



News sourcing and gender on Twitter

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Abstract

Traditional news sourcing practices that favor official, male voices have been widely documented over time and across media. But do these patterns persist in today's social media environment, where women outnumber and spend more time than men? This study explores news sourcing and gender on Twitter by analyzing more than 2700 tweets from reporters at 51 US newspapers. Guided by hegemony and set within the framework of social networking technology, the research examines quoting practices and interaction with sources by gender, beat, newspaper size, and live coverage. The analyzed tweets show a severe underrepresentation of women in quotes, indicating perpetuation of the status quo. The data also suggest a conformity mechanism may be at work in larger newspapers, where female reporters quoted fewer women than their counterparts in smaller news organizations. But at the same time, the research offers evidence that both male and female reporters are using the technology to engage with a more diverse community via @mentions and to share conversations by retweeting those messages to their networks.

Keywords

Source, Twitter, hegemony, gender, reporter, conformity, quote

News sourcing and gender on Twitter

From police chief to politician, official sources dominate the quotes and sound bites in mainstream news media coverage. “One study after another produces essentially the same observation... Journalism, on a day-to-day basis, is the story of the interaction of reporters and government officials...” (Schudson, 2011: 142). And, in study after study, findings show that the overwhelming majority of sources in traditional news have been

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men (Armstrong, 2004; Global Media Monitoring Project, 2010; Zoch and Turk, 1998). While reporter gender appears related to sourcing (Armstrong, 2004; Correa and Harp, 2011; Zeldes and Fico, 2005, 2010), women are less likely to be used as news sources overall (Poindexter, 2008). For decades, scholars have questioned how the press can serve democracy if it underrepresents women and minority voices in the news (Silver, 1986), and some have even described the absence of women in the media as ‘symbolic annihilation’ (Gerbner, 1972; Tuchman, 1978a).

But in today’s social networking environment, where women outnumber men, and also spend more time than men (Blakley, 2011; Brenner, 2012), will male news sourcing patterns persist? And specifically on Twitter, with its majority of female users (Beevolve, 2013) and its power to facilitate connections among journalists, sources, and readers (Hacker and Seshagiri, 2011), will journalists’ reliance on elite male voices prevail? Hermida et al. (2012) suggest that social media technology could enhance pluralism in media discourse. On Twitter, where the networked audience can take part in ‘many-to-many’ communication (Marwick and boyd, 2011: 16), opportunities for alternative sourcing are emerging (Hermida et al., 2012).

Despite the promise of diversity offered through Twitter, this technology exists within the hegemony of social, political, and institutional arenas. And in this real-time environment where news breaks, the dominant forces may dictate which voices are carried on reporters’ live Twitter feeds. The process of normalization, which carries traditional practices to the new medium (Lasorsa et al., 2012), would suggest that official, male voices in mainstream media would also dominate on Twitter. Guided by hegemony and set within the framework of social networking technology, the research examines newspaper reporter quoting practices and interaction with sources on Twitter by gender, beat, newspaper size, and live coverage.

Sources in journalism

Without sources, contemporary news is “unimaginable” (Carlson and Franklin, 2011: 1). Sources bring credibility (Reich, 2011) and authority (Schudson, 2011) to news reports, and have been called the reporter’s “life blood” (Mencher, 1977: 218). And sourcing can define news, as it is not necessarily what happens, but “what a news source says has happened...” (Turk, 1985: 48).

Reliance on official and elite sources

This paradigm tends toward a reliance on elite and official sources. Tuchman (1978b: 210) argues that news sourcing is related to institutional structures, where journalists are wedded to beats and bureaus that are “objectified” as appropriate information sites. This official framework can marginalize the voices that fall outside elite circles and can establish social norms (Reese, 1997).

From Sigal’s (1973) study of *The New York Times* and *The Washington Post* to contemporary scholarship, research shows mainstream news media rely heavily on official and elite sources. Livingston and Bennett (2003: 363) concluded from their study of 1200 CNN news stories that despite advances in technology and live coverage that could

liberate journalists from highly managed institutional settings, "...officials seem to be as much a part of the news as ever." And their prevalence as sources may be increasing over time. Research on newspaper coverage of social protests set three decades apart found journalists in 1999 relied on authorities more than their counterparts covering anti-Vietnam war protests in 1967 (Jha, 2007).

Sourcing patterns favoring official voices can be found in both general and topic-specific news coverage. A study of front-page stories from six newspapers showed that the majority of sources cited were from the government (Brown et al., 1987). Similarly, more than half the sources in network television news on Alzheimer's disease over a 25-year period were doctors, researchers, and politicians (Kang et al., 2010). These patterns extend beyond US borders. In Canadian newspapers, more than three-quarters of the quotes in stories about homelessness were from experts, not from those living in poverty (Schneider, 2011), and Danish journalists initiated contact with experts in a large percent of cases (Albaek, 2011).

Male source dominance

The Global Media Monitoring Project (2010) studied nearly 1300 newspapers, television and radio stations in 108 countries and found fewer than one in four news subjects were women. Results from the Project for Excellence in Journalism (2005) found similar results. In 45 US news outlets and nearly 17,000 stories, more than three-quarters included male sources, while only a third contained even one woman's voice. A few years earlier researchers found an even smaller representation of female voices in newspapers—just over one-fifth of sources (Zoch and Turk, 1998) and just over 16 percent in network television news (Liebler and Smith, 1997). A decade before that, the findings were even more extreme, showing that only 10 percent of sources in newspaper front-page stories were women (Brown et al., 1987).

Armstrong (2004: 148) cites a "mirror" explanation for the male sourcing practice. Women, she argues, appear in newspapers less frequently than men because they do not hold positions that represent their agencies. Others have documented a relationship between occupation and coverage (Silver, 1986) and attribute low numbers of women in news stories to their underrepresentation in the institutions reporters often turn to for sources (Brown et al., 1987).

Statistics show relatively few women hold political office and serve in the judiciary. According to the Center for American Women and Politics (2012), women held about 17 percent of the seats in the 112th US Congress. About the same percent of mayors in US cities with populations over 30,000 were women, and among state legislators, just over one-fifth were women. Among judges, women held 27 percent of federal and state benches in 2012 (Refki et al., 2012), and only 20 Chief Executive Officers in the Fortune 500 were women (Leahey, 2012). If the mirror concept holds, we would expect to find a similar representation of women in today's news on Twitter.


Reporter gender and sourcing

Numerous studies point to a relationship between reporter and source gender, with female reporters using more female sources (Armstrong, 2004; Rodgers and Thorson,

2003; Zeldes and Fico, 2005, 2010; Zoch and Turk, 1998). But this gendered pattern has not been supported universally (Ross, 2007). Instead, others argue that organizational and institutional factors relate to the sources journalists use in their stories.

Socialization and hegemony

Soon after her appointment as *The New York Times* Executive Editor, Jill Abramson said, “The idea that women journalists bring a different taste in stories or sensibility isn’t true” (Brisbane, 2011). Several months later, the paper’s incoming public editor, Margaret Sullivan (2012), tweeted:

	<p>Margaret Sullivan @Sulliview 18 Jul</p> <p>As editor (or public editor), does being a woman matter? Of course http://blogs.buffalonews.com/sulliview/2012 ... via @TheBuffaloNews</p>
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While anecdotal, the comments illustrate varying perspectives among women in the news industry. To explain such differences, scholars have drawn from socialization theory and hegemony to guide their research. Rodgers and Thorson (2003) applied job and gender socialization models to sourcing in news organizations of various sizes. In the job model, journalists are socialized to newsroom norms and organizational factors—including both size and demographic structure. The gender model argues that women will bring differences to the newsroom based on their lifelong socialization, which could influence their sourcing practices (Rodgers and Thorson, 2003). Their analysis of a small, medium, and large newspaper showed fewer gender differences in sourcing at the larger organization. This pointed to a possible ‘conformity mechanism’ in larger newspapers, where newsroom norms may, perhaps implicitly, dictate the use of sources (Rodgers and Thorson, 2003: 670).

Correa and Harp (2011: 312) also found gendered differences in sourcing between news organizations in their coverage of the HPV vaccine. While female reporters in a male-dominated newsroom used more official and male sources, this was less likely in stories produced by women in a more ‘gender-balanced environment.’

Thus, the masculine order of the newsroom, and in the larger socio-political perspective, the dominance of elite, official, men in power, may play a role in how mainstream news reporters use sources in their stories. The concept of hegemony has guided media scholarship in various contexts (Burch and Harry, 2004; Correa and Harp, 2011; Gitlin, 1980; Reese, 1997). Describing hegemony, Gramsci (1971: 12) wrote that consent is given “to the general direction imposed on social life by the dominant fundamental group...because of its position and function in the world of production.”

The news paradigm operates within the larger ideological sphere, helping the system maintain control through routines that perpetuate conceptions of authority (Reese, 1997). From the newsroom through the social and political spheres, hegemony—encompassing the mirror concept and conformity mechanisms—would predict maintenance of the status quo in social media. But, might Twitter's networked environment and interactivity through @mentions make a difference in diversifying sources in news reporting?

Twitter, journalism, gender, and sourcing

More than 200 million people use Twitter (What is Twitter? 2013), accounting for 15 percent of women on the Internet, and 17 percent of male Internet users (Duggan and Brenner, 2013). These figures include 10,000-plus journalists (Sreenivasan, 2012) and mainstream news media whose followings often exceed their circulation many times over (nytimes on Twitter, 2012). The majority of journalists use this information network on the job (Cision, 2010; Oriella, 2011), sending out links to their stories, live-tweeting breaking news, engaging with their communities, and more, all within the 140-character tweet format (Twitter for Newsrooms, 2012). And as journalists and their organizations integrate social media into their daily routines, a body of research on Twitter and news is emerging.

At the organizational level, research shows Twitter functioning as a distribution platform for traditional news, with mainstream media tweeting links to their own content (Holcomb et al., 2011). Individual journalists use Twitter to monitor and research news (Sherwood and Nicholson, 2012) and have been found to 'normalize' Twitter to fit existing professional norms and practices (Lasorsa et al., 2012), similar to journalist bloggers (Singer, 2005). Deuze (2008: 11) argues that new technology "amplifies existing ways of doing things" and supplements existing practices, taking time to seep into the organizational culture. Earlier studies of technology and news work support these ideas. In their examination of newspapers with electronic news libraries, Hansen et al. (1994) found the technology supported established male sourcing practices. And Livingston and Bennett (2003) found the continued reliance on official sources in live, breaking news, despite opportunities for diversity afforded by the technology.

A study of Twitter accounts from six newspapers and three television stations found men were much more likely than women to be mentioned in tweets (Armstrong and Gao, 2011: 500). This appeared to track the gender disparity of the mainstream news content. The study did not, however, examine individual reporters' Twitter feeds.

Lasorsa (2012) examined gender differences among 500 journalists on Twitter, but did not study sourcing. The findings showed female reporters to be more transparent than males in terms of sharing about their personal lives, jobs, and everyday activities.

Hermida et al. (2012) argue that social media have the potential to disrupt hierarchical structures. Their case study of sources used by NPR's Andy Carvin on Twitter during the Tunisian and Egyptian uprisings found that non-elite sources accounted for more than half of the 3623 messages in their sample (Hermida et al., 2012). This was the case even though institutional elites and mainstream media made up a greater percent of sources. While this appears to break with established norms, it may reflect Carvin's real-time reporting practices (Hermida et al., 2012). For example, Carvin has sent 879 tweets in one

day (Sonderman, 2011), which is more than other journalists may tweet in an entire year. And his job as senior digital strategist allowed him to take risks and explore new tools while covering the Arab Spring on Twitter (Ingram, 2012). Hermida et al. (2012) suggest looking beyond the Carvin case to include other journalists and sourcing on social media. The present study does so by analyzing Twitter content from a range of US newspaper reporters, examining quotes as well as interactions with followers through @mentions.

News sourcing on Twitter: Hypotheses and research questions

Several hypotheses follow from the literature synthesized above. Hegemony (Burch and Harry, 2004; Correa and Harp, 2011; Gramsci, 1971; Gitlin, 1980; Reese, 1997), socialization, and the conformity mechanism (Rodgers and Thorson, 2003) would predict a replication of mainstream news sourcing patterns on Twitter.

Mainstream media journalists' reliance on official sources leads this study to predict finding similar patterns on Twitter:

H1: Reporters will quote official sources more than they quote other sources in their tweets.

The literature on gendered sourcing by journalists in traditional media and by media organizations on Twitter predicts a similar gendered pattern among reporters on Twitter.

H2: Reporters will quote male sources more than they quote female sources in their tweets.

H3: Female reporters will quote women in their tweets more than their male counterparts do.

Assuming the conformity mechanism in large newspapers, a similar pattern would be expected on Twitter.

H4: Reporters at large newspapers will quote fewer women in their tweets than reporters at small newspapers.

H5: Female reporters at large newspapers will quote fewer women in their tweets than female reporters at small newspapers.

Three research questions follow from the scholarship on news work and technology in reporting.

According to Hermida et al. (2012), social media could provide for increased news source diversity, finding evidence for greater reporter/source interaction on Twitter through @mentions. The following research question explores reporters' engagement with sources on Twitter via @mentions.

RQ1: How do reporters interact with sources through @mentions on Twitter, and what role might gender play?

Guided by writings on sources and institutional structures (Tuchman, 1978b), technology (Deuze, 2008), sourcing and technology (Hansen et al., 1994), live news coverage (Hermida et al., 2012; Livingston and Bennett, 2003), and the normalization of Twitter (Lasorsa et al., 2012), this study asks:

RQ2: How do beats relate to sourcing and gender on Twitter?

RQ3: How does live tweeting relate to sourcing and gender on Twitter?

Method

Using constructed-week sampling, the study analyzed 2733 tweets from newspaper reporters on Twitter. Reporters were drawn from 51 US metro daily newspapers listed on MuckRack (2011). MuckRack has served as a resource in previous scholarly research for sampling journalists who use Twitter (Lasorsa, 2012; Lasorsa et al., 2012). The account of the news reporter with the highest number of Twitter followers for each paper (excluding sports and entertainment journalists) was selected for the study. Number of followers was used to help ensure the sample would yield sufficient tweets for analysis. While having more followers does not guarantee level of tweeting, it does indicate the likelihood of tweeting and the potential to reach the greatest number of people. Those with fewer followers may tweet less frequently or their use may vary. And, because the site includes many types of journalists, those eligible for inclusion had to be identified as a *reporter*. The work practices of columnists, editors, critics, etc., may be distinct from reporters' routines, so non-reporters were excluded. The same holds for sports and entertainment journalists; while they may be prolific Twitter users and are often the most-followed journalists in their markets, their role in society may differ from that of the metro reporter. Also, the mix of fans and celebrities in their Twitter accounts may fall outside the parameters of this study.

The period of analysis spanned April 1 through June 30, 2011, with the sample week constructed by randomly selecting one Sunday from all available Sundays in that period, one Monday, and so on. Constructed-week sampling has been tested and used as a reliable method for sampling media content (Riffe et al., 1993). All tweets from each reporter's Twitter account were collected for June 25, June 15, June 5, May 26, May 6, April 25, and April 5, 2011. To collect the tweets, the researchers accessed the selected reporters' Twitter accounts, copied all tweets from the sampled dates, and pasted them into a Word document for numbering and coding.

The principal investigator and one research assistant coded the tweets after pretesting the coding categories on a separate collection of tweets.

Variables

The study measured sourcing by examining quotes in tweets and by exploring @mentions as a means to gauge interactions with followers.

Reporter gender – The reporter is coded as male or female for each tweet.

Quote – The variable measures who is quoted or paraphrased in the tweets. Categories include: no quote, the reporter, staff in the reporter's news organization, another news organization, politician, public employee, business, academic/scientist, lobby/interest group, attorney, citizen, journalism industry, entertainment, other, can't tell, and multiple. Further grouping includes politicians, public employees, academics/scientists, and attorneys as official sources, and all others as unofficial sources.

Quote gender – The person quoted is coded as male, female, or entity (such as police, the FDA, etc.).

@mention – Reporters can communicate with Twitter account holders semi-privately beginning the message with the @ symbol. The @mention indicates a conversation is taking place between the reporter and the person to whom the message has been sent. Including text before the @, adding a hashtag (#) in the message, or retweeting it (RT@) would make it public, allowing the reporter to address a specific follower publicly. This variable measures to whom reporters are sending these messages. It categorizes recipients of the @mention as listed above for *quote*. Simple mentions using @ are excluded—for example, a tweet such as: "On Air Force One with @barackobama."

@mention gender – The recipient of each @mention is coded as male, female, or entity (such as 'police' or 'the government').

Beat – Ten beats are included in this variable, based on the reporter's Twitter profile and byline. They include: government/politics, education, business, technology, crime, health/medicine/science, courts, environment, investigative, and general.

Size – This variable categorizes the circulation of the reporter's newspaper as either small (less than 200,000) or large (200,000 or more), based on data from the Audit Bureau of Circulations (2012).

Live tweet – Categories include breaking news (such as a fire or natural disaster), planned event, (such as a news conference or speech), and tweets unrelated to live coverage. The live event offers potential for quoting or @mentioning the newsmakers related to events, and others who may be witnesses or participants.

Type – The tweet either pertains to reporting or it does not. For example, tweeting a photo of kitty on the sofa would not be considered a reporting tweet unless the story was about a cat virus.

Cohen's Kappa values on a sample of the tweets showed more than acceptable intercoder reliability: *quote*=.949, *quote gender*=.943, *@mention*=.906, *@mention gender*=.975, *live tweet*=.93, and *type*=.786. The researcher determined gender and beat using the MuckRack and Twitter profiles. Newspaper size was based on circulation data from the Audit Bureau of Circulations (2012).

Results

The 2731 tweets analyzed came from 26 men 25 women. Of the 51 reporters, 14 men and 14 women worked for small newspapers (under 200,000 circulation), and 12 men and 11 women worked for large papers (200,000 and above).

Men tweeted more than women, generating 58 percent of the 2731 tweets. Reporters quoted sources in 18.6 percent of their tweets (507 quotes).

Table 1. Percent of quotes by reporter gender and newspaper size.

	Men quoted	Women quoted	Entity quoted
Small paper, male reporter	82.4	12.6	4.9
Small paper, female reporter	79.3	15.7	5.0
SMALL, ALL	81.2	13.9	5.0
Large paper, male reporter	52.9	0.0	47.1
Large paper, female reporter	87.9	7.5	4.7
LARGE, ALL	79.4	5.7	14.9

$\chi^2=6.797=17.498$, $N=444$, $p<.001$.

H1: The first hypothesis predicted that reporters would quote official sources more than other sources on Twitter, and was supported. A paired samples *t*-test showed a significant difference between official ($M=.80$, $SD=0.40$) and unofficial sources ($M=.20$, $SD=0.40$); $t=17.922$, $df=506$, $p<.001$. The largest percent of quotes came from politicians (57.4 percent), followed by public employees (18.3 percent), and citizens (4.5 percent).

H2: The data supported previous findings on gendered sourcing in mainstream media. Of all the sources quoted in reporters' tweets, men accounted for 80.6 percent, women, 11.3 percent, and entities, 8.1 percent—supporting H2. A chi-square test shows a relationship between reporter gender and quoting ($\chi^2=6.797$, $N=444$, $p<.05$).

H3: As predicted, female reporters quoted women more than their male counterparts did, albeit a small difference (11.8 versus 10.6 percent, respectively). They also quoted more men.

H4: As predicted by previous findings that argued for the conformity mechanism in large newspapers, fewer women were quoted by reporters at large newspapers (5.7 percent), than at small papers (13.9 percent), supporting H4.

H5: The female reporters at small papers quoted women more than twice as often as their counterparts at large papers, supporting H5. See details in Table 1, which also shows that the male reporters at the large papers quoted no women in their 539 tweets. Unidentifiable quotes, such as 'rookie reporter,' may have been women, but because the gender was not evident in the tweet, the quote was coded as 'entity.' And several male reporters referenced women in their tweets, but did not quote them. For example: "Oh #Florida! 85-year-old woman starts fighting & biting her 59-year-old dentist...over ill-fitting dentures" (Pittman, 2011).

RQ1 asked how reporters would interact with sources through @mentions on Twitter. The reporters sent 571 @mentions, or 21 percent of their tweets. One-third were related to reporting on their beats, while two-thirds were unrelated to reporting. This was consistent for male and female reporters. Overall, 55.9 percent of @mentions were directed at men, 35.5 percent at women, and 8.6 percent at entities. See Table 2 for a breakdown of @mentions by newspaper size and gender.

As a proportion of their total tweets, male reporters used @mentions slightly more than their female counterparts—22 percent of the men's tweets versus 19 percent of the women's tweets. Men showed little difference across markets. But women differed

Table 2. Percent of @mentions sent by reporter gender and newspaper size.

	Men @	Women @	Entity @
Small paper, male reporter	66.0	30.9	3.1
Small paper, female reporter	50.8	39.0	10.2
SMALL, ALL	62.5	32.8	4.7
Large paper, male reporter	48.6	39.0	12.4
Large paper, female reporter	48.8	38.0	13.2
LARGE, ALL	48.7	38.5	12.8

$\chi^2=14.396=17.498$, $N=487$, $p</.001$.

dramatically. In small markets, they used @mentions in only 12.1 percent of their tweets, while female reporters in large papers did so at more than twice the rate (25.6 percent).

For reporting-related tweets, the men and women directed their @mentions most often to citizens. But the percent was greater for male reporters (42.4) than for female reporters (26.4). The next highest percent of reporting-related @mentions for men (14.4) and women (23.6) was other news organizations.

Reporters extended the conversations they were having by retweeting 15 percent of their @mentions ($N=88$), making them publicly available and sending them to their followers. Source gender was more evenly distributed in these tweets, with 46.6 percent male, 37.5 percent female, and 15.9 percent entity @mentions. The bulk of these retweets came from reporters in large newspapers (85 percent), with a chi-square test showing a significant relationship between newspaper size and retweeting @mentions ($\chi^2=127.36$, $N=88$, $p<.001$). In addition, male reporters retweeted a greater percent of female @mentions (35.7) than their female counterparts (34.4). The female reporters retweeted a greater percent of male @mentions (59.4) than their male counterparts (44.6). Official sources accounted for a small percent of these retweets (11.3), while more than a third were citizen @mentions (34.1) and another third came from their own or other news organizations (35.2).

RQ2 asked how beats relate to sourcing and gender on Twitter. Of all the quotes, nearly two-thirds came from the politics/government beat, and on that beat both male and female reporters quoted men more than 8 out of 10 times. On the courts beat, female reporters quoted no women (there were no men covering courts).

A male education reporter quoted the largest percent of women, 28.6 percent (excluding female general assignment and health reporters whose single quote was a woman). For female reporters, the government beat yielded the greatest percent of women quoted, 14.6 percent (again, excluding the single quotes noted above). This beat generated two-thirds of women reporters' quotes, with many coming out of live coverage during legislative sessions and elections. Details follow below in the section on RQ3 and live tweeting.

Both male and female politics reporters sent about two-thirds of their @mentions to men. Male business reporters sent a greater percent of their @mentions to women than their female counterparts. Table 3 offers detail by beat and gender for quoting and sending @mentions.

Table 3. Quotes and @mentions as percent of total tweets by beat and reporter gender.

	Male reporter quotes	Male reporter @	Female reporter quotes	Female reporter @
Government/politics	60.9	21.2	67.6	24.8
Education	11.3	0	.8	4.6
Business	0	8.5	5.8	34.4
Technology	1.6	32.6	3.1	11.5
Crime	12.1	16.7	0	0
Health/medical/science	.8	1.7	0	4.1
Courts	0	0	22.0	4.6
Environment	6.9	8.2	0	0
Investigative	0	.6	0	0
General	6.5	10.5	.4	16.1
TOTAL NUMBER	248	218	259	353

RQ3 asked how live tweeting related to sourcing and gender. Of the identifiable quotes, 68.7 percent were live-tweeted. A chi-square test showed a significant relationship between live tweeting and quoting ($\chi^2=47.79$, $N=444$, $p<.001$). During live planned events, reporters quoted men 86.6 percent of the time, women, 11.4 percent, and entities, 2 percent. These included speeches by President Obama, the Rod Blagojevich trial, elections, and state legislative sessions. As noted above in the findings for RQ2, the politics beat generated a substantial percent of the live tweets while reporting on state government. One of the most active tweet streams featured live coverage of the Wisconsin state legislature. The female reporter’s live tweets quoted female legislators as they participated in sessions addressing the 2011 budget crisis. The women were clearly identified, as this tweet illustrates, “Democratic Rep. Tamara Grigsby: Today’s decisions will haunt you for the rest of your careers,” (Spicuzza, 2011). Interestingly, the percentage of that reporter’s live tweets mirrored perfectly the percent of women who held seats in the Wisconsin state legislature at that time—25 percent (National Conference of State Legislatures, 2011). The pattern was remarkably similar for the other two female political reporters who live-tweeted for smaller newspapers. In Pittsburgh, 25 percent of live quotes featured women, which is actually higher than the 17 percent of state seats held by women in Pennsylvania. In Sacramento, California, where women hold 28 percent of the seats, one-third of the live-tweeted quotes featured women. And, as hegemony and the conformity mechanism would predict, the female reporters at the larger newspapers who live-tweeted quotes on the government beat quoted fewer women. In Indianapolis, 3 percent of the quotes featured women, and in Minneapolis, 20 percent. These figures came nowhere close to mirroring the 21 and 32 percent of women holding seats in those legislatures (National Conference of State Legislatures, 2011).

Breaking news accounted for only 1.4 percent of quotes. And for tweets that were not generated during live coverage, men accounted for 69.1 percent of quotes, women, 10.8 percent, and entities, 20.1 percent.

Post-hoc analysis: Exploring tweets containing quotes and links

To further explore the quotes that reporters tweeted, a post-hoc analysis was conducted that examined their relationship to the news organizations' mainstream content. This analysis was guided by the Armstrong and Gao (2011) findings, which showed the gender in tweeted quotes predicted the gender in linked stories. They suggested that news organizations were sending their mainstream content through Twitter as another distribution tool. For the present study, evidence of this practice would illustrate maintenance of the status quo in organizational practices.

The analysis examined tweets that contained both links and quotes, comparing them between large and small newspapers. The data showed that reporters at the larger papers linked heavily to their own news organizations' content. About two-thirds of their tweets that contained both links and quotes linked to their own newspapers' stories. These tweets accounted for about 27 percent of their quotes. The equivalent at the small papers represented only 8 percent of their quotes. So, it appears that the larger papers drew quotes from their mainstream content at more than triple the rate of the smaller papers.

Discussion

Mainstream media quoting practices that favor official male voices and severely under-represent women appear to have migrated to the reporters' Twitter streams examined in this study. The data suggest a conformity mechanism (Rodgers and Thorson, 2003) may be at work, as female reporters at the larger newspapers quoted fewer women than their counterparts at smaller papers, and reflected more closely the large papers' male reporters, whose tweets did not include a single quote from a woman. But, this did not mean their Twitter streams were devoid of women's voices.

Overall, the reporters were engaging with a more diverse community via @mentions, and sharing conversations by retweeting them to their networks. Twitter's function as both an interactive communication tool and dissemination platform stands out as a key distinction from mainstream media. By taking into account both quoting and engagement with sources, this study offers a more concise picture of reporters' use of Twitter. While the findings replicate conventional elite sourcing patterns (Schudson, 2011), and male dominance in quotes (Armstrong, 2004; Global Monitoring Project, 2010; Zoch and Turk, 1998), they also build on the Hermida et al. (2012) findings of alternative voices through @mentions. So, while technology appears to amplify the mainstream media practice (Deuze, 2008) of quoting elite male sources, Twitter's networked environment also facilitates new journalistic methods—namely, communicating using @ mentions.

But, as social, political, and newsroom hegemony would predict, quotes featured primarily elite sources, such as politicians and government authorities. And, the percent of women quoted was even smaller than many recent mainstream news studies have found. Just 11 percent of all the quotes cited women. Given the mirror concept (Armstrong, 2004), that argues news sources reflect those in positions to provide information, these numbers fall short. Considering that women hold 17 percent of seats in the US Congress and account for 17 percent of mayors in cities with populations over 30,000 and one-fifth

of state legislators (Center for American Women and Politics, 2012), women's voices were relatively silent in the quotes on these reporters' Twitter streams.

The rate was slightly better at smaller papers, where women quoted women in 16 percent of quotes—exceeding that of their male counterparts by three percentage points. But at the larger papers, the findings indicate a possible conformity mechanism (Rodgers and Thorson, 2003), where less than 8 percent of female reporters' quotes featured women, and male reporters quoted no women at all. The men's quotes largely referenced entities, such as 'police,' or other authorities, nearly half the time. And, while women who hold public relations or spokesperson roles within those organizations may have served as sources, this was not evident in the attributions.

During live tweeting, female political reporters from smaller newspapers quoted more women than their female counterparts at the larger papers. The percent of quotes at the smaller papers more closely matched the percent of women holding legislative seats in those states.

However, when it came to interacting with followers through @mentions, the reporters' Twitter streams were clearly more diverse. Nearly four in 10 @mentions were directed to women. But even though the female reporters in larger newspapers were engaging with other women on Twitter, quotes in their tweets did not reflect those conversations. This conformed with the male reporters at the larger newspapers, who also communicated with women in @mentions, but chose to quote no women at all in their tweets.

This appears to resonate with the larger papers' hegemonic quoting practices in their mainstream content. A post-hoc analysis showed that the larger papers were drawing quotes from their own linked stories at more than three times the rate of the smaller papers. Given the relationship between gender in Twitter quotes and gender in linked stories (Armstrong and Gao, 2011), it appears that the underrepresentation and even absence of women in the mainstream content was being carried over to Twitter in quotes.

Tuchman (1978b) argued more than three decades ago that institutional structures and the journalistic beat system are related to news sourcing. The findings suggest that these practices may have migrated to Twitter. The politics/government beat generated the majority of quotes, which featured men 80 percent of the time. Many of those tweets came from live election coverage and reporting on state legislatures. Considering that women held about 24 percent of the state legislative seats during this period (National Conference of State Legislatures, 2011), the finding appears in line with the mirror concept, which argues sources reflect those in positions to provide information (Armstrong, 2004). And in an environment where Twitter technology offers journalists the means to cover news as it unfolds, the newsmakers giving the speeches, holding the press conferences, and garnering the spotlight also featured heavily in reporter quotes on Twitter. This resonates with what Livingston and Bennett (2003: 363) found with live reporting on CNN, "...the one predictable component of coverage remains official sources." Another is quoting primarily men during live tweeting, as the data suggest.

Overall, the study advances past research on gender and news sourcing through its findings of mainstream quoting practices among newspaper reporters on Twitter, while also offering evidence for increased diversity through @mentions. It is distinct from others that have included news organizations' Twitter accounts and other types of journalists

in their analyses. This strength may also be considered a limitation, as broadcast, magazine, web-only, or other journalists—including those with fewer followers—may use the network differently. And while the content analysis method documents significant differences and relationships, it does not reveal what causes them or measure their effects. Nor does it answer questions about the impact of exposure to the voices in a rapid stream of brief tweets compared to those in legacy media forms. Future studies await further exploration in these directions.

Conclusion

The nearly-absent female voice in the quotes on reporter Twitter feeds might appear to ring of ‘symbolic annihilation’ (Gerbner, 1972; Tuchman, 1978a), especially in today’s world of social media, where women outnumber and spend more time than men (Blakley, 2011; Brenner, 2012). However, delving deeper than quotes into Twitter’s networked environment reveals enhanced pluralism in reporters’ discourse through @mentions. The research suggests that in navigating social media technology, reporters are increasing diversity by communicating with women via @mentions and retweeting messages to their entire community of followers. But at the same time, the hegemony of reporters’ social, political, and institutional realms appears to perpetuate the status quo of the official, male voice in the quotes that make their way onto Twitter. Examples include live-tweeting events featuring male elites, replicating the organization’s male-dominated legacy content on the Twitter stream, and conforming to the masculine order, from the newsroom to political office. Continuing toward pluralism will mean striking a balance between traditional quoting for story generation, and public discourse through @mentions and retweets. And while the technology provides innovation, such as live tweeting, the reporters who use it do not operate within a vacuum. Reshaping the old rules and hegemonic structures that dominate story content and push-through onto Twitter may be needed to make way for the diversity of voices that can better serve democracy.

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