Computers in Human Behavior xxx (2016) 1–6

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Full length article

Exploring extreme events on social media: A comparison of user reposting/retweeting behaviors on Twitter and Weibo

Xialing Lin [a, *], Kenneth A. Lachlan [b], Patric R. Spence [c]

[a] Department of Corporate Communication, Penn State Worthington Scranton, USA
[b] Department of Communication, University of Connecticut, USA
[c] School of Information Science, University of Kentucky, USA

ARTICLE INFO

Article history:
Received 15 February 2016
Accepted 19 April 2016
Available online xxx

Keywords:
Crisis communication
Risk communication
Social media
Twitter
Weibo

ABSTRACT

Although recent research suggests that Twitter and other forms of micro-blogging are becoming increasingly relied upon by both the public and response agencies dealing with crises and disasters, little is known about how these dynamics may play out in a non-Western context. The current study examines the use of the Chinese Weibo service during a 2013 smog emergency, and compares user generated content to that found in earlier data concerning a weather event in North America. The results indicate that by way of comparison, the Weibo sample contained proportionately similar degrees of informative and affective content, but that users were less likely to use humor and showed no increase in affective outpouring as the crisis developed. Results are discussed in terms of implications for those designing social media campaigns for informing and motivating those affected by large-scale weather-related crises.

1. Introduction

Social media have evolved into widely used and legitimate sources of news and information, particularly for natural disasters, crises, and other extreme events (Pepitone, March 10, 2010). This evolution is happening globally, within and between cultures and across individual technological expertise. Previous extreme weather situations, such as the 2010 Haiti cholera outbreaks, the 2011 Japanese tsunami, and Hurricane Sandy of 2012, have evident that citizens in closest proximity to an event often act as eyewitnesses, reporting information on social media in a timely manner (e.g., Dredze, 2012; Lachlan, Spence, Lin & Del Greco, 2014; Sutter, 2010). As a group of interactive, collaborative, conversational, and community-based platforms, social media collapse diverse social contexts and media audiences into one, providing a comprehensive outlet for the dissemination of crisis and risk information (Spence, Lachlan, Lin, & del Greco, 2015). Despite the increasing volume of research regarding the utilization of social media during extreme events (Lachlan, Spence, Lin, Najarian, & Del Greco, 2016), the extent to which different social media functions (such as reposting or retweeting on microblogging services) are used for crisis communication and information accessibility is understudied (Lachlan, Spence, Lin, Najarian, & Del Greco, 2014). Further, most research has focused on Western cultures and their social media applications, while less is known about the differences in the information consumption and learning across social media platforms from different cultures. Such cross-cultural explorations of social media are needed due to rapid technological diffusion and increased opportunities for international travel and work.

As Twitter and other social networking sites are unavailable in China, applications such as Sina Weibo fill the void and take the lead in the Chinese microblogging market (Tai & Liu, May 6, 2015). To expand and solidify the understanding of social media functions within different culture domains, the current study examines mediated communication on Twitter and Weibo in the time leading up to the impact of two large-scale weather-related events. In particular, this study focuses on reposting/retweeting behaviors, and compares the content and frequency of these behaviors regarding the 2013 winter storm Nemo on Twitter and the 2013 Eastern China smog on Weibo. Specifically, examining retweeting/reposting (the act of relaying a message that has been written by another user of the platform) may reveal patterns or behaviors that could be helpful during an extreme event. Moreover, cross-cultural comparisons of crisis communication using social media are scarce. This study aims to investigate public interactions of risk awareness and concerns as well as to compare emergency information

* Corresponding author.
E-mail addresses: xialinglin.psws@gmail.com (X. Lin), Patric.spence@uky.edu (P.R. Spence).

http://dx.doi.org/10.1016/j.chb.2016.04.032
0747-5632/

management within different cultures and platforms.

1.1. Twitter and Weibo

Twitter launched in March of 2006, having accumulated around 302 million monthly active users with 500 million tweets being posted per day as of 2016 (twitter.com). By initially providing users the opportunity to post, read, and respond to text-based messages limited to 140-characters in length, Twitter creates a multi-media platform with constantly updated timelines for wide-open content. These messages, called tweets, range from mundane life chores to critical breaking news. Twitter users connect with each other by following or being followed without reciprocal requirement.

However, Twitter and other non-China-based networking sites have been blocked in China since 2009, whereas some local social networking services, such as Weibo, emerged to lead the Chinese microblogging market ("Sina Weibo", n.d.). Weibo was launched in July 2010 and has occupied over 56.5% of microblogging market in China since 2011, which can be thought of as a hybrid of Twitter and Facebook. This social networking service currently has over 500 million users with more than 100 million posts being sent per day ("Sina Weibo", n.d.). Weibo also limits the lengths of each post to 140 characters; it also provides a follower-followee social network. Weibo users can organize their social networking, to update and follow the posts in unidirectional relationships as well.

A previous study indicates that in 2010, approximately 11% of all tweets from a random sample were retweets, and users tend to retweet messages containing hashtags and URLs (Suh, Hong, Pirolli, & Chi, 2010). By using the retweet, Twitter users can repost a message from another user and share it with one's own followers, whereas, for Weibo users, the function is called "repost." The retweets or reposts are shown to the public on a senders' profile page; depending on these repost and reply mechanisms, users choose to disseminate the information on Twitter and Weibo which could go beyond the original messages (Kwak, Lee, Park, & Moon, 2010). Given the increased portions of retweets and reposts in online daily updates, it is necessary to investigate the roles these particular report functions have upon specific online communication.

Holding great promise as a social medium for crisis communication, these two networking sites provide publicly available online information, reflecting immediate accessibility and harnessing collective intelligence (O'Reilly & Battelle, 2009; Wunsch-Vincent & Vickery, 2006). The public has gradually used Twitter or Weibo as a source throughout a crisis lifecycle to make sense of an event and to make well-informed decisions, especially for natural disasters which have the potential to cause varying degrees of destruction or harm to vulnerable populations (Coombs & Holladay, 2002; Qu, Huang, Zhang, & Zhang, 2011; Zhang, Zhou, & Nunamaker Jr, 2002). For instance, Spence et al., (2015) analyzed the content and the frequency of over 1500 tweets being sent during the prodromal stage of Hurricane Sandy in 2012 and found that Twitter served as a medium for information sharing and an outlet for affective expressions. The results revealed several insights into audience responses on Twitter that differed from previous self-report studies. People sought out tweets that more closely resembled interpersonal messages than did those stemming from a centralized, mass media entity (Spence et al., 2015). Qu et al. (2011) examined the use of Weibo in response to 2010 Yushu earthquake and reported a large portion of posts were opinion-related. However, limited research compares the use of these two microblogging platforms from different cultures in risk and crisis domains, thus, cross-cultural research is needed (Burke & Zhou, 2010). Two extreme weather-related events, the 2013 winter storm Nemo and the 2013 Eastern China smog, are examined in the current study.

1.2. 2013 Winter Storm Nemo

Winter storm Nemo primarily struck the northeastern United States and parts of Canada in early February 2013 ("February 2013 nor'easter", n.d.). The storm delivered rapidly accumulating snowfall combining with hurricane-force winds and destructive tides, which caused at least eighteen storm-related fatalities, over 600,000 customer power outages, and economic damages throughout New England (Ariosto et al., February 9, 2013). In the city of Boston, Nemo brought 24.9 inches of snowfall from February 8 to 10, 2013, ranking as one of the five worst snowstorms in Boston since 1935 (Klepper & Salsberg, February 10, 2013). On February 8, 2013, Boston reported a storm surge that peaked at 4.21 feet, marking it as the fourth-highest storm surge since 1921 (Masters, 2013). The blizzard caused a buzz on the social media during that time. Bostonians and local organizations spontaneously used *#Bosnow* on Twitter to track blizzard updates, send out emergency alerts, and offer relief assistance in real time (e.g., City of Boston. Gov, October 2013).

Previous studies have investigated how people used Twitter in the early stage of winter storm Nemo. For instance, Lachlan, Spence, Lin, Najarian, & et al. (2014) retrieved the tweets containing localized and national hashtags during this weather event, and suggest that Twitter might be used more for affective display than for information seeking, which is consistent with Twitter research on Hurricane Sandy (Spence et al., 2015). However, it is unclear whether retweets during Nemo reflect such findings. Thus, as an extended investigation of Lachlan, Spence, Lin, Najarian, & et al's. (2014) data, the first research question follows:

RQ1 What were the frequency and specific information users retweeted concerning Winter Strom Nemo on Twitter?

1.3. 2013 Eastern China smog

To compare the repost/retweet behaviors between Twitter and Weibo during weather-related disasters, the current study also examines how online users communicated during the 2013 Eastern China smog. This weather-related event was chosen because it occurred in the same year as Winter Storm Nemo, thus allowing for as close of a chronemic examination as possible. Given that the time and type of weather related crises are not predictable; these two events provide the best comparison available.

From December 2nd to 14th, 2013, with a combination of weather conditions and an increase in the burning of coal for homes and municipal heating systems, heavy smog blanketed Eastern China, affecting more than seven provinces and nine major cities. High levels of tiny and harmful PM 2.5 particulates were detected, with over 150 μg per cubic meter on average ("2013 Eastern China smog," n.d.). In Shanghai, air quality index (AQI) reported the highest level air pollution among all the cities on December 6th; PM 2.5 particulates also reached 602.5 μg per cubic meter on that day (Tang & Hoshiko, December 7, 2013). It reached the most hazardous level since the city began recording such data and soared to a record over 24 times higher than the World Health Origination's (WHO) safety standard (Tang & Hoshiko, December 7, 2013). The severe air pollution resulted in limited visibility, reduced outdoor activity, increased respiratory symptoms, causing major disruption in transportation and daily routines ("2013 Eastern China smog," n.d.).

This severe weather event caused discussions on Weibo. Researchers have investigated how people use microblogging for

Please cite this article in press as: Lin, X., et al., Exploring extreme events on social media: A comparison of user reposting/retweeting behaviors on Twitter and Weibo, Computers in Human Behavior (2016), http://dx.doi.org/10.1016/j.chb.2016.04.032