sup>						
Tabloid	−0.21 (0.34)	0.81	0.55 (0.39)	1.74	0.62* (0.29)	1.86
Quality daily	Ref.					
Weekly magazines	−0.57 (0.33)	0.57	−1.20* (0.52)	0.30	−0.33 (0.28)	0.72
Broadcast	0.17 (0.30)	1.18	0.41 (0.40)	1.51	−0.63* (0.27)	0.53
<i>Topic</i> <sup>b</sup>						
Politics & economy	−1.50* (0.72)	0.22	−2.02** (0.75)	0.13	−0.74 (0.49)	0.48
Crime & disaster	−15.51 (674.96)	0.00	−2.96* (1.18)	0.05	−1.22* (0.59)	0.29
Sports	1.91** (0.68)	6.65	−0.99 (0.83)	0.37	−1.14† (0.68)	0.32
Science & culture	Ref.					
Human interest	3.64*** (0.80)	38.24	2.06* (0.81)	7.83	1.00 (0.73)	2.73

Notes.  $N = 349$  references, Pseudo- $R^2$  (McFadden) = .251. Contrasts for "Media type" were effect coded, i.e., all levels of the predictors are compared to the grand mean. Contrasts for topic were treatment coded, i.e., all levels are compared to the reference level "Science & culture".

<sup>a</sup>Likelihood Ratio test for media type:  $LR\text{-}\chi^2(9) = 22.31$ ,  $p = .008$ .

<sup>b</sup>Likelihood Ratio test for topic:  $LR\text{-}\chi^2(12) = 199.16$ ,  $p < .001$ .

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

distribution across media types. Whereas media types did not differ significantly in their likelihood of referring to celebrities (rather than to public actors) as sources, weeklies were significantly less likely than the average across media types to refer to citizen/private actor tweets ( $OR = 0.30, p = .022$ ) rather than to public actors. Furthermore, it was significantly more likely for tabloid articles ( $OR = 1.86, p = .031$ ) and significantly less likely for broadcasters' articles ( $OR = 0.53, p = .022$ ) than average to cite tweets of media/journalists as compared to tweets of public actors.

To analyze whether types of media differ in the proportion of references to verified vs. non-verified Twitter accounts, a binary logistic regression model with verification status (verified vs. non-verified) as dependent and media type and topic as predictor variables was estimated. Since our analysis found a significant effect of media type on the proportion of user types, and the proportion of verified accounts also varied significantly between user type categories,  $\chi^2(3, n = 349) = 87.08, p < .001$ , Cramér's  $V = .50$ , the user type was included in the regression model as a control variable. The model revealed

**Table 9.** Binomial logistic regression models predicting verification status of cited accounts.

Predictor	Verified vs. non-verified account	
	<i>b</i> ( <i>SE</i> )	<i>OR</i>
Intercept	0.51 (.20)	1.66
<i>Media type</i> <sup>a</sup>		
Tabloid	−0.60* (0.26)	0.55
Quality daily	<i>Ref.</i>	
Weekly magazine	0.10 (0.28)	1.10
Broadcast	0.59* (0.26)	1.81
<i>Topic</i> <sup>***b</sup>		
Politics & economy	0.50† (0.26)	1.64
Crime & disaster	0.40 (0.36)	1.49
Sports	−1.56*** (0.36)	0.21
Science & culture	0.31 (0.37)	1.36
Human interest	<i>Ref.</i>	
<i>User type</i> <sup>***c</sup>		
Public actor	<i>Ref.</i>	
Citizen	−2.74*** (0.45)	0.06
Media	−0.24 (0.27)	0.78
Celebrity	2.64*** (0.38)	13.95

Notes.  $N = 350$  references, Pseudo- $R^2$  (McFadden) = .278. Contrasts were coded using effect coding, i.e., all levels of the predictors are compared to the grand mean.

<sup>a</sup>Likelihood Ratio test for media type:  $LR\text{-}\chi^2(3) = 8.21, p = .042$ .

<sup>b</sup>Likelihood Ratio test for topic:  $LR\text{-}\chi^2(4) = 23.99, p < .001$ .

<sup>c</sup>Likelihood Ratio test for user type:  $LR\text{-}\chi^2(3) = 100.24, p < .001$ .

† $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .



significant differences between media types with regard to the proportion of verified Twitter sources cited in their articles,  $LR\chi^2(3) = 8.21$ ,  $p = .042$ , even after controlling for the effects of topic and user type (see Table 9). While verified sources accounted for over 70% of all coded references in quality newspapers (70.6%), weekly magazines (72.6%), and broadcasters (78.2%), their proportion in the tabloid newspaper was only 57.5%. Since the proportion of verified Twitter sources in the quality daily newspaper was closest to its proportion in the entire sample (70.6%), it served as the reference category for detailed comparisons. Comparing each media type individually to the average across all media categories, tabloid newspaper articles included a significantly reduced proportion of verified Twitter sources ( $OR = 0.55$ ,  $p = .020$ ), whereas broadcasters' articles referred significantly more frequently to verified sources ( $OR = 1.81$ ,  $p = .021$ ).

Turning to RQ3 and RQ4, we now focus on the role of the articles' topics for the number and characteristics of Twitter references contained in them. In particular, RQ3 asked for the relationship between news topic and the frequency and type of references to Twitter as a source. Descriptive analyses show a higher than average mean number of references in articles categorized as human interest/gossip and sports, while a lower number was found in politics/economy and crime/disaster themed articles. The zero-truncated Poisson model reported in Table 3 showed that after controlling for the effect of media type (RQ1) article topic had a significant effect on the number of sources cited per article,  $LR\chi^2(4) = 19.51$ ,  $p < .001$ . For detailed analyses, science/culture was chosen as a reference category because its mean number of references most closely approximated the sample mean. Comparing all topic means against the grand mean of all topic categories, the number of references to Twitter sources was significantly above average in human interest/gossip ( $IRR = 1.31$ ,  $p = .029$ ) and sports-related articles ( $IRR = 1.49$ ,  $p = .002$ ), whereas their number was significantly reduced in articles on political/economy-related topics ( $IRR = 0.71$ ,  $p = .013$ ) when controlling for the effect of media type. Finally, whereas in a bivariate analysis of the relationship of article topic and the formal style of Twitter references a small significant association could be observed,  $\chi^2(8, n = 452) = 34.90$ , Cramer's  $V = .20$ ,  $p < .001$  (Table 10), these significant differences disappeared after controlling for the effect of media type in a multinomial logistic

**Table 10.** Type of Twitter quote according to news topic.

News Topic	N Art.	N Ref.	M Ref. per Art.	Type of quotation style		
				Embedded tweet	Direct quote	Indirect quote
Politics & economy	100	142	1.42	56 40.3%	46 33.1%	37 26.6%
Crime & disaster	34	51	1.50	23 45.1%	15 29.4%	13 25.5%
Sports	46	92	2.00	39 42.9%	37 40.7%	15 16.5%
Science & culture	31	55	1.77	39 73.6%	6 10.9%	8 15.1%
Human interest	59	125	2.12	76 64.4%	28 23.7%	14 11.9%
Total	270	465	1.72	233 51.5%	132 29.2%	87 19.2%

Notes.  $\chi^2(8, n = 452) = 34.90$ , Cramer's  $V = .20$ ,  $p < .001$ . Eleven (2.2%) quotes were coded as "other" for type of quotation style and not included in the analysis.

regression (Table 5), with the overall effect of topic turning out non-significant,  $LR\text{-}\chi^2(8, n = 452) = 10.55, p = .229$ . Comparing all topic categories to the grand mean across topics, only the higher percentage of embedded tweets in science/culture ( $OR = 2.19, p = .044$ ) and the lower percentage of indirect quotations in sports themed articles ( $OR = 0.58, p = .066$ ) – both in relation to direct quotations of tweets – remained significant or marginally significant.

RQ4 asked about differences in news topic according to the use of elite and non-elite sources. 70.6% of all references referred to verified sources, with higher percentages observed in politics/economy (76.5%) and crime/disaster (73.0%) and lower proportions in sports (65.3%) and science/culture themed articles (58.3%, Table 11). Indeed, our logistic regression model revealed a significant effect of topic on the verification status of cited Twitter sources after controlling for the effect of media type and user type,  $LR\text{-}\chi^2(4, n = 349) = 23.99, p < .001$  (Table 9). For detailed comparisons, human interest was chosen as the reference level because the percentage of references to verified accounts in this category (70.9%) approximated most closely the proportion across topics (70.6%). Apart from a trend to cite disproportionately more verified accounts in politics/economy themed articles ( $OR = 1.64, p = .055$ ), sports articles featured significantly less verified sources than the average across all topics ( $OR = 0.21, p < .001$ ).

Turning to the relationship between article topics and the user types cited, a significant effect of topic after controlling for the effect of media type emerged in a multinomial logistic regression model,  $LR\text{-}\chi^2(12, n = 349) = 199.16, p < .001$  (see Table 8). For detailed comparisons, science/culture was selected as the reference level, because its distribution of user types most closely approximated the marginal distribution across topic categories. In contrast to the comparisons reported above, simple treatment coding instead of effect coding was used to contain standard error inflations due to some combinations of topics and user type not occurring in our sample. All reported topic effects are therefore based on a comparison to the reference level science/culture as an approximation of the average across media types.

Reflecting the differing roles of different types of actors within the subject areas and social fields, politics/economy-themed articles were less likely to refer to celebrity tweets than articles on science/culture topics ( $OR = 0.22, p = .036$ ), whereas both sports ( $OR = 6.65, p = .005$ ) and human interest themed articles ( $OR = 38.24, p < .001$ ) used celebrity tweets disproportionately more often as an information source. In fact, references to celebrity tweets constitute the majority of all references in these two categories (sports: 63.9%, human interest: 58.1%). Turning to the proportion of references to citizen/private actor tweets as compared to public actor tweets, both politics/economy ( $OR = 0.13, p = .007$ ) and crime/disaster themed articles ( $OR = 0.05, p = .012$ ) referred disproportionately less frequently to citizen sources (relative to public actor sources), whereas citizen sources were referenced significantly more likely in human interest articles ( $OR = 7.83, p = 0.011$ ) than in articles on science/culture. Finally, the only topic to differ significantly from science/culture related articles in their relative preference of media/journalist versus public actors as information source was crime/disaster, owing to the exceptionally high reliance on public actors as sources in this topic category (73.0%,  $OR = 0.29, p = .038$ ). In addition, Holm-corrected post-hoc comparisons showed that public actors were referred to significantly more often in articles on the topic of politics/economics than in all other topic categories except crime/disaster. (Table 11).

**Table 11.** Type of Twitter users cited according to article topic.

	Article topic					Total
	Politics & economy	Crime & disaster	Sports	Science & culture	Human interest	
Verified accounts	91 76.5%	27 73.0%	47 65.3%	22 57.9%	61 70.9%	265 70.7%
<i>User type</i>						
Citizen (non-elite)	6 5.0%	1 2.7%	4 5.6%	6 16.2%	18 20.9%	35 10.0%
Public actor	74 62.2%	27 73%	17 23.6%	12 32.4%	4 4.7%	134 38.2%
Media	32 26.9%	9 24.3%	5 6.9%	14 37.8%	14 16.3%	74 21.1%
Celebrity	7 5.9%	0 0.0%	46 63.9%	5 13.5%	50 58.1%	108 30.8%
Total (user type)	119 100%	37 100%	72 100%	37 100%	86 100%	351 100%

Notes. User type vs. topics:  $\chi^2(12) = 177.72$ , Cramer's  $V = .41$ , Fisher's exact  $p < .001$ .

## Discussion

The present study aimed to draw a systematic comparison of the use of Twitter as a source on the websites of five news media types in Germany. The study focused on the use of Twitter sources along the dimensions of media type and news topic. Overall, we found significant effects of both media type and the topic of the articles on the number of references to Twitter sources, the proportion of verified accounts among cited references, and the user type cited. Quotation style was only influenced by media type.

Our first research question asked how media type was related to the use of Twitter as a source. Interestingly, the tabloid newspaper incorporated the highest number of tweets per article. However, three-quarters of tweets in the tabloid paper were embedded tweets that had not been worked on at all. In contrast, although incorporating the fewest Twitter sources per article, almost half of the Twitter quotes used by broadcasters were incorporated into the text as direct quotes and further 28% as indirect quotes. This might point to a development in the way in which tweets are incorporated into reporting. In an analysis published in 2013 over 90% of all tweets were directly cited (Broersma and Graham 2013, 455). The differences might be due to technical issues but also to the function the tweets serve. Incorporating tweets into text (direct or indirect quotes) could be more time-consuming than only embedding tweets, which might just serve illustrative purposes and not be vital to understanding the article.

Furthermore, half of the Twitter sources in the tabloid newspaper were found in articles on human interest/gossip, whereas only 12.3 % were in articles on politics/economy. On the other hand, almost 40 % of Twitter sources used by broadcasters and weekly appeared in articles on the topics of politics/economy. While these findings confirm results from previous research on tabloids (Hine 2020) and quality papers (Nordheim, Boczek, and Koppers 2018) they also provide a unified overview of how tweets are incorporated by media types according to topic.

Our second research question asked how media type is related to the use of elite and non-elite Twitter sources. Again, the strongest differences were evident between the tabloid newspaper and all other media types. Less than 60% of references in the tabloid newspaper came from verified sources, while in quality newspapers, weekly

magazines, and broadcasters more than 70% of citations were from verified accounts. Seemingly along these lines, non-elite sources were found most often in the tabloid newspaper in our sample, making up 17.2% of all coded references in contrast to 4.1% of coded references in weekly magazines. However, adjusting for the effect of topics, virtually identical proportions of non-elite sources were predicted in tabloid and broadcast articles (13.2% and 13.7%). While the results are in line with findings from previous work on the frequent use of official Twitter sources (Bane 2019; Hine 2020), the differentiation by media type shows that especially the tabloid paper was open to the use of non-verified non-elite Twitter sources in its reporting.

Our third research question asked about the relationship between news topic and the use of Twitter as a source in reporting. Most Twitter references were found in articles pertaining to politics/economy, human interest/celebrity gossip, and sports, whereas articles on crime/disaster and science/culture featured Twitter references to a lesser degree. This is interesting in light of previous research pointing to Twitter as an important information source during crises and catastrophes (Broersma and Graham 2013). Articles on sports and human interest/gossip also featured a higher number of Twitter sources per article than articles on politics/economy or crime/disaster, even after controlling for differences between media types. In contrast, whereas in bivariate analyses differences between topics also seemed to exist regarding the type of quotation style, these differences were not significant after controlling for differences between media types.

Furthermore, social media provide journalists with easy access to content published by various sources, ranging from ordinary citizens to politicians and companies. Our fourth research question focused on differences in how user types were cited according to news topic. In line with findings from previous research, the journalists who wrote the articles analyzed in our study preferred verified elite sources when citing social media. Paulussen and Harder (2014, 543) suggested that journalists use social media citations from less trustworthy sources, such as statements from ordinary citizens, only in case no official source is available. However, our study uncovered interesting differences between news topics in this respect. After adjusting for the differences in media types and user types cited, around 70 percent of sources cited in politics/economy, human interest, crime/disaster, and science/culture were verified, but only 25 percent in sports. Moreover, only ten percent of the coded Twitter sources came from ordinary citizens – after adjusting for effects of media type, most cases were in articles classified as human interest/gossip (18.7%) followed by science/culture (18.5%). Articles on politics/economy (4.6%) and crime/disaster (2.3%) barely featured social media quotes from citizens at all. Other notable results are the high reliance on public actors as Twitter sources in crime/disaster (73.2%) and politics/economy (58.7%), as opposed to only 4.5% in human interest articles and, inversely, the prominence of celebrity sources in human interest (62.9%) and sports (61.4%) as opposed to politics/economy (5.3%) and crime/disaster (0%).

## Conclusion

In general, our results point towards the “normalizing” of the use of social media for sourcing (Lewis and Molyneux 2018, 14; Singer 2005). Journalists tend to use Twitter according to their traditional repertoire and transfer their traditional journalistic norms to the new

environment (Neuberger, Langenohl, and Nuernbergk 2014). Such an effect can be shown separately for both media types and topics. Thus, journalists do not allow the norms of social media to alter their sourcing and news production process, but rather use the new platforms according to the norms of traditional media (Lasorsa, Lewis, and Holton 2012, 21). For example, our study shows that especially in politics and economy journalists tend to prefer trustworthy and official sources as well as additional sources outside of Twitter to verify information. Although Twitter provides citizens with a platform to share information with the public, their tweets rarely get publicized in the media. Similar to the preferred use of elite sources in traditional television news (Kleemans, Schaap, and Hermans 2017) and regional newspapers (Vonbun-Feldbauer and Dogruel 2018), journalists do not incorporate a substantial number of unchecked citizen statements collected from social media platforms into their articles. In this vein, our results point to traditional sourcing routines being carried over to the use of social media sources. This is in line with research that found that journalistic use of Twitter for communication is guided by relatively strict organizational norms (Molyneux and Mourão 2017, 15).

While the present study makes a valuable contribution to the understanding of how social media sources are integrated into reporting, it has several limitations. We could only capture cases in which the use of Twitter was disclosed. The number of unrecorded cases is unclear and must be examined with other methods (surveys, observation of newsroom activities). A motive for the non-transparent use of Twitter as a source may be the dubious image of the microblogging platform (Skogerbø and Krumsvik 2015, 361). Another explanation could be that journalists may have found their initial story idea on Twitter and conducted extended research with several steps and combined different sources before covering the topic. Thus, further research should explore what factors influence the use of social media sources in reporting.

A further limitation is that this study focused on one social media platform. The number and nature of the use of sources from other social media platforms were not explored. Future research should compare the use of Twitter, Facebook, and blogs as cited sources, as well as other social media platforms as named sources in news reporting. The opposite question is how often social media make use of traditional news as sources (e.g., Bastos 2015; Meraz 2009). In future studies, both directions of citing and linking between social media and journalism (Messner and Watson DiStaso 2008) should be combined to give a full picture of the mutual relationships in the networked public sphere. Another limitation is the focus on one country. Research shows that large differences exist in the journalistic appropriation of social media between national contexts (Gulyas 2013, 2017; Powers and Vera-Zambrano 2018). Finally, the comparison in this study only refers to the websites of different media types, but not to the press and broadcasting itself. The question must remain open here as to how much the content of the websites differs from that of traditional media. This, too, would have to be examined in further studies.

Despite these limitations, the present study provides valuable insights into the use of Twitter as a source in reporting. Social media are a relatively new field of research for journalism. Journalism is faced with a new role as a gatewatcher in an information environment characterized by information overload (Bruns 2018). The audience increasingly expects assistance in coping with the amount of information they face, especially on

social media. This includes a thorough selection and examination of tweets. Our study provides insights into the circumstances under which journalists disclose their use of Twitter as a source.

Our results show that, consistent with the normalization hypothesis, social media logic does not override the logics of different media types. Rather, differences in the way of (online) reporting between media types persist, albeit in an adapted way, in the disclosed use of Twitter as a source and manifest themselves in all characteristics of Twitter references examined. However, our analysis also shows that in addition to – and independent of – media logics, the logics of topics are also evident in the sourcing of Twitter, with differences primarily reflecting the relevant actors of the social field in question. Topic logics do not seem to play a role only in the formal style of Twitter referencing. In this case, technical, but also stylistic peculiarities of the different media types predominate. Our study thus points to the necessity of taking a closer look at the complex interplay of influences on the inclusion – and disclosure – of social media sources in (online) journalism and takes first steps in this direction.

## Disclosure Statement

No potential conflict of interest was reported by the author(s).

## Funding

This work was supported by Deutsche Forschungsgemeinschaft.

## ORCID

Felix Frey  <http://orcid.org/0000-0003-0138-5398>

Stefan Stieglitz  <http://orcid.org/0000-0002-4366-1840>

Milad Mirbabaie  <http://orcid.org/0000-0002-9455-5773>

## References

- Arbeitsgemeinschaft Onlineforschung e.V [agof]. 2015. "Studienarchiv digital facts 2015-09." <https://www.agof.de/studien/digital-facts/studienarchiv-digital-2015/#2015-09>.
- Artwick, C. G. 2014. "News Sourcing and Gender on Twitter." *Journalism* 15 (8): 1111–1127. doi:10.1177/1464884913505030.
- Bane, K. C. 2017. "Tweeting the Agenda." *Journalism Practice* 13 (2): 1–15. doi:10.1080/17512786.2017.1413587.
- Bane, K. C. 2019. "Tweeting the Agenda: How Print and Alternative Web-only News Organizations Use Twitter as a Source." *Journalism Studies* 13 (2): 191–205. doi:10.1080/17512786.2017.1413587.
- Bastos, M. T. 2015. "Shares, Pins, and Tweets: News Readership from Daily Papers to Social Media." *Journalism Studies* 16 (3): 305–325. doi:10.1080/1461670X.2014.891857.
- Boesman, J., L. d'Haenens, and B. Van Gorp. 2015. "Triggering the News Story: Reconstructing Reporters' Newsgathering Practices in the Light of Newspaper Type, Newsroom Centralization, Reporters' Autonomy, and Specialization." *Journalism Studies* 16 (6): 904–922. doi:10.1080/1461670X.2014.953783.
- Broersma, M., and T. Graham. 2012. "Social Media as Beat: Tweets as News Source During the 2010 British and Dutch Elections." *Journalism Practice* 6 (3): 403–419. doi:10.1080/17512786.2012.663626.

- Broersma, M., and T. Graham. 2013. "Twitter as a News Source: How Dutch and British Newspapers Used Tweets in Their News Coverage, 2007–2011." *Journalism Practice* 7 (4): 446–464. doi:[10.1080/17512786.2013.802481](https://doi.org/10.1080/17512786.2013.802481).
- Bruns, A. 2018. *Gatewatching and News Curation: Journalism, Social Media, and the Public Sphere*. New York: Peter Lang.
- Eberl, J.-M., C. E. Meltzer, T. Heidenreich, B. Herrero, N. Theorin, F. Lind, R. Berganza, H. G. Boomgaarden, C. Schemer, and J. Strömbäck. 2018. "The European Media Discourse on Immigration and its Effects: A Literature Review." *Annals of the International Communication Association* 42 (3): 207–223. doi:[10.1080/23808985.2018.1497452](https://doi.org/10.1080/23808985.2018.1497452).
- English, P. 2016. "Twitter's Diffusion in Sports Journalism: Role Models, Laggards and Followers of the Social Media Innovation." *New Media & Society* 18 (3): 484–501. doi:[10.1177/1461444814544886](https://doi.org/10.1177/1461444814544886).
- Fisher, C. 2018. "News Sources and Journalist/Source Interaction." In *Oxford Research Encyclopedia of Communication*, edited by J. F. Nussbaum. Oxford: Oxford University Press. doi:[10.1093/acrefore/9780190228613.013.849](https://doi.org/10.1093/acrefore/9780190228613.013.849).
- Gulyas, A. 2013. "The Influence of Professional Variables on Journalists' Uses and Views of Social Media: A Comparative Study of Finland, Germany, Sweden and the United Kingdom." *Digital Journalism* 1 (2): 270–285. doi:[10.1080/21670811.2012.744559](https://doi.org/10.1080/21670811.2012.744559).
- Gulyas, A. 2017. "Hybridity and Social Media Adoption by Journalists: An International Comparison." *Digital Journalism* 5 (7): 884–902. doi:[10.1080/21670811.2016.1232170](https://doi.org/10.1080/21670811.2016.1232170).
- Hedman, U. 2015. "J-Tweeters: Pointing Towards a new set of Professional Practices and Norms in Journalism." *Digital Journalism* 3 (2): 279–297. doi:[10.1080/21670811.2014.897833](https://doi.org/10.1080/21670811.2014.897833).
- Heim, K. 2021. "Tweets and Source Diversity: Newspapers' Sourcing of Twitter Posts from 2009 to 2016." *Mass Communication and Society* 24: 1. doi:[10.1080/15205436.2021.1883063](https://doi.org/10.1080/15205436.2021.1883063).
- Hermida, A. 2010. "Twittering the News: The Emergence of Ambient Journalism." *Journalism Practice* 4 (3): 297–308. doi:[10.1080/17512781003640703](https://doi.org/10.1080/17512781003640703).
- Hine, C. 2020. "The Evolution and Diversification of Twitter as a Cultural Artefact in the British Press 2007–2014." *Journalism Studies* 21 (5): 678–696. doi:[10.1080/1461670X.2020.1719369](https://doi.org/10.1080/1461670X.2020.1719369).
- Hladík, R., and V. Štětka. 2017. "The Powers That Tweet: Social Media as News Sources in the Czech Republic." *Journalism Studies* 18 (2): 154–174. doi:[10.1080/1461670X.2015.1046995](https://doi.org/10.1080/1461670X.2015.1046995).
- Kleemans, M., G. Schaap, and L. Hermans. 2017. "Citizen Sources in the News: Above and Beyond the vox pop?" *Journalism* 18 (4): 464–481. doi:[10.1177/1464884915620206](https://doi.org/10.1177/1464884915620206).
- Lasorsa, D. L., S. C. Lewis, and A. E. Holton. 2012. "Normalizing Twitter: Journalism Practice in an Emerging Communication Space." *Journalism Studies* 13 (1): 19–36.
- Lecheler, S., and S. Kruijemeier. 2016. "Re-evaluating Journalistic Routines in a Digital age: A Review of Research on the use of Online Sources." *New Media & Society* 18 (1): 156–171. doi:[10.1177/1461444815600412](https://doi.org/10.1177/1461444815600412).
- Lewis, S. C., and L. Molyneux. 2018. "A Decade of Research on Social Media and Journalism: Assumptions, Blind Spots, and a Way Forward." *Media & Communication* 6 (4): 11–23. doi:[10.17645/mac.v6i4.1562](https://doi.org/10.17645/mac.v6i4.1562).
- Lukito, J., J. Suk, Y. Zhang, L. Doroshenko, S. J. Kim, M.-H. Su, Y. Xia, D. Freelon, and C. Wells. 2020. "The Wolves in Sheep's Clothing: How Russia's Internet Research Agency Tweets Appeared in U.S. News as Vox Populi." *The International Journal of Press/Politics* 25 (2): 196–216. doi:[10.1177/1940161219895215](https://doi.org/10.1177/1940161219895215).
- Meraz, S. 2009. "Is There an Elite Hold? Traditional Media to Social Media Agenda Setting Influence in Blog Networks." *Journal of Computer-Mediated Communication* 14 (3): 682–707. doi:[10.1111/j.1083-6101.2009.01458.x](https://doi.org/10.1111/j.1083-6101.2009.01458.x).
- Messner, M., and M. Watson DiStaso. 2008. "The Source Cycle: How Traditional Media and Weblogs use Each Other as Sources." *Journalism Studies* 9 (3): 447–463. doi:[10.1080/14616700801999287](https://doi.org/10.1080/14616700801999287).
- Molyneux, L., and R. R. Mourão. 2017. "Political Journalists' Normalization of Twitter." *Journalism Studies* 20 (2): 248–266. doi:[10.1080/1461670X.2017.1370978](https://doi.org/10.1080/1461670X.2017.1370978).
- Moon, S. J., and P. Hadley. 2014. "Routinizing a new Technology in the Newsroom: Twitter as a News Source in Mainstream Media." *Journal of Broadcasting & Electronic Media* 58 (2): 289–305. doi:[10.1080/08838151.2014.906435](https://doi.org/10.1080/08838151.2014.906435).



- Neuberger, C., S. Langenohl, and C. Nuernbergk. 2014. *Social Media und Journalismus*. Düsseldorf: Landesanstalt für Medien Nordrhein-Westfalen (LfM).
- Newman, N. 2015. *Reuters Institute Digital News Report 2015: Tracking the Future of News*. Oxford: Reuters Institute for the Study of Journalism.
- Newman, N. 2021. *Reuters Institute Digital News Report 2021*. Oxford: Reuters Institute for the Study of Journalism.
- Nordheim, G. V., K. Boczek, and L. Koppers. 2018. "Sourcing the Sources." *Digital Journalism* 6 (7): 807–828. doi:[10.1080/21670811.2018.1490658](https://doi.org/10.1080/21670811.2018.1490658).
- Paulussen, S., and R. A. Harder. 2014. "Social Media References in Newspapers: Facebook, Twitter and YouTube as Sources in Newspaper Journalism." *Journalism Practice* 8 (5): 542–551. doi:[10.1080/17512786.2014.894327](https://doi.org/10.1080/17512786.2014.894327).
- Phillips, A. 2010. "Transparency and the New Ethics of Journalism." *Journalism Practice* 4 (3): 373–382. doi:[10.1080/17512781003642972](https://doi.org/10.1080/17512781003642972).
- Powers, M., and S. Vera-Zambrano. 2018. "How Journalists use Social Media in France and the United States: Analyzing Technology use Across Journalistic Fields." *New Media & Society* 20 (8): 2728–2744. doi:[10.1177/1461444817731566](https://doi.org/10.1177/1461444817731566).
- Quandt, T. 2018. "Dark Participation." *Media and Communication* 6 (4): 36–48. doi:[10.17645/mac.v6i4.1519](https://doi.org/10.17645/mac.v6i4.1519).
- Rogstad, I. D. 2014. "Political News Journalists in Social Media: Transforming Political Reporters Into Political Pundits?" *Journalism Practice* 8 (6): 688–703. doi:[10.1080/17512786.2013.865965](https://doi.org/10.1080/17512786.2013.865965).
- Santana, A. D., and T. Hopp. 2016. "Tapping Into a new Stream of (Personal) Data: Assessing Journalists' Different use of Social Media." *Journalism & Mass Communication Quarterly* 93 (2): 383–408. doi:[10.1177/1077699016637105](https://doi.org/10.1177/1077699016637105).
- Schumacher, N. F., P. Maurer, and C. Nuernbergk. 2021. "Towards New Standards? Interaction Patterns of German Political Journalists in the Twittersphere." *The International Journal of Press/Politics*, 1–21. doi:[10.1177/19401612211025502](https://doi.org/10.1177/19401612211025502).
- Singer, J. B. 2005. "The Political J-Blogger: 'Normalizing' a New Media Form to fit Old Norms & Practices." *Journalism* 6 (2): 173–198. doi:[10.1177/1464884905051009](https://doi.org/10.1177/1464884905051009).
- Skogerbø, E., and A. H. Krumsvik. 2015. "Newspapers, Facebook and Twitter: Intermedial Agenda Setting in Local Election Campaigns." *Journalism Practice* 9 (3): 350–366. doi:[10.1080/17512786.2014.950471](https://doi.org/10.1080/17512786.2014.950471).
- Van Leuven, S., A. Deprez, and K. Raeymaeckers. 2014. "Towards More Balanced News Access? A Study on the Impact of Cost-Cutting & Web 2.0 on the Mediated Public Sphere." *Journalism* 15 (7): 850–867. doi:[10.1177/1464884913501837](https://doi.org/10.1177/1464884913501837).
- Vonbun-Feldbauer, R., and L. Dogruel. 2018. "Regional Newspaper's Sourcing Strategies: Changes in Media-Citation and Self-Citation from a Longitudinal Perspective." *Journalism* 22 (6): 1503–1521. doi:[10.1177/1464884918817639](https://doi.org/10.1177/1464884918817639).
- Wallsten, K. 2015. "Non-elite Twitter Sources Rarely Cited in Coverage." *Newspaper Research Journal* 36 (1): 24–41. doi:[10.1177/0739532915580311](https://doi.org/10.1177/0739532915580311).
- Willnat, L., D. H. Weaver, and W. G. Cleveland. 2017. *The American Journalist in the Digital age: A Half-Century Perspective*. New York: Peter Lang.