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Who's Following Twitter? Coverage of the Microblogging Phenomenon by U.S. Cable News Networks

Deborah S. Chung
University of Kentucky, deborah.chung@uky.edu

Mina Tsay-Vogel
Boston University

Yung Soo Kim
University of Kentucky, kim.s.eye@uky.edu

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DEBORAH S. CHUNG[1]
University of Kentucky, USA

MINA TSAY-VOGEL
Boston University, USA

YUNG SOO KIM
University of Kentucky, USA

Through data captured in a digital content analysis (DCA) lab, we examine coverage of Twitter across three 24-hour U.S. cable news channels: *CNN*, *Fox News Channel*, and *MSNBC.* This investigation tracked Twitter coverage from its initial stage, followed by its rise to a massively used tool and its subsequent diffusion into society, evident through its plateauing coverage. News stories covering Twitter, as it penetrated into society, were more likely to use benefit/gain frames when discussing the technology, highlighting its positive social, communicative, political, and participatory impact. Benefit frames were also likely to associate Twitter with journalism. Patterns emerging through the indicator graphs plotted by the DCA lab showed that the most intense coverage occurred during crisis situations, as Twitter coverage reached saturation, followed by increased personal daily usage of Twitter.

Keywords: Twitter, microblogging, cable news, diffusion, source, framing, participatory journalism

New information and communication technologies (ICTs) offer audiences increased opportunities for participation and prompt traditionally passive news audiences to become more actively engaged in information consumption. While tools facilitating audience feedback are not entirely new, as is evident in research on talk radio (Hofstetter & Gianos, 1997; Squires, 2000) and newspaper letters-to-the-editor

Deborah S. Chung: dchung@uky.edu
Mina Tsay-Vogel: minatv@bu.edu
Yung Soo Kim: kim.s.eye@uky.edu

(Renfro, 1979; Richardson & Franklin, 2004), the interactive capabilities of ICTs have increased the ease and range of user participation (Chung & Yi, 2009). Thus, some scholars have described Web 2.0 tools (e.g., blogs) as emancipatory technologies for communication, perhaps challenging traditional hegemonic notions of information delivery (Herring, Scheidt, Bonus, & Wright, 2004).

Recently, the microblogging tool Twitter has received much attention and following. Currently, Twitter is reported as having more than 600 million active registered users (see http://www.statisticbrain.com/twitter-statistics/). While its utility in enhancing active information dissemination and engagement among ordinary citizens has generated considerable discussion (Dunlap & Lowenthal, 2009; Hermida, 2010; Jansen, Zhang, Sobel, & Chowdury, 2010), reference to Twitter by the traditional press has not been examined extensively. In particular, broadcast media, with practices aligning most closely with the transmission model of communication, and their news coverage have received minimal attention. Today, a large percentage of consumers still rely on traditional forms of media for news, and these sources function as an essential bridge between the general public and information about new technologies adopted by society.

While news media have a responsibility to document and report on emerging phenomena, they are also finding themselves in competition with newer media tools. Media scholars suggest journalists tend to select, highlight, and exclude certain aspects of issues when delivering stories to audiences, and these "frames" guide the public in understanding and forming dispositions toward such issues (Gamson, 1989; Iyengar, 1996; McCombs, Shaw, & Weaver, 1997; Scheufele, 1999). In light of the proliferation of emerging technologies, media coverage of these tools may also serve as heuristics that audiences use to make evaluative judgments (Nisbet, Brossard, & Kroepsch, 2003). Thus, considering mainstream media's perception that such interactive tools can serve as threats to journalistic gatekeeping practices, it is critical to investigate the frames through which such topics are covered and communicated to news audiences. In other words, as Twitter is a vehicle for news dissemination, how is the tool presented by professional journalists, and is it even associated with journalism at all?

Employing a content analysis with data captured in a digital content analysis (DCA) lab, this research examines the coverage of the Twitter phenomenon on 24-hour U.S. cable news networks, tracking the frequency of Twitter mentions and the context in which Twitter use was reported. In the process of identifying patterns of coverage, we further compare the frames assigned to Twitter reports over time as the usage of the tool diffused into society. The time frame examined tracks Twitter coverage close to its inception—before its rise to a massively used tool—through its prominence and plateauing coverage as the main topic in cable news stories. Additionally, this study examines when Twitter was covered most intensely, and then compares those frames by specifically tying them to media events occurring at the time.

Emerging Participatory Tools and Twitter

Newer technological transformations have advanced reporting practices and, at the same time, posed challenges to existing conventions (Mathew, 1998). In particular, the unique characteristics of the Internet allow for the merging of various forms of media and offer novel news consumption experiences to

audiences. People are now actively searching and sharing information, rather than simply browsing and scanning for news (An, Cha, Gummadi, & Crowcroft, 2011). Consequently, newer media tools potentially undermine the traditional information domain and authority that have dominated the mainstream press, helping to address concerns about the hegemonic notion of traditional mass media messages (Schudson, 2005; Schultz, 1999). This practice of traditional audiences playing a more active role in news consumption, such as through the use of social media, is broadly referred to as participatory journalism (Bowman & Willis, 2003). Hence, it is vital to consider the way Twitter is associated with journalism through the lens of traditional news channels, as the concept of journalism is perpetually evolving.

News coverage of an emerging phenomenon, such as Twitter, is critical, as the reception of any topic or issue is largely associated with media coverage (Jones & Himelboim, 2010). However, when technologies that potentially compete and challenge conventional notions of journalism emerge, the media may relent to biased content by imposing their respective opinions on news audiences. Thus, the news media hold a powerful position in informing and educating the public. Arceneaux and Schmitz Weiss refer to Twitter as "the Web 2.0 phenomenon that combines elements of blogging, text messaging, and broadcasting" (2010, p. 1,262). Given these characteristics and capabilities, it would be worthwhile to examine how Twitter, and its use, has been covered by seemingly competing traditional media outlets.

While there is much excitement about Twitter, the pressing question for most media professionals is whether Twitter works meaningfully as an information-dissemination channel, as a sourcing tool, or merely as a promotional platform (Farhi, 2009). Literature documents key Twitter moments, where the tool was used effectively as an information and communication channel by ordinary citizens (Stelter & Cohen, 2008; Sutton, Palen, & Shlovski, 2008; The Huffington Post, 2011). Further, research on Twitter use by activists shows how news frames can be negotiated through crowdsourcing practices, breaking away from traditional journalistic norms of storytelling (Hermida, 2013).

Such coverage often shows alternative perspectives and generates a greater sense of community than that which is offered through mainstream news sources. The utility of Twitter as an information platform is amplified when other media outlets are silenced, and on such occasions, Twitter may enable audiences to listen in and report on events deemed important (e.g., the Egyptian uprising; Papacharissi & de Fatima Oliveira, 2011). For example, a study examining Twitter, YouTube, and Flickr use by protesters of the 2010 G20 summit in Toronto found that, while social media did not facilitate crowd-sourcing of alternative reporting, Twitter was able to further that process (Poell & Borra, 2012).

On the other hand, Twitter may also complement, rather than compete against, mainstream media coverage. For example, newspapers' adoption of social media tools, such as Twitter, is positively related to an increase in online readership (Hong, 2012). Another study found that professional journalists used Twitter successfully as a reporting tool to cover the 2011 UK summer riots by using links, disseminating images, and sharing mainstream media content (Vis, 2013). Furthermore, a content analysis of mainstream journalists' tweets found that Twitter allows them to deviate from journalism conventions through the ability to express opinions more freely—a practice contesting the traditional journalistic norms of objectivity (Lasorsa, Lewis, & Holton, 2012). Studies investigating tweets from political journalists during the 2012 presidential campaign found them to share opinions and commentary

(Coddington, Molyneux, & Lawrence, 2014) and also use humor through the Twitter platform (Mourão, 2014).

However, a content analysis examining the adoption and use of Twitter by U.S. newspapers and television stations found that, while the microblogging platform has become an important tool for news dissemination, Twitter was used mostly as a promotional tool (Messner, Linke, & Eford, 2011). Shovelware, or informational links originating from news organizations' websites, still dominates the Twitter feeds, indicating that Twitter's ability to facilitate open dialogue and community building is not exploited (ibid.).

Thus, given the multitude of ways Twitter has been examined as an informational, sourcing, and promotional tool, and as one that both challenges and complements traditional journalistic practices, investigating how Twitter is covered by mainstream news would theoretically deepen our understanding of its journalistic role in society.

Broadcast Coverage and Frames of Emerging Technology

Despite the constantly changing media climate, consumers today still rely on traditional forms of media for news. Although the Internet is growing in popularity as the public's primary news source, television still remains the main source for national and international news among Americans (Pew Research Center, 2011). Cable news audiences continue to grow (Guthrie, 2009), especially when consuming campaign information (Owen, 2010). Furthermore, broadcast news has generally been perceived as more credible than newspaper news (Gantz, 1981). In light of news organizations' continued function as sources of information, the methods used to present emerging technologies to the public warrants attention (Jones & Himelboim, 2010). According to the cognitive miser model of information processing (Fiske & Taylor, 1991), people generally rely on heuristics (e.g., beliefs, values, or media portrayals) to form judgments about issues. In the case of Twitter, audiences may consequently make evaluations of the technology based on what features, uses, or effects of the tool are emphasized in news coverage.

The use of frames has been extensively studied by media scholars, as they have implications for how news audiences interpret and form dispositions toward issues (Gamson, 1989; McCombs et al., 1997). The powerful effects of framing have been a focus in the theoretical tradition of agenda setting. At its first level, McCombs and Shaw's work (1972) suggest issues most salient in the news are generally perceived to be most important and pressing among the general public. Its second level emphasizes that media tell people *how* to think about an issue, also referred to as framing. Support for this latter component of the agenda-setting function of mass media suggests that variations in the representation of issue attributes play a substantial role in the way individuals picture stories in their minds.

Consistent with attribute agenda setting, frames are also described as strategic tools of communication, through which information is organized, selected, emphasized, and excluded (Entman, 1993, 2004). Gamson and Modigliani (1987) define news stories as packages containing specific arguments, information, symbols, and images that guide the interpretation of events. In other words,

framing devices not only provide a contextual structure through which people learn about and evaluate issues, but also help to build associations between concepts. Such implications further point to the importance of examining the attributes of news content, as its cognitive effects can be substantial.

Therefore, given that frames help to guide media consumers' understanding and evaluation of issues, it is imperative to investigate the frames through which stories about Twitter are covered and communicated to the public. The competition fostered by interactive tools that have the capability to empower users could be detrimental to traditional media, consequently impacting the types of frames used in news stories. In contrast, the complementary role of Twitter can help to further expedite the distribution of news (i.e., mainstream and user-generated content).

A wealth of research has examined the role of message framing, particularly with respect to gain and loss frames (Kahneman & Tversky, 1984; Maheswaran & Meyers-Levy, 1990; Shah, Kwak, Schmierbach, & Zubric, 2004). The former type of frame highlights the benefits or positive outcomes attained from a specific issue, whereas the latter emphasizes the threats or negative outcomes that should be avoided. The use of such frames that focus on the level of desirability attached to an issue or outcome has also been seen in the discussion of technologies. For example, while scholars have commended the progressive and innovative contributions of technological advances (Dicken-Garcia, 1998; Rosenzweig, 1998), news media have often represented them as either excessively positive or negative (Blume, 1997; Roll-Hansen, 1994). In the case of blogs, they are rarely framed as an authentic form of journalism across U.S. newspapers (Jones & Himelboim, 2010).

Arceneaux and Schmitz Weiss (2010) examined print and online coverage of the Twitter phenomenon as it diffused into society and found that the public's response to Twitter mirrored narratives of earlier, similar communication technologies, such as telephones and mobile devices (Fischer, 1992). They found narratives with largely positive reporting, coupled with skepticism concerning overload of trivial information and unanticipated consequences. Therefore, taking into account the prevalent use of both positive and negative frames when presenting emerging technologies, it becomes even more important to investigate the nature of media content, particularly as news frames provide audiences with cognitive shortcuts for processing and evaluating information about such tools (Price & Tewksbury, 1997).

Consequently, with minimal attention being given to news coverage of Twitter, as it can be both a potential competitor or facilitator to mainstream news media, this research extends the work of Arceneaux and Schmitz Weiss (2010) by examining whether Twitter has been framed as a tool with prosocial or antisocial characteristics and outcomes during the more recent years between 2007 and 2010. Uniquely, this study investigates how the technology has been referenced with regard to its informational and sourcing functions among U.S. broadcast cable channels. Exploring the types of frames used in stories that cover Twitter will help to elucidate the public's understanding of how traditional informational sources represent the role and impact of emerging participatory tools.

Research Questions

Following recent work examining U.S. print media's coverage of blogs by Jones and Himelboim (2010), this study focuses on the frames assigned to U.S. cable networks' coverage of Twitter, with special attention devoted to its association with the tool as a source of information. Jones and Himelboim's work examined how blogs were discussed with benefit or threat frames, their discussion as a new or common phenomenon over time, and references to blogs as journalism. Modeling this approach, this research considers these categories of frames to examine the way Twitter is covered in cable news. These frames are theoretically pertinent to the study of Twitter because they provide greater insight into the general disposition toward the tool, its novelty, and its functional value as a tool for journalism, as presented by mainstream news to the public. The current study further builds on extant literature by investigating the intensity of Twitter coverage through the help of visual indicator graphs charted by digital content analysis technology.

First, reports may reference Twitter as a tool for social engagement and participation (positive or benefit frame), or as promoting an overload of information fragments (negative or threat frame). Examining these frames over time sheds light on how the discussion of Twitter, yet another technologically "hot" tool, much like blogs, may have evolved by the mainstream media historically as it diffused into society. Taking into consideration Twitter's emancipatory nature, we can further understand whether professional journalists see Twitter as a beneficial or harmful vehicle for news dissemination, given that users have greater control over their news consumption experiences through the use of this technology. Therefore, the following research question is proposed:

RQ1:   *Do 24-hour U.S. cable news broadcasts frame Twitter as a positive or negative phenomenon?*

Additionally, Twitter may have been introduced as the newest social media tool allowing ordinary users to participate in content creation and information sharing. However, as this innovation becomes more diffused and integrated into mainstream media, the initial excitement and enthusiasm may evolve into more pragmatic coverage regarding the implications of the use of this new technology. Theoretically informed by the process of diffusion of innovations, there is a point at which technology adoption reaches critical mass and the tool is no longer deemed novel (Rogers, 1995). Would Twitter follow similar technological conventions? These answers will allow us to gain a deeper insight into the novelty of the tool, as this could have implications for technological adoption and sustained use. Therefore, we ask the following research question:

RQ2:   *Is Twitter framed as a new or common phenomenon, and does this frame change over time?*

Web 2.0 tools afford users the ability to enhance active engagement in news consumption and information dissemination. Thus, users may act as sources of information, a practice previously exclusive to professional journalists. This points to the question of whether Twitter might be utilized as the next tool to empower audience participation in news production. On the other hand, are mainstream media using Twitter as a serious journalistic tool? As Twitter has been referred to as a form of participatory journalism, it becomes even more pressing to understand how professional journalists are presenting this tool to the

public, particularly as it competes with and challenges conventional journalistic practices. Furthermore, such an examination may address how the usage of technological tools may evolve as they become better understood and further assimilated into society.

RQ3:   *Is Twitter associated with the journalistic practice of information dissemination?*

Lastly, when Twitter coverage is most intense, the present study also addresses the three aforementioned research questions on these most saturated days. Subsequently, we propose the final research question:

RQ4:   *When was Twitter coverage most intense, and what were the frames associated with that coverage during those media events?*

The dependent variables for this study include the three frames described in RQ1–RQ3: valence of the frames, the narrative of the frames, and the association with journalism, respectively. The independent variables include 24-hour cable channels, topics of news story, and time/year of coverage. Additionally, the specific media event, if any at all, is examined, as it may have affected the frames used for Twitter-related stories.

Method

To collect data for this study, we used television media coverage captured through the DCA lab at a large university in the southern United States. Between February 2007 and December 2010, the lab captured all video and transcripts of broadcast coverage, which included a total of 800 half-hour clips of video coverage per day (20 channels x 40 30-minute segments) and approximately 1,168,000 total half-hour broadcast clips (800 x 365 days x 4 years) of programming. The data from three 24-hour cable television channels' coverage were used to create media frequency graphs for Twitter-related stories (see Figures 1 and 2). We also assessed the major positive increases (15-plus mentions, representing the most intense days of Twitter coverage) based on these indicator graphs and analyzed the key frames occurring during those peak days. While Twitter was launched in 2006, it did not diffuse as a mainstream media tool until 2008. Thus, the lab was able to capture stories related to the initially gradual and subsequently rapid integration of Twitter, almost from its inception.
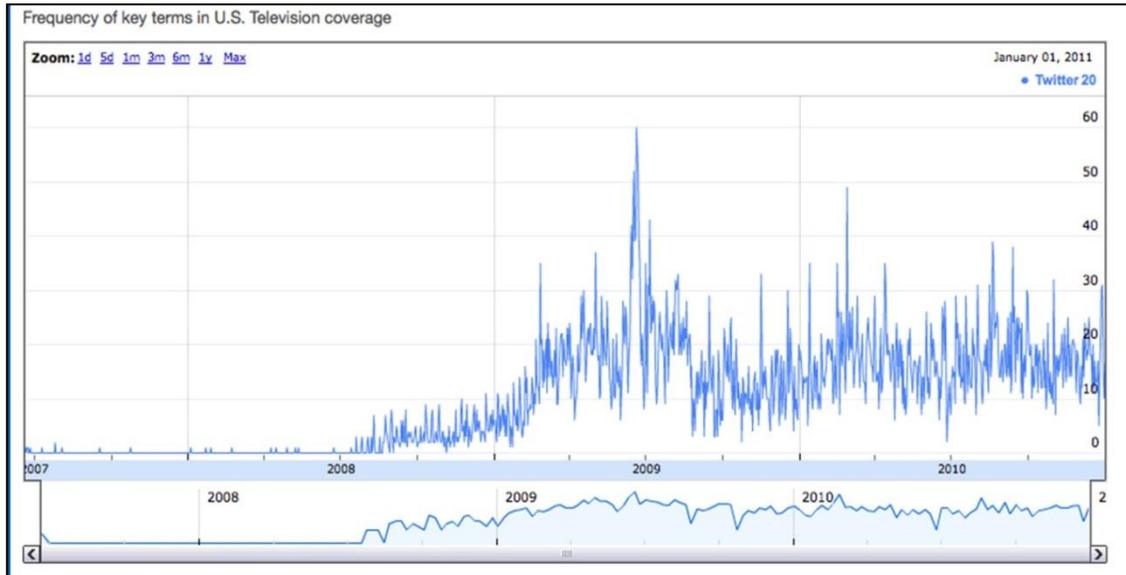
**Figure 1. Media frequencies for Twitter-related coverage from
February 2007 to December 2010: CNN, FNC, and MSNBC.**
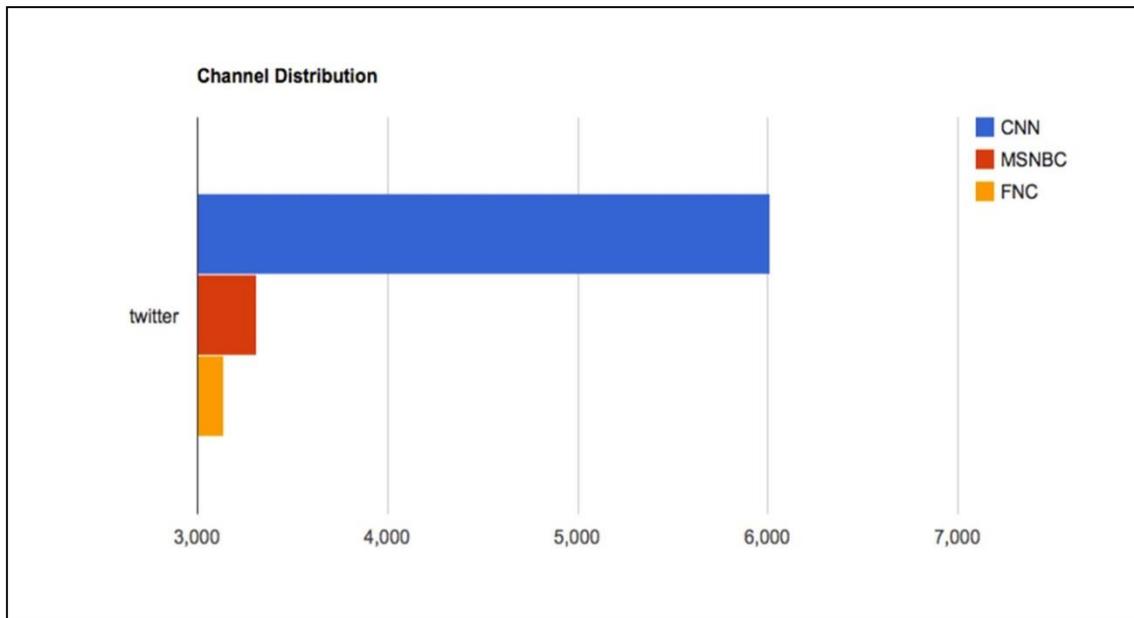
Figure 2. Channel frequencies of Twitter-related coverage: CNN, FNC, and MSNBC.

The three 24-hour cable news networks examined are *CNN (N = 6,002), Fox News Channel (N =3,141)*, and *MSNBC (N =3,319)*. The term "Twitter" was used to identify relevant television stories. Data were plotted according to channel and keyword in order to create media frequency graphs. As visualized in the graphs, there initially was very limited coverage of Twitter, and then extremely frequent coverage of it later, before it plateaued. In order to address the disproportionate coverage, we used a stratified sampling method by year, and then systematic random sampling method within each year, to identify the appropriate sample size (see Table 1 and Figure 3).

Table 1. Number of Twitter-Related Stories from 2007–2010: CNN, FNC, and MSNBC.

	2007	2008	2009	2010	Total
CNN	6 (6)	367 (184)	2873 (363)	2778 (348)	6,002 (901)
FNC	5 (4)	150 (146)	1498 (303)	1481 (297)	3,141 (750)
MSNBC	0	14 (14)	1378 (349)	1924 (321)	3,319 (684)
Total	11 (10)	531 (344)	5759 (1,015)	6183 (966)	12,484(2,335)

Note. The numbers inside parentheses denote stories included in the sample.
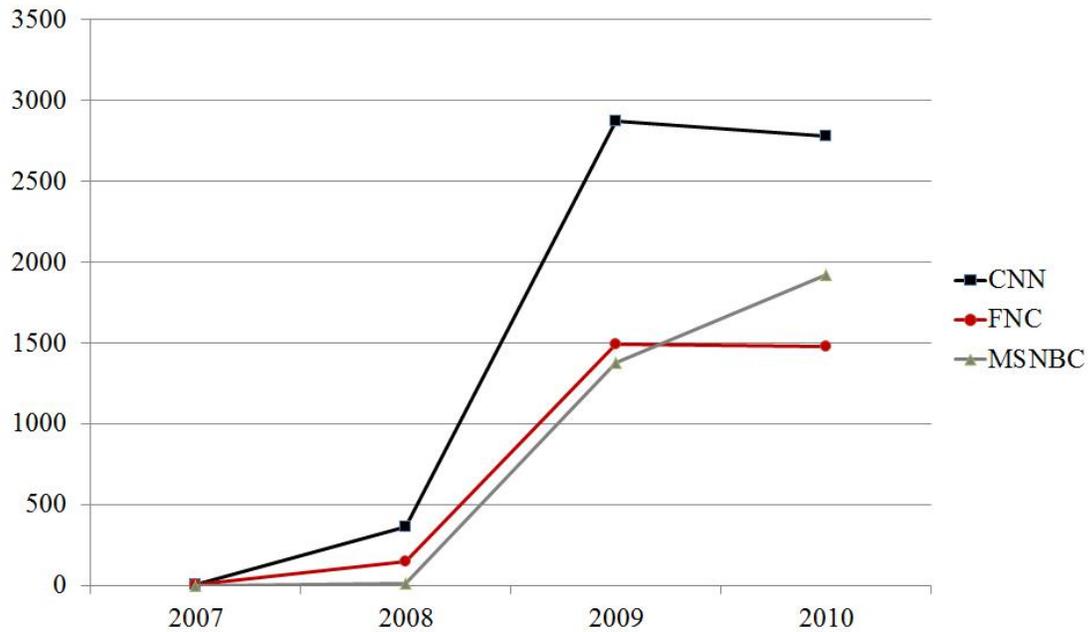
Figure 3. Number of Twitter-related stories from 2007–2010: CNN, FNC and MSNBC.

In developing a coding scheme for the frames, we first identified major topics emerging through the integration of social media. Thus, we developed categories for positive (benefit of using Twitter) and negative (threat of using Twitter) associations with Twitter. Explicit mentions of a positive outcome or intention of using Twitter include discussions of Twitter as personal enjoyment, bonding/bridging (social capital), or increased communication (social purposes), increased personal expression and participation (personal purposes), political reach or influence, financial gains or marketing, source of information/knowledge gain, or speed/immediacy or brevity. Explicit mentions of a negative outcome include discussions of Twitter as any loss (e.g., job, time, friends, real-world human connections), credibility or content issues (e.g., dull or confusing content), criminal or illegal activity or indecent activity (e.g., infringement on privacy), and limited influence/reach.

The narrative frame assessed whether stories framed Twitter as something new, an innovative method, a trend, an emerging phenomenon, or an activity in which everyone is participating. The journalism frame assessed whether the individual who tweeted or the tweets themselves were treated as any form of journalist/journalism, and if tweeting was associated with new journalism, grassroots journalism, or a citizens' journalist movement, with specific references to concepts of "journalism," "journalist," "reporter," "reporting," or "news." To further identify journalistic practices, we identified how Twitter was specifically used as a source of information, if at all. We thus assessed whether tweets were from a public figure (e.g., journalist, celebrity, politician), an organization (e.g., government, non-profit, corporate, etc.), or an ordinary citizen.

A coding scheme for categorizing story topics was also developed and modified based on prior conceptualizations of story topics (Thelwall, Byrne, & Goody, 2007). For this study, the unit of analysis was the individual news story. To test intercoder reliability, two individuals were extensively trained with the coding protocol and subsequently coded 10% of the stories, selected randomly, for the presence of frames and specific story topics. The measure of Cohen's kappa was used because the coding categories were categorical variables, and kappa is generally considered to be a more robust measure than simple percent agreement, as it takes into account the amount of agreement that may occur by chance (Cohen, 1960). Cohen's kappa resulted in intercoder reliability ratings of .83 for the positive/benefit frame, .75 for the negative/threat frame, .89 for the narrative frame, and .81 for the journalism frame, indicating acceptable agreement among coders. Other kappa scores include .77 for source, .83 for the meaningful stories variable, and .68 for story topics.

Frequencies and percentages were assessed over the four-year period to identify frame patterns. In assessing associations between variables, the Cramer's V statistic was used to assess the strength of the relationships.

Results

As indicated in Table 1 (also see Figure 3), the initial total sample size was 2,335. In order to more precisely examine meaningful mentions of Twitter, we screened for stories that were duplicates, or in which Twitter was not referenced as the microblogging technology (e.g., birds are twittering). Additionally, we assessed whether Twitter was mentioned as 1) promotional content, casual references, or

general references to Twitter submissions, or 2) references to Twitter in a meaningful way/Twitter is the primary focus of the story. The present study focuses on the latter. Thus, the final sample that was examined for frames was 429 (18.4% of the initial sample). The dramatic decrease in count indicates that, while Twitter was mentioned frequently, it was referenced predominantly in a casual manner and was rarely the primary subject discussed in the news story (see Table 2 and Figure 4).

Table 2. Meaningful Mentions of Twitter in Story/Twitter as Central Subject Matter.

	2007	2008	2009	2010	Total
CNN	4	14	56	61	135
FNC	0	15	62	75	152
MSNBC	0	6	71	65	142
Total	4	35	189	201	429
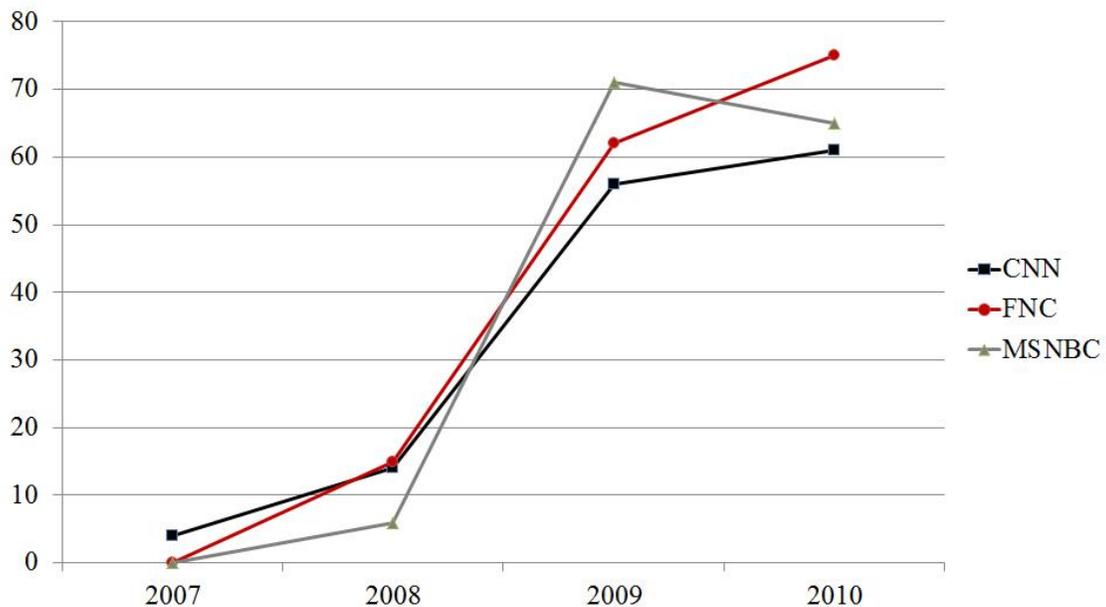
Figure 4. Meaningful mentions of Twitter in story/Twitter as central subject matter.
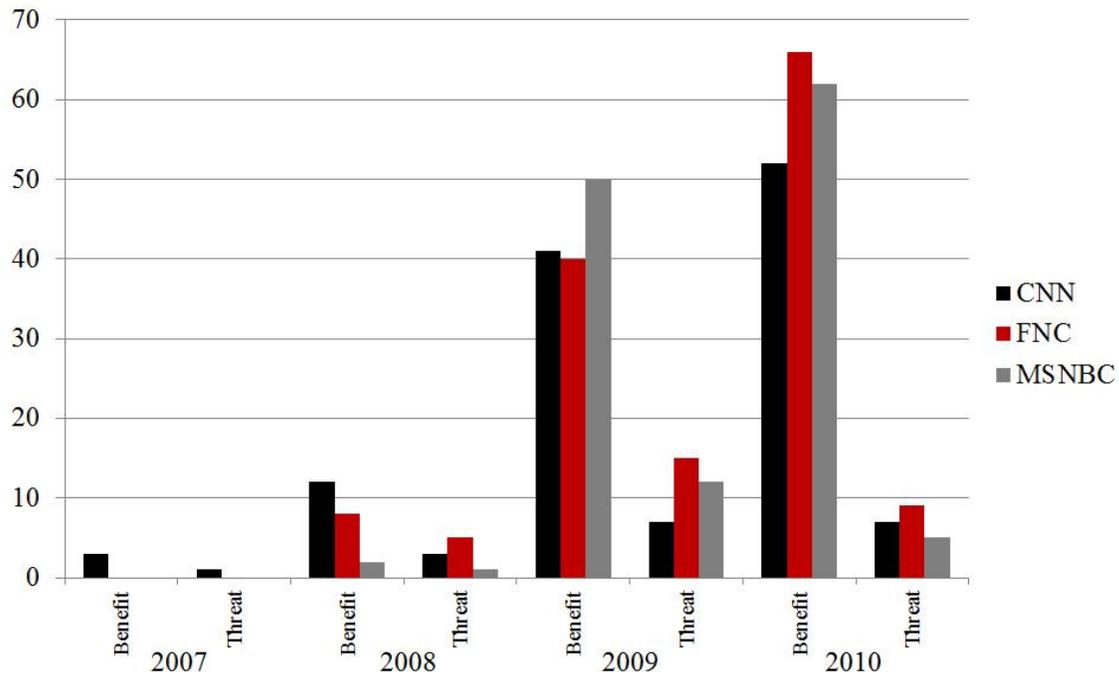
Positive and Negative Frames

When Twitter was mentioned in a meaningful way or was referenced as the story's central topic, we were able to assess the positive and negative frames (RQ1). As Table 3 shows (see also Figure 5), initially, Twitter was not frequently framed either positively or negatively in its early years. However, starting from 2009, positive frames increased dramatically, and their frequency continued to grow into 2010. The most frequently discussed benefits were source of information/knowledge gain ($N = 106$, 24.7%), bonding/bridging (social capital) or increased communication ($N = 93$, 21.7%), political reach or influence ($N = 92$, 21.4%), and increased personal expression and participation ($N = 69$, 16.1%).

Negative frames, however, were not as frequent: Benefit was mentioned about five times more frequently than threat. While 2009 saw an increase in negative frames, this trend did not continue into 2010. In fact, in comparison to *CNN*, both *FNC* and *MSNBC* were even less critical of Twitter's potential negative consequences. The increased dissemination and adoption of Twitter into society most likely prompted its diverse usage, both positive and negative, while the public experimented with its functionality before sticking to particular ways of using the tool. Alternatively, with time, the most frequent negative frames were criminal or illegal activity or indecent activity ($N = 32$, 7%), credibility or content issues ($N = 20$, 5%), and tangible loss ($N = 9$, 2%).

Overall, positive frames appeared frequently ($N = 336$, 78.3%), and negative frames appeared extremely infrequently ($N = 65$, 15.6%). *FNC* was most likely to employ both positive and negative frames, and it also covered Twitter stories more frequently.

Table 3. Positive/Benefit and Negative/Threat Frames.

	2007		2008		2009		2010		Total	
	Benefit	Threat	Benefit	Threat	Benefit	Threat	Benefit	Threat	Benefit	Threat
CNN	3	1	12	3	41	7	52	7	108	18
FNC	0	0	8	5	40	15	66	9	114	29
MSNBC	0	0	2	1	50	12	62	5	114	18
Total	3	1	22	9	131	34	180	21	336	65

Figure 5. Number of positive/benefit and negative/threat frames.
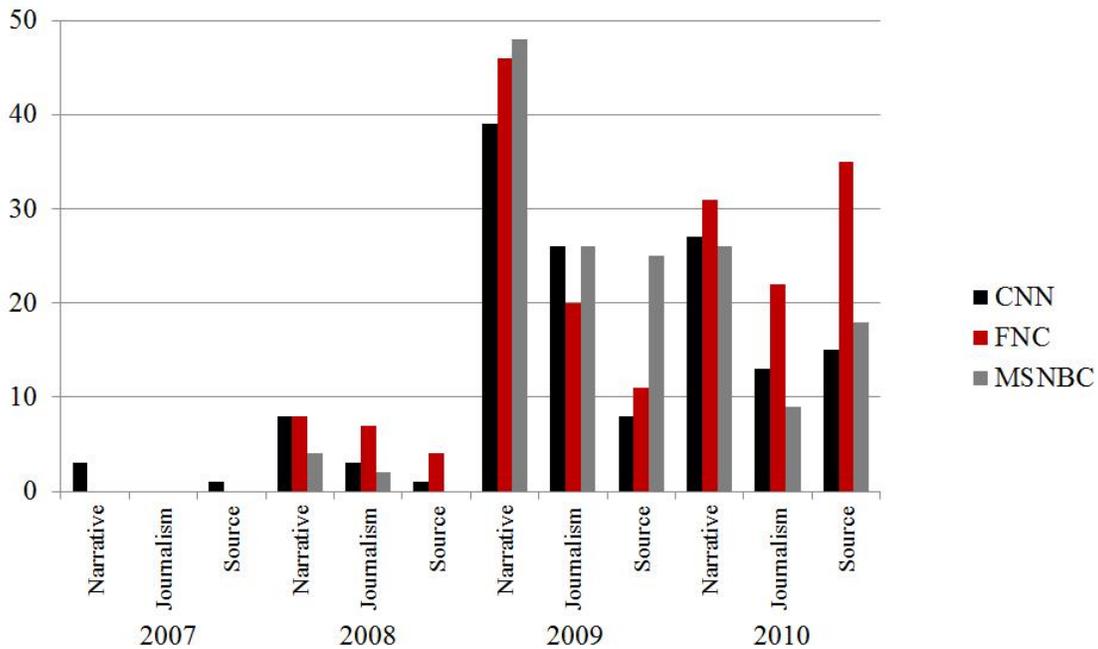
Narrative and Journalism Frames

We further analyzed the data to identify narrative frames used to introduce or discuss Twitter (RQ2). Similar to benefit and threat frames, the narrative frame of Twitter as a new, innovative tool did not appear frequently until 2009, when the microblogging tool became more massified and familiar to the public (See Table 4 and Figure 6). While this frame peaked in 2009, it did not continue into the following year. In some cases, as with *MSNBC*, its coverage as an innovation dropped by almost half. Thus, the use of the narrative frame increased at the peak of Twitter mentions across broadcast news stories, and tapered off in 2010, as did its general coverage. More than half ($N = 240$, 56%) of the stories included this frame.

The discussion of Twitter as being associated with journalism or information dissemination was examined through the journalism frame (RQ3). Here, similar patterns emerged, with the discussion of Twitter and journalism being nonexistent in the early stages of Twitter's rise into the public radar. Again, the journalism frame peaked in 2009, with about an equal number of journalism frames by all three stations. In 2010, the number of frames also decreased by half or more, with the exception of *FNC*. Overall, less than a third of the stories associated Twitter with the journalism frame ($N = 128$, 29.8%) and even fewer used specific tweets from individuals as news sources ($N = 118$, 27.5%). See also Table 4.

Table 4. Narrative and Journalism Frames.

	2007			2008			2009			2010			Total		
	N	J	S	N	J	S	N	J	S	N	J	S	N	J	S
CNN	3	0	1	8	3	1	39	26	8	27	13	15	77	42	25
FNC	0	0	0	8	7	4	46	20	11	31	22	35	85	49	50
MSNBC	0	0	0	4	2	0	48	26	25	26	9	18	78	37	43
Total	3	0	1	20	12	5	133	72	44	84	44	68	240	128	118

Note. N = narrative; J = journalism; S = source.

Figure 6. Narrative and journalism frames.

We further examined how stories using journalism frames employed sources through Twitter. Sourcing practices increased over the four-year period. Specifically, *CNN* doubled its use, and *FNC* tripled its use of tweets as informational sources in 2010. However, *MSNBC* decreased its use of tweets as story sources. In terms of type of source, journalists, celebrities, politicians, or other public figures were the most popular form of tweets used as sources in broadcast news stories (*N* = 97, 82.2%). Ordinary citizens (*N* = 15, 12.7%) and organizations, such as government organizations, non-profits, corporations, etc. (*N* = 6, 5%), were used as sources considerably less. *FNC* included the most citizen tweets as story sources (*N* = 9, 60%).

We also examined the associations between the journalism and benefit/threat frames by using crosstabulations. About 32% of stories reporting a benefit of Twitter also referred to journalism or journalistic practices (Cramer's V = .10 at $p < .05$). Furthermore, 84.1% of stories reporting a threat of Twitter did not refer to journalism or its practices (Cramer's V = .13 at $p < .01$).

Story Topics

In order to assess when certain frames were applied, we evaluated the primary story topics among the Twitter stories examined. As Table 5 indicates, in the early years of its emergence, Twitter was discussed in the context of various story topics among the broadcast stations. Starting in 2009, a pattern seemed to surface with political and international events/stories taking center stage in the discussion. In 2010, Twitter continued to be discussed most frequently in political stories, and it also became increasingly discussed within the context of entertainment.

Table 5. Primary Story Topic Among Twitter Stories.

	2007		2008		2009		2010	
CNN	Environment	1	Science/Tech	4	International	15	Entertain	12
	Politics	1	International	3	Politics	12	Science/Tech	10
	Science/Tech	1	Politics	2	Science/Tech	9	Politics	9
			Society, Health/Medical, Accidents	1	Society, Econ, Sports	4	Society	6
FNC			Accidents	6	International	16	Politics	27
			Politics	4	Politics	14	Entertain	11
			Military /Defense	2	Society	8	International	10
			Society, Econ/Bus, Science/Tech	1	Science/Tech	7	Environment	9
					Health/Med	6		
MSNBC			Environment	2	Politics	29	Politics	24
			International	2	International	18	Econ/Bus	7
			Military/Defense, Politics	1	Science/Tech	6	Science/Tech, Entertain, Sports, Society, Environment	4
					Econ/Bus	4		
					Society	3		
Trend			Twitter used in different ways among broadcast stations		Politics and international events take center stage through Twitter		Twitter continues to be used as tool for politics; increasingly used for entertainment	

Subsequent analyses examined the associations between specific frames and Twitter story topics, revealing that relationships exist between certain types of story topics and the benefit frame. Specifically, international, society, science/technology, and health/medicine stories were likely to be framed positively among the broadcast news channels (Cramer's V = .32 at p < .001). They were mostly associated with increased communication and source of information/knowledge gain; the topic of science/technology was also associated with Twitter's speed of information delivery and/or brevity. Political stories were also generally framed positively (e.g., using Twitter for political reach or influence). Among these story topics, 91.4% of international stories were framed positively. On the other hand, military/defense and law stories were more likely to be framed negatively (Cramer's V = .39 at p < .001), being associated with criminal/illegal or indecent activity.

The narrative frame was also associated with international, economics/business, and science/technology stories, indicating that these stories emphasized Twitter as a new phenomenon and innovative tool (Cramer's V = .44 at p < .001). Additionally, international and political stories and stories covering accidents were specifically associated with journalistic practices (Cramer's V = .62 at p < .001).

Associations between story topic and news channel and year were also assessed, indicating that *MSNBC* was most likely to mention Twitter in political stories, *FNC* was most likely to offer Twitter coverage in health/medicine stories, and *CNN* provided the most Twitter coverage among science/technology stories (Cramer's V = .23 at p < .05). There was also a significant relationship between story topic and year (Cramer's V = .31 at p < .001). Twitter was more likely to be mentioned in science/technology stories in 2007, followed by accidents in 2008. In 2009, international stories dominated Twitter stories in these broadcast news channels. However, in 2010, about 80% of the stories focusing on Twitter were entertainment stories.

Intensity of Twitter Coverage

In order to assess when Twitter coverage was most intense and also identify the frames and events associated with that coverage (RQ4), the visual indicator graphs were used to identify peaks in coverage over the four-year period. We examined the major positive increases (15-plus mentions) and analyzed the major frames during those peak days. Peaks only occurred after Twitter had diffused as a familiar tool in society during 2009 and 2010, for all three broadcast channels. Additionally, stories that were deemed duplicates, promotional content, or mere casual references were eliminated from the analysis. Table 6 illustrates the peaks occurring during 2009 and 2010 among the three broadcast stations.

Table 6. 15-Plus Mentions of Twitter Among 24-Hour Broadcast News Stations.

	MSNBC	FNC	CNN
2009	February 25, 26 March 6 June 15, 16, 18, 22	June 20, 21 July 5	April 18 May 2, June 15, 16, 17, 18, 19, 20, 21, 22 July 6, 12 August 19 October 3
2010		February 27	January 13 February 15 August 21 November 9

The visual plotting in the DCA lab-produced image indicated the most significant increase in mentions happened during the following noteworthy events: earthquake in Chile, February 2009; Ashton Kutcher is Twitter champion, April 2009; Iran uprising, June 2009 (most frequent and intense coverage); campaign politics, July 2009; astronaut tweets, July 2009; prayer over Twitter, August 2009; Olympic host bid for Chicago, October 2009; earthquake in Haiti, January 2010; Kevin Smith kicked off of Southwest Airlines due to weight issue, February 2010; WikiLeaks, August 2010; and Sarah Palin, November 2010.

Upon examination of the frames, it became clear that they predominantly included the narrative and journalism frames. When tweets were used as sources, they overwhelmingly came from public figures, such as politicians or celebrities. Stories from *MSNBC* and *FNC* were generally about campaign politics and the Iran uprising. *FNC* also used ordinary citizens as sources for international and environment stories (e.g., the earthquake in Chile). The primary benefit frames were bonding/bridging (social capital), increased communication, and source of information/knowledge gain. *CNN*'s coverage was more diverse than the other two stations, which may be attributed to the larger count of days in which Twitter was covered intensely. In addition to the two benefit frames dominating *FNC* and *MSNBC*'s coverage, *CNN* also included positive frames of political reach/influence and increased personal expression and participation. The threat frame was noticeably absent from all three broadcast stations' coverage.

Conclusions and Discussion

The present research examined Twitter stories in one of the most traditional media venues and how it had cast a developing interactive phenomenon to the public. We were particularly interested in the nature of the frames applied to newer forms of audience communication through the traditional media lens.

Notable findings include the large volume of Twitter mentions, compared to its infrequent meaningful discussion as the story's primary focus. Discussions of Twitter in terms of its benefits continued to climb, although the numbers are low, while framing Twitter as a threat, innovation, or journalism peaked in 2009 and dropped or tapered off in 2010 as Twitter became an increasingly familiar

tool to the masses. The massification of Twitter and the subsequent diverse range of usage may have initially prompted Twitter practice in unique ways before plateauing off. These findings are consistent with adoption patterns proposed by the theory of diffusion of innovations. It appears Twitter was no longer considered novel by 2010, and was instead integrated into society as a common phenomenon that most were experiencing. Additionally, based on the examination of the associations between the journalism and benefit/threat frames, it is apparent that the 24-hour cable news channels were generous in their coverage of Twitter and uncritical in their discussion, as the positive/benefit frame appeared about five times more frequently than the negative/threat frame. It may likely be that cable news channels do not perceive Twitter as a threat to the hegemonic practices and control of traditional news media outlets. Twitter may serve as a helpful tool for news organizations in their gatekeeping processes, via the selection and dissemination of news information. In the current media environment, the convergence of technologies is widespread, and most broadcast stations have Twitter profiles. This microblogging tool not only allows news tweets to be followed, but also provides greater control for news organizations to use alternative means to reach their followers. In turn, such reasoning perhaps explains the infrequent counts of Twitter being associated with innovative journalistic practices.

Based on the analyses of the journalism frame and associations between story topic and year, Twitter appears to be most closely linked to international, political, and science/technology stories. Twitter was initially linked to being a new technological phenomenon and was subsequently used as a way to communicate with others during disaster and crises situations. However, it has increasingly become a tool for socialization of information regarding celebrity news. While politics and international news stories dominated Twitter coverage until 2009, entertainment stories topped the list of all three cable news channels in 2010, being associated with the benefit frame of increased personal expression and participation. Thus, with increased usage and experimentation, it is clear that the method in which Twitter is being used is evolving over time (i.e., increased personal usage of Twitter for daily communication). In particular, this research uniquely contributes to the framing literature on Twitter, because it also takes into account the context through which Twitter is discussed, as compared to previous studies that focus primarily on the functionality of the technology (e.g., Arceneaux & Schmitz Weiss, 2010). As this research finds that Twitter is increasingly contextualized in stories on entertainment, it is critical that scholars consider the role Twitter plays in its impact on audiences in the landscape of entertainment media for future research. More specifically, if Twitter serves as an informational tool and is featured in more soft news contexts, could perceived credibility be threatened?

Overall, *FNC* provided the most coverage, in terms of both meaningful story count and all three main frames. Specifically, it was most likely to continue to highlight the journalistic practices associated with using Twitter. Furthermore, *FNC* continued to use tweets as sources of information from public figures, organizations, and ordinary citizens throughout the four-year period, as its figures increased over time with a spike in 2010.

MSNBC was more erratic in its coverage and was the sole channel witnessing a drop in meaningful story volume in 2010. This channel capitalized the most on Twitter coverage during its peak in 2009, but was quick to retract its coverage as Twitter became more integrated and familiar to the public. Its frames for narrative and journalism were most infrequent in the early years, but it offered the most

extensive coverage among the three channels in 2009. However, *MSNBC*'s interest toward Twitter also dropped most severely among the three channels in 2010.

CNN was most consistent, and perhaps most cautious, in its coverage, showing steady patterns during the four-year period. Although Twitter was mentioned the most in *CNN* news coverage, the meaningful mentions were lowest among the three news channels. *CNN*, however, was the only channel to cover benefit, threat, and narrative frames, and it was also the first to use tweets as a source in 2007. *CNN* also emerged as having the lowest total number of benefit, threat, and narrative frames. While being the first to use tweets as a source of information, *CNN* also used tweets as sources the least during the examination period.

In addition, expanding on the framing literature on Twitter, this study examined the most Twitter-intense days among the cable channels' coverage as Twitter use diffused and identified key events that highlighted an intense Twitter news day. Days of concentrated coverage were generally related to international conflicts (e.g., the uprising in Iran) or natural disasters (e.g., the earthquake in Haiti), suggesting that Twitter holds a prominent role in crisis situations. Nearly all of these stories were also tied to the journalism and narrative frames (e.g., innovation). Major benefits that these stories underscored were those of increased communication and information. No stories highlighted in this analysis associated the stories with negative/threat frames. The indicators graphs were, thus, able to provide a snapshot of how Twitter was covered during key news events. These findings suggest that Twitter had been associated most frequently with crisis and disaster news. During times of uncertainty and emergency, it appears that Twitter can be used as a quick method to both communicate with others and gain knowledge when resources are limited. The immediacy of information facilitated by brevity in style can help Twitter function as a powerful communication tool. As was found in the analysis between story topic and year, here, too, a pattern emerged where Twitter was initially used in times of crises to broadcast and communicate information to the public. However, over time, its use became more diversified and varied in terms of how it was being used and by whom.

Nevertheless, *CNN*'s broader coverage of Twitter stories also suggests that it could be used flexibly, such as for personal expression and active participation. Yet, the findings also indicate that, while various public figures continue to speak their minds and share their views through this tool, ordinary citizens are rarely integrated into the role of information provider, despite the interactive qualities of the technology. While Web 2.0 tools have been praised for their interactive and participatory potential, Twitter participation by non-media agents seems to be limited to the usual suspects—public figures and celebrities. Thus, it appears that 24-hour broadcast news channels that most closely conform to the traditional transmission model of information delivery find little to fear in this interactive tool, but more embrace it.

The current study is not without limitations. This research examined 24-hour cable news channels, and the findings may have differed if the research had been conducted in the context of network news that may target a broader viewer base. Additionally, this study primarily focused on the breadth of coverage of Twitter and did not entirely consider the concentration of coverage. Examining both dimensions of coverage would provide a more comprehensive investigation into how Twitter is framed by

mainstream media and presented to the public. In light of the findings from this study, future scholarship should consider examining the effects of news frames on how audiences perceive both Twitter as a technology and the nature of its information (e.g., credibility, trustworthiness, authenticity, etc.). As media messages serve as mental shortcuts for audiences to make inferences about the world (Nisbet et al., 2003), investigating the impact of attribute frames on judgments of emerging technologies becomes even more important. Consequently, these evaluative perceptions may have implications for how audiences engage with Twitter as an informational tool.

In general, this study offers insights into the ways in which Twitter has been framed in cable news. Demonstrating the variability in the types of media frames used to cover Twitter, this research shows that cable news discussing this technological phenomenon was indeed more likely to use benefit frames emphasizing Twitter's positive social, communicative, political, and participatory impact. Such benefits are consistent with those found in the work of Arceneaux and Schmitz Weiss (2010). However, this study extends the literature by examining how Twitter as a technology is associated with reporting practices in news coverage, an area that has received minimal attention in both technology and framing research. In fact, benefit frames were most likely to associate the Twitter phenomenon with journalism, suggesting that the technology is not perceived as a threat to traditional journalistic functions. Interestingly, as mentioned above, the findings from this study specific to sourcing suggest that, while Twitter's participatory potential is underscored in media coverage, tweets by ordinary citizens are infrequently integrated into the news. Moreover, this study reveals that the most intense coverage occurred during crisis situations and was also being referenced for more daily personal communication purposes.

With regard to theoretical contributions, the findings of this study support the notion that the news media focus their attention on certain aspects of an issue when delivering stories to audiences. Such processes of selection, emphasis, and exclusion of issue attributes (e.g., the functions and value of Twitter) have implications for meaning-making and demonstrate the power of second-level agenda setting to potentially influence perceptions of technological innovations. Furthermore, the coverage of Twitter across different cable news outlets reinforces the diversity of frames employed to present this tool to the public. Lastly, the various frames used to discuss Twitter theoretically support the diffusion of innovations process and elucidate our understanding of the nature of its adoption and assimilation into society. Likewise, these evolutionary patterns help us to better understand how this tool has been associated with both challenging and facilitating journalistic practices.

Additionally, data from this study captured through the DCA lab not only allow for a comprehensive collection of cable news stories, but also enable the visualization of cable news coverage over time. This unique two-step procedure afforded the opportunity to explore both the overall frames used in Twitter-related stories and the specific frames used to cover Twitter on days in which it was most intensely reported. Methodologically, this research contributes to the investigation in broadcast media's coverage of emerging participatory tools.

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