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Facebook and Twitter, communication and shelter, and the 2011 Tuscaloosa tornado

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This paper represents one of the first attempts to analyse the many ways in which Facebook and Twitter were used during a tornado disaster. Comparisons between five randomly selected campus samples and a city of Tuscaloosa, Alabama, sample revealed that campus samples used Facebook and Twitter significantly more both before and after the tornado, but Facebook usage was not significantly different after the event. Furthermore, differences in social media usage and other forms of communication before the tornado were found for age, education, and years lived in Tuscaloosa. Generally, age and education were inversely proportionate to social media usage. Influences on shelter-seeking actions varied between social media users and three random samples of non-social media users; however, it appears that social media respondents were likely to be using a smartphone simultaneously to access warning polygon information, to receive text message alerts, and to listen or respond to environmental cues.

Keywords: communication, shelter, social media, tornado

Introduction

The southeast United States has been found to be at a higher risk of multiple atmospheric hazards as compared to other regions of the country. A range of such hazards are discussed in the literature, including baroclinic tornadoes (Boruff et al., 2003; Dixon et al., 2011), extreme temperatures (Soulé, 2005), hurricanes (Czajkowski, Simmons, and Sutter, 2011), hurricane-spawned tornadoes (Schultz and Cecil, 2009; Moore and Dixon, 2011a, 2011b), lightning (Ashley and Gilson, 2009), and wind events (Schmidlin et al., 2002; Schmidlin, 2009; Schoen and Ashley, 2011). In recent years, broadcast meteorologists have employed social media ubiquitously as a platform for communicating weather information. While the potential effects and the efficacy of social media have been studied in relation to earthquake detection (Earle, Bowden, and Guy, 2011), tsunami warnings (Chatfield, Scholl, and Brajawidagda, 2013), wildfire danger (Kent and Capello, 2013), and Hurricane Sandy of October 2012 (Lachlan, Spence, and Lin, 2014), no previously published research has investigated the use of Facebook and Twitter before and after a tornado. Cates et al. (2013) is believed to be the only example of work involving social media and tornadoes. They found

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that Twitter and dual-polarisation radar reduced injuries in the 2013 Hattiesburg, Mississippi tornado.[1]

The EF-4[2] Tuscaloosa tornado on 27 April 2011 was one of the most intense tornadoes ever to impact an urban population with a large concentration of social media users. As such, it provided one of the first opportunities to analyse the many ways in which social media is employed in communicating information on tornados.

Tornado hazard communication research has been performed at Mississippi State University. Sherman-Morris (2010) looked into how the institution communicates with the campus population through methods such as the alert system; social media was not included in this particular research, however, as its popularity was not sufficient in 2009. Facebook and Twitter are now the most recognisable forms of online social networking services. They are at the centre of this study because of high usage among the student populace (Lenhart et al., 2010), and their increasing application for severe weather communication.

The focus population of this study was the University of Alabama (UA) campus, comprising a diverse range of users of Facebook and Twitter. The study population was a large sample of 19,000 students, staff, and faculty members. Although the campus did not suffer a direct hit—the 2011 tornado passed within one kilometre of UA—its population was in the area of the tornado warning (Senkbeil et al., 2014).

The specific objectives of this research are to assess how social media was employed during the 2011 tornado, and how usage was related to age, gender, education, and years lived in Tuscaloosa, Alabama. Two broad primary research questions and three subthemes are evaluated here:

1. Who used social media before and after the tornado?
   a. Did campus sample respondents use social media more than city sample respondents?
   b. Were there differences in social media usage for the categories of age, education level, and years lived in Tuscaloosa?
2. What caused respondents to seek shelter?
   a. Did social media users display a different shelter influence from three samples of non-social media users?

Materials and methods

Data collection

This research involved the distribution of a 21-question survey via an email list-serve to a sample of 19,000 UA students, staff, and faculty members. Central administration at UA denied permission to email the entire campus population, restricting the sample to 19,000. A total of 3,600 recipients started the survey, of which 2,300 produced full completions—a final response rate of slightly more than 12 per cent.

The survey contained a mixture of closed and open-ended questions; however, open responses were minimised for the online survey associated with the campus population. An email survey was the most efficient outlet for this study since the spring semester ended one week early, immediately after the tornado. The online survey was available between 11 May and 30 June 2011. The response rate was similar to that

Table 1. Comparisons between the university population and sample and the city population and sample*

Category	University population	University sample	City population	City sample
Male	47	32	48	48
Female	53	68	52	52
White	83	89	54	46
African-American	11	5	43	28
Hispanic/Latino	2	1	1	18
Asian	1	2	2	2
Other	3	3	1	6
Education				
High school or less		2	41	40
Current undergraduate student/some college		46	22	24
Associate's degree		2	5	8
Bachelor's degree		18	18	13
Current graduate student		16	N/A	N/A
Master's degree or higher		16	14	15
Age				
19–24		73	17	26
25–34		17	13	28
35–44		5	12	21
45–54		4	11	14
55+		3	17	10
Years lived in Tuscaloosa				
0–4		69		23
5–9		17		24
10–14		2		8
15–19		3		9
20+		9		36

Notes: * Numbers are percentages. Percentages for the university population are not available for education, age, and years lived in Tuscaloosa. Percentages for the city population were calculated from the United States Census 2010 and are not available for years lived in Tuscaloosa. N/A=not available.

Source: authors

of the study of Sherman-Morris (2010) at Mississippi State University. The demographics of the UA campus sample were quite different from a city sample of 211 respondents used for comparison and statistical testing (Senkbeil, Rockman, and Mason, 2012). The university sample was primarily female with other categories more closely resembling the population (see Table 1). The characteristics of the city sample have been discussed in previous work (Senkbeil, Rockman, and Mason, 2012; Senkbeil et al., 2014). Table 2 contains an abbreviated version of the survey, showing the communication and shelter questions.

Methods

The aim of the first research question—who used social media before and after the tornado?—was to identify whether social media had any potential impacts as a hazard communication tool before and after the tornado by comparing campus responses to city responses. The campus sample was overwhelmingly white and aged between 19 and 24 years, so five random samples of 211 campus respondents were compared to a more diverse non-campus sample of 211 respondents from the city of Tuscaloosa (Senkbeil, Rockman, and Mason, 2012). Five random samples were chosen to gain a better understanding of possible differences that might have been misleading when using fewer than five samples. Using more than five samples did not result in a meaningful

Table 2. Possible answers to communication and shelter questions

What was the most important factor that made you seek shelter from the tornado?	What was your primary source of information before the tornado hit?	What was your primary source for information, assistance, and/or relief after the tornado?
I saw the tornado in person or on live video	Smartphone	Television
A local TV meteorologist provided a landmark which I was familiar with	Weather website	Radio
The track of the tornado on internet/TV/radar was going to pass near my home	Facebook	Newspaper
I heard environmental cues such as wind, rain, or hail	Twitter	Internet
A friend or relative informed me via text, phone call, or message	Local television	Facebook
None of these were the most important	Local radio	Twitter
I did not seek shelter	The Weather Channel	Telephone
	National Ocean and Atmospheric Administration (NOAA) weather radio	Text message/telephone call
	Tornado siren	
	Text message/telephone call	

Source: authors.

increase in information. One-way analysis of variance (ANOVA) was applied to test for statistically significant differences in usage counts between the six samples. This was followed by post hoc Tukey tests to determine in which groups there were statistically significant differences in social media usage between the city and campus samples both before and after the tornado.

For subtheme 1b, categorical data from the survey were tested using a series of contingency tables with Pearson chi-squared tests. Contingency tables were constructed to examine relationships before the tornado between the major sources of information and age, education, and years lived in Tuscaloosa. For the six major information sources (Facebook, Twitter, internet, television, radio, and telephone) three variables (age, education, and years lived in Tuscaloosa) were tested. Results were then analysed to discern which variables produced the greatest differences between the observed and expected values. The Pearson chi-squared statistic was reported to see if any of these factors contributed to a respondent's preference for tornado hazard communication before the event. The before time period also includes during the tornado, and these two terms can be used interchangeably. Respondents were deliberately not limited to one choice for questions since it was hypothesised that many were simultaneously using multiple media sources, or multiple modes of communication. Thus, some respondents limited question responses to one answer choice whereas others selected multiple answers. The chi-squared tests utilise the counts for how many times a particular source was mentioned. One respondent could have contributed four count values for four different media types whereas another may have contributed only one or two counts.

Similar to subtheme 1b, the results for subtheme 2a were summarised using a series of contingency tables with a Pearson chi-squared statistic. Subtheme 2a was assessed from the following survey question: 'What was the most important factor that made you seek shelter from the tornado?'. Counts were tallied for the five shelter influences for those who used either Facebook or Twitter (social media users) (n=343) as a communication source and for three random samples of identical size of respondents who did not use Facebook or Twitter. Simple percentages were also calculated for the four samples to see if there was a dominant mode of shelter-seeking impetus. Additional contingency table tests were performed for warning information type and shelter influences between the four samples.

Results and discussion

Subtheme 1a: did campus respondents use social media more than city respondents?

The results from a comparison of a sample of Tuscaloosa city residents (Senkbeil, Rockman, and Mason, 2012) with five randomly selected campus samples of equal size helped to determine differences in social media usage between heterogeneous groups. Although the city sample had a smaller number of Facebook and Twitter

Table 3. ANOVA results comparing Facebook and Twitter usage before and after the tornado for five randomly selected campus samples and one city sample (all n=211)*

Test and category	F	p	Total df	n
One-way ANOVA results				
Facebook before	2.81	0.02	1270	102
Twitter before	3.35	<0.01	1270	82
Facebook after	1.96	0.08	1270	227
Twitter after	7.7	<0.01	1270	123
Tukey post hoc tests compared to the city sample				
City sample	**Percentage (n)**	**p**		
Facebook before	2 (4)			
Twitter before	1 (2)			
Facebook after	10 (22)			
Twitter after	0.5 (1)			
Sample 1				
Facebook before	10 (22)	0.02		
Twitter before	9 (19)	0.01		
Facebook after	19 (41)	0.16		
Twitter after	9 (19)	0.03		
Sample 2				
Facebook before	10 (21)	0.03		
Twitter before	9 (20)	<0.01		
Facebook after	20 (43)	0.09		
Twitter after	16 (34)	<0.01		
Sample 3				
Facebook before	8 (17)	0.19		
Twitter before	6 (13)	0.24		
Facebook after	18 (39)	0.27		
Twitter after	10 (22)	0.01		
Sample 4				
Facebook before	8 (18)	0.12		
Twitter before	8 (16)	0.06		
Facebook after	19 (41)	0.16		
Twitter after	15 (31)	<0.01		
Sample 5				
Facebook before	9 (20)	0.05		
Twitter before	6 (12)	0.34		
Facebook after	19 (41)	0.16		
Twitter after	8 (16)	0.13		

Notes: post hoc Tukey tests compare the usage of the city sample with the five random campus samples. Statistically significant results indicate higher usage by campus samples. Percentages are reported with counts in parentheses.

Source: authors.

users, it was important to find out if campus respondents used social media more than the general public before and after the 2011 tornado.

Counts of social media users were higher in every campus sample (n=211) in every category when compared to the city sample; yet, not all of these differences were statistically significant (see Table 3). One-way ANOVA results indicated that there were statistically significant differences between campus and city usage for all variables except Facebook after the tornado ($F=1.96$, $p=0.08$). Tukey post hoc tests revealed that a total of three campus samples were significantly higher ($p<0.05$) than the city sample for Facebook usage before the tornado. Twitter usage before the tornado showed that only two campus samples were significantly higher, whereas twitter usage after the tornado revealed four campus samples with significantly higher usage (the strongest result). Respondents in the city sample chose Facebook as a primary mode of communication after the tornado nearly as often as campus sample respondents.

A possible explanation for these similarities in social media usage after the tornado could be the appeal of Facebook as a tool to find aid and supplies, as indicated by several comments in both city and campus samples. Such conclusions, though, are difficult to reach because of the small subset of respondents in the city sample who experienced damage and used social media after the tornado (4 per cent). A total of 52 per cent of respondents in the city sample reported some level of damage, whereas the campus sample reported 30 per cent damage. The city sample reported 20 per cent of homes destroyed, whereas the campus sample reported 4 per cent of homes destroyed. The damage percentages reflected a wider loss of power for the city sample, providing obstacles to communication through social media after the tornado, which may have magnified the differences between the campus and city samples.

Subtheme 1b: were there differences in social media usage for the categories of age, education level, and years lived in Tuscaloosa?

Chi-squared contingency tests were conducted on counts of information type use before the tornado for groups of age, education, and years lived in Tuscaloosa. Table 4 presents the statistical results, percentages, and counts. There were four significant results before the tornado for education level, two for age, and two for years lived in Tuscaloosa and information type (see Table 4).

For education, the highest percentages of respondents using Facebook and Twitter were among current undergraduate students and those with a Bachelor's degree. Generally, Facebook usage before the tornado was inversely proportional to education level, with the exception of those with an Associate's degree. Having an Associate's degree resulted in the highest percentages for television both before and after the disaster. Much higher percentages of telephone use before the tornado were found among those with a high school diploma or less, a current undergraduate student, and those with a Bachelor's degree.

Contrasting the percentages with observed versus expected counts from the chi-squared tests facilitates further discussion. Those with a Bachelor's degree had the

Table 4. Chi-squared results for differences in information type by education, age, and years lived in Tuscaloosa*

Education	Information type	Before	After	p	X^2	df
	Facebook			<0.01	18.1	4
	Twitter			0.01	12.8	4
	Television			0.03	10.9	4
	Telephone			0.01	16.6	6
Education group	**Information type**	**Before**	**After**	**Information type**	**Before**	**After**
High school or less	Facebook	7 (4)	18 (10)	Twitter	4 (2)	14 (8)
Current undergraduate student/some college	Facebook	14 (148)	19 (209)	Twitter	12 (128)	13 (146)
Associate's degree	Facebook	0 (0)	10 (4)	Twitter	7 (3)	1 (2)
Bachelor's degree	Facebook	10 (43)	16 (68)	Twitter	8 (35)	18 (73)
Current graduate student	Facebook	5 (17)	20 (73)	Twitter	4 (13)	11 (42)
Master's degree or higher	Facebook	4 (12)	11 (37)	Twitter	4 (14)	8 (28)
High school or less	Television	59 (33)	13 (7)	Telephone	37 (21)	29 (16)
Current undergraduate student/some college	Television	57 (612)	10 (104)	Telephone	36 (389)	42 (453)
Associate's degree	Television	67(28)	19 (8)	Telephone	19 (8)	45 (19)
Bachelor's degree	Television	60 (248)	8 (35)	Telephone	30 (123)	31 (128)
Current graduate student	Television	57 (195)	14 (49)	Telephone	20 (69)	26 (90)
Master's degree or higher	Television	56 (209)	12 (44)	Telephone	22 (81)	30 (112)
Age	**Information type**			**p**	**X^2**	**df**
	Facebook			0.03	11.4	3
	Television			<0.01	47.9	4
Age group	**Information type**	**Before**	**After**	**Information type**	**Before**	**After**
19–24	Facebook	12 (194)	18 (299)	Television	58 (958)	9 (142)
25–34	Facebook	7 (27)	20 (79)	Television	54 (209)	13 (52)
35–44	Facebook	3 (4)	12 (15)	Television	56 (68)	21 (25)
45–54	Facebook	1 (1)	7 (8)	Television	64 (58)	25 (23)
55+	Facebook	0 (0)	3 (2)	Television	58 (45)	14 (11)

Years lived in Tuscaloosa	Information type			p	X^2	df
	Television			<0.01	23.4	3
	Telephone			<0.01	18.7	4
Years lived in Tuscaloosa group	**Information type**	**Before**	**After**	**Information type**	**Before**	**After**
0–4	Television	53 (850)	8 (134)	Telephone	31 (501)	39 (619)
5–9	Television	64 (250)	13 (49)	Telephone	30 (115)	32 (124)
10–14	Television	50 (26)	17 (9)	Telephone	27 (14)	25 (13)
15–19	Television	58 (38)	23 (15)	Telephone	26 (17)	23 (15)
20+	Television	77 (167)	18 (39)	Telephone	21 (218)	23 (51)

Note: * Percentages are reported with counts in parentheses.
Source: authors.

greatest difference between observed and expected counts for telephone use before the tornado. There was an overall decrease in telephone usage after the tornado for all educational groups, which is best explained by downed lines and interruption of service. The number of respondents with a Bachelor's degree using Facebook before the tornado was also lower than expected, leading to speculation that this group utilised other sources to make decisions. Generally, Facebook and Twitter usage before the tornado was inversely proportional to education level. The highest rate of Twitter usage before the tornado was among current undergraduate students; this was the only result where the observed value exceeded the expected value. Education has been found to have an influence on which information type a person employs to make decisions during a severe weather event (Schmidlin et al., 2002; Blanchard-Boehm and Cook, 2004).

Those with a graduate degree or current graduate students were the only groups that had below the expected count for television usage before the tornado, with graduate degree producing the largest observed versus expected difference. This could be because these groups were more likely to remain on campus after a severe weather notification for employment reasons, as opposed to the other groups that might have left campus to be at their place of residence.

Similar to education, age had an influence on the type of communication chosen, specifically television and Facebook for 19–24 year olds (see Table 4). Furthermore, the chi-squared results demonstrated the largest difference between observed and expected counts was for Facebook responses for 19–24 year olds. These results suggest that 19–24 year olds also use traditional media as well as Facebook. The increase in Facebook usage among 19–24 year olds after the tornado was relatively lower than that in other age groups (see Table 4). After the tornado, the focus of many residents shifted to news, relief, and recovery, which probably is the reason for the Facebook rise in all age groups.

Years lived in Tuscaloosa was found to be another factor significant with information types. Television was strongly preferred by 20-plus year residents of the city (77 per cent). This might be explained by trusted para-social relationships that are fostered over time between viewers and broadcast meteorologists (Sherman-Morris, 2005). Residents of more than 20 years also had the lowest percentage for telephone use both before and after the tornado. This runs contrary to assumptions of greater telephone use among a more established density of social connections with longer residence time.

Research question 2: what caused respondents to seek shelter?

Although not the focus of this research project, respondents were asked how they received storm warning information. As confirmed in previous work (Paul et al., 2003; Comstock and Mallonee, 2005; Sherman-Morris, 2005), the most common information source among the campus population was local television weather (57 per cent of responses). There was a cluster of sources that made up between 30 and 36 per cent of the choices (in order from highest to lowest): tornado siren; weather website; smartphone; and text message/telephone call. Of those respondents who indicated using Facebook and Twitter as their primary means of warning information before the tornado, these sources comprised 10 and 8 per cent, respectively. While these results are not surprising, it is imperative to know what caused people to seek shelter once they received the warning, rather than what source they used to get their information. In addition, did Facebook and Twitter users demonstrate different shelter-seeking influences than users of other media types?

Table 5. Cross-tabulation of counts of locations of shelter with the five major shelter-seeking influences for the campus sample*

Where did you seek shelter during the 27 April 2011 tornado	Visual confirmation	Familiar landmark	Track proximity	Environmental cues	Message from a friend or relative
Interior room in a house	25 (207)	30 (282)	27 (238)	25 (121)	22 (157)
Interior room in an apartment/condominium	38 (321)	34 (324)	27 (236)	33 (162)	31 (240)
Dormitory/campus housing	13 (109)	13 (122)	15 (129)	19 (91)	21 (160)
Campus building	14 (114)	16 (151)	21 (183)	14 (67)	16 (126)
At work	3 (25)	2 (23)	3 (24)	4 (17)	3 (22)
Storm shelter	1 (7)	2 (14)	2 (13)	1 (4)	3 (25)
Did not seek	2 (15)	1 (5)	1 (11)	1 (5)	4 (29)
Other/unclassified	4	2	4	3	0

Notes: * Numbers are percentages with counts in parentheses. Percentages are calculated for each column. Respondents were allowed to insert an answer in multiple categories of shelter influence.

Source: authors.

There was not a dominant mode of shelter-seeking influence. The highest percentage across the four samples was seeing the tornado in person or on live video (23 per cent). Visualising the track of the tornado using internet, television, or radar sources, having a local television meteorologist provide a familiar landmark, or being informed by friends and relatives each accounted for 21 per cent. The remaining 14 per cent is explained by hearing environmental cues such as hail, rain, or wind.

Cross-tabulation of the most commonly cited shelter locations and shelter-seeking influences was performed (see Table 5). The abbreviated shelter-seeking category titles in Table 5 match those found in Figure 1. A familiar landmark or visual confirmation was the most important influence for respondents that sheltered in interior rooms of homes or apartments (see Table 5). The most popular influence among residents of campus housing was a personal message from a friend or relative, whereas those using a campus building for shelter favoured track proximity on the internet, television, or radar. The majority of respondents using a campus building were faculty, staff, and graduate students, whereas undergraduate students almost exclusively used campus housing. The remaining categories in Table 5 had similar percentages.

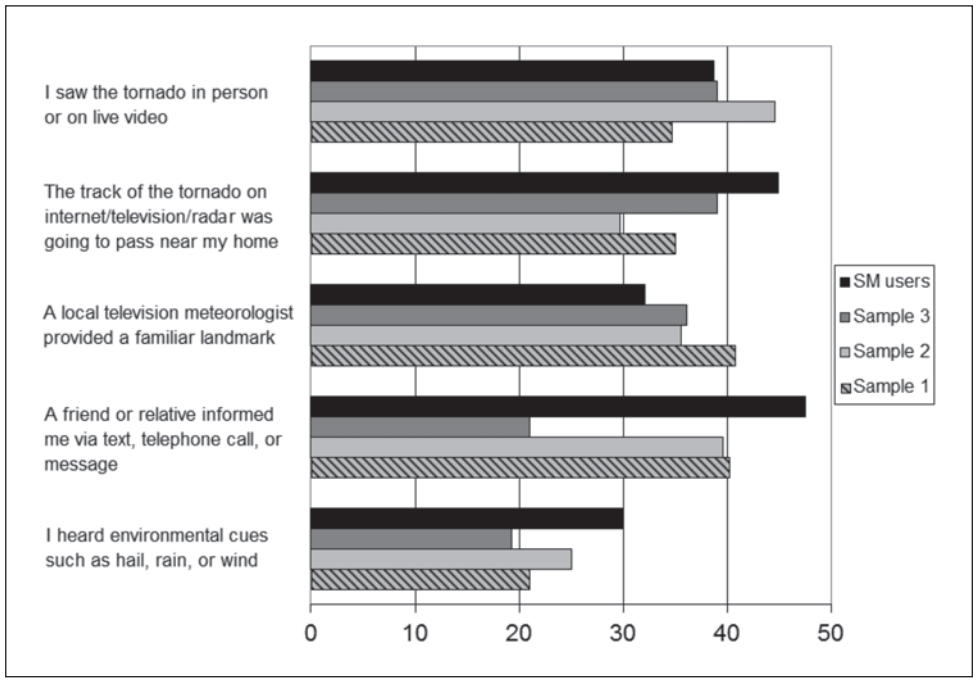
Subtheme 2a: did social media users display a different shelter influence from three samples of non-social media users?

The shelter influences of social media users in the campus sample (n=343) were compared to three random campus samples (n=343) of non-social media users. The difference between samples was highly significant ($X^2=50.9$, $p=<0.01$), and social media users had the highest percentage for three of the shelter influences (see Figure 1): environmental cues; personal messages; and visualising track proximity to their locations. As above, respondents were not restricted to just one answer since it was possible to have more than one shelter influence.

These results are intuitive when considering the way in which people use social media and the dominance of younger users of social media. A personal message via text, telephone, or other means suggests a respondent using a personal electronic device, actively monitoring social media, and relying on a social support network to assist in decision-making. Social media users also were the only group to record 30 per cent or more for every shelter influence, indicating perhaps a distinction in using multiple modes of information and influences simultaneously during the decision-making process.

The dominance of social media users with regard to track proximity visualisation and personal messages also suggests a more personal evaluation of risk instead of the influence of a local television meteorologist, as seen in sample 1 (see Figure 1). The percentage of social media users was lowest for the category of a local television meteorologist providing a familiar landmark, which contrasts well with social media users having the highest percentage for visualising track proximity. Local television meteorologists were employing various media throughout 27 April 2011 during their coverage of the tornado (including Facebook, Twitter, and Ustream). Hence, it is impossible to determine if the social media users in the study sample were getting

Figure 1. Comparison of social media users and 3 samples of non-social media users on shelter-seeking influences*



Note: * Values are percentages and respondents could choose more than one shelter-seeking influence; SM=social media.

Source: authors.

television information through a social media format, or if they were relying on their networks of friends, or both.

Regardless of the limitations, it appears that social media users utilise a greater variety of shelter-seeking influences and are more motivated to seek shelter by tornado track proximity, personal messages, and environmental cues than non-social media users.

A final test for this subtheme was conducted to answer a related question about warning information and shelter influence for the four samples: was there a relationship between method of warning information and shelter influence? None of the four samples displayed a significant relationship between the method of warning information and shelter influence, although social media users were the sample closest to a significant result (see above for percentages of warning information).

Conclusion

The EF-4 Tuscaloosa tornado on 27 April 2011 affected a densely populated city with a large university population of social media users. Although social media use has been studied in other disasters, this research represents one of the first attempts to

analyse the many ways in which it was employed before and after the event. Two primary questions emerged in this research:

- who used social media before and after the tornado?; and
- what caused respondents to seek shelter?

For the second question emphasis was placed on contrasting social media users and non-social media users.

Comparisons of five randomly selected campus samples and a city of Tuscaloosa sample revealed that there were statistically significant differences in Facebook and Twitter usage both before and after the tornado. Before the tornado, three and two of the campus samples used Facebook and Twitter, respectively, significantly more than the city sample. After the tornado, none of the campus samples were significantly different for Facebook; however, usage of Twitter was statistically significantly greater among four of the five samples. Facebook was used ubiquitously in the recovery phase by respondents of all demographics. Twitter was similarly utilised for acquiring rapid information updates after the tornado, but the rate of this type of microblogging social media was greater among 19–24 year olds associated with the campus samples.

Additional differences in social media usage and other forms of communication before the tornado were found using the age, education level, and years lived in Tuscaloosa variables. Generally, age and education were inversely proportional to social media usage. Current undergraduate students and respondents with a Bachelor's degree had the highest percentages of Facebook and Twitter use; a point reinforced by the fact that 19–24 year olds had the highest Facebook percentage. City residents of 20 or more years demonstrated a strong preference for television relative to other age groups.

Influences on shelter-seeking action varied between social media users and three random samples of non-social media users. There was not a dominant mode of shelter-seeking influence across all samples; yet, social media users favoured three of the influences more than non-social media users: environmental cues; personal messages; and visualising track proximity to their location.

These results suggest that social media users were the most likely group to be using multiple sources of information simultaneously. The most popular shelter influences of social media users imply that these respondents were using a smartphone to access warning polygon information, to receive text message alerts, and to listen or respond to environmental cues. Social media users appear to be digesting more information in the same amount of time as non-social media users. If true, this indicates a more informed person capable of making better decisions on safety and shelter-seeking. Alternatively, confusion may ensue as the user has to comprehend quickly more information under duress caused by an impending disaster.

The potential role of misinformation through social media was not assessed here. This research provides insight into who is using social media and how it may influence shelter decisions. Future research will strive to inform risk-decision models on how social media augments the paradigm of decision-making.

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Endnotes

[1] Additional research has been conducted on social media use during other meteorological hazards (Hyvärinen and Saltikoff, 2010; Cox and Plale, 2011; Fontugne et al., 2011; Klotz, 2011).

[2] That is, ranked as a devastating tornado (166–200 miles per hours) on the Enhanced Fujita Damage Intensity Scale.

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