

The Use of Twitter During Different Stages of the Crisis and Emergency Risk Communication

Model During the 2015 Paris Attacks

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Abstract

In recent years the use of social media has increased, especially to access information and discuss current events. The November 2015 Paris attacks gained attention around the world and was a trending topic on Twitter. Using the Crisis and Emergency Risk Communication (CERC) model the Paris attacks were divided into the different stages of a crisis in order to analyze any changes that occurred in the use of Twitter over time. The results showed that during the initial stage of the crisis information related tweets were the highest, and as the crisis progressed the opinion related tweets increased. From the results the majority of tweets over the period of the crisis were information related, followed by opinion related.

Keywords: crisis communication, Paris Attacks, social media, twitter, public relations

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Introduction

By 2006, social media sites, Twitter and Facebook were introduced around the world. Social media allows organizations and individuals to send out information that can reach people around the world in a matter of seconds, while also allowing anyone on the platform to comment and post their own opinions on a crisis as it unfolds. Due to social media and globalization, global interactions are further enabled, creating another obstacle when controlling risk in times of crises for communication and public relation professionals (Sellnow & Seeger, 2013). In many cases, “the activities of multiple organizations are intertwined in a complex manner that makes crisis planning and risk management exceedingly difficult” (Sellnow *et al*, 2013, p.29). More research is needed to understand social media’s role in times of crisis for communication professionals to effectively and efficiently use it. Social media allows a crisis that occurs in one city to spread to people around the world very quickly. The Paris Attacks that occurred in November 2015 is a great example a crisis that occurred in one city that was deeply felt by other people in other cities around the world because of social media. The Paris attacks are the chosen case of study due to the mass amount of tweets sent out during the crisis – according to the Washington Post (2016 February), a study conducted by New York University Media and Political Participation (SMaPP) lab, there were four million tweets sent out within 24 hours of the attacks.

According to Qunying Huang & Yu Xiao (2015), some recent studies suggest that social media data streams can be “used to mine actionable data for emergency response and relief operation”, but that there hasn’t been enough research or effort put into classifying and understanding social media data in terms of the different stages of disaster management (p.1550).

There are three general attributes of a crisis, “they are largely unanticipated or violate

expectations, they threaten high priority goals, and they require relatively rapid response to contain or mitigate the harm” (Hermann, 1963; Seeger, Sellnow & Ulmer, 2003) (as cited in Sellnow *et al.* 2013, p.6). Within the crisis discourse there is some debate – some scholars believe that international conflicts between countries represent crisis, and others have said that war should not be classified as a crisis. Therefore, some are unsure whether or not terrorism is classified as a crisis. But, according to Sellnow *et al.* (2013), terrorism attacks are intentional, unanticipated and surprising, and are generally classified as crises. There are many different typologies of crisis which are defined in different categories by three different scholars, Lebringer, 1997; Seeger, Sellnow & Ulmer 2003; and Coombs, 2010 (Appendix 1). For the purpose of this study I will be looking at The Paris Attacks, which is classified as a man-made disaster by Lebringer (1997), which in this case is a terrorist attack (Sellnow *et al.*, 2013, p.6).

Framework: Crisis and Emergency Risk Communication Model

Following disasters in society, including 9/11 and the intentional anthrax contamination of letters in the United States postal system the Crisis and Emergency Risk Communication (CERC) model was developed by the Centers for Disease Control(CDC) and Prevention (Sellnow *et al.*, 2013). The model was developed by CDC mainly to “address the emergency risk communication training needs of the public infrastructure” (p.41). The model approaches crisis as a five stage process: the pre crisis, the initial event, the maintenance, the resolution and the evaluation stage. Although, Spence, Lachlan, Lin & Greco (2015) suggest that Fink’s stage theory approach may be particularly relevant to the study of new technologies, specifically Twitter. But the CERC model will be the theoretical foundation because it has been widely used to assess external crisis, that occurs outside of the control of an organization or entity, like natural disasters and epidemics, and terrorist attacks, and can be easily applied to the Paris Attacks. Also, to my knowledge this is the only crisis communication model that was developed out of inspiration to understand the reactions of a terrorist attack, and how to respond to them.

This study examines how Twitter was used during the November 2015 Paris attacks in correlation to the different stage of the crisis. Using the CERC model, the crisis will be split into the four stages (see Appendix 1) and the tweets sent out during each stage will be separated and analyzed in accordance to the coding categories, to find the major themes of the Tweets sent out during each stage of the crisis. This proposed study will identify the major uses of Twitter during each stage of a crisis, it may ultimately help crisis communication professionals craft their messages and tailor them to the needs of the public. “It will help organize information and streamline priorities and activities during the course of a disaster” (Huang & Xiao, 2015, p. 1549). This study will help communication and public relations professionals to better understand how the public uses Twitter during different stages of a crisis, in return, helping them use Twitter more effectively during times of crisis.

Situation

On Friday November 13th, Paris, experienced a series of attacks by gunmen and suicide bombers at a concert hall, a major stadium, restaurants and bars – all happening almost simultaneously. All of the attacks occurred in areas with high traffic, and were very well known tourist areas. One hundred and 30 people died, hundreds wounded, and more than 100 were in critical condition after the attacks (BBC News, December 2015). "Three coordinated teams" were believed to have been behind the attacks, according to Paris chief prosecutor Francois Molins. “The attacks were described by President Francois Hollande as an "act of war" organized by the Islamic State (IS) militant group” (BBC News, December 2015). The attacks were planned and implemented by The Islamic State of Iraq and the Levant (ISIL). All of the attackers were European Union citizens and who previously fought in Syria. ISIL states that the reasons for the attacks was revenge for the French airstrikes on ISIL targets in Syria and Iraq. They released a statement saying the motive was “to teach France, and all nations following its path, that they will remain at the top of Islamic State’s list of targets, and that the smell of death won’t leave their noses as long as they partake in their crusader campaign” (Fang, 2015).

At 21:20 the first explosion happened at the Stade de France – there was an international football match happening between France and Germany, where the President of Hollande, and the Foreign Minister of Germany were in attendance. At 21:25 a gun attack occurred on Rue Alibert, near the center of town, near popular nightlife spots, where 15 people died at the restaurant and bar, and 15 were severely injured. At 21:32 there was another attack in front of Café Bonne Biere and La Casa Nostria pizzeria in rue de la Fontaine au Roi, just a few streets south of Rue Alibert. At 21:36 there were attacks at La Belle Equipe bar in the rue de Charonne in the 11th district, to the south of the first restaurant attacks, where 19 people died. At 21:40 there was a suicide bomber at Boulevard Voltaire at the restaurant Le Comptoir Voltaire, where one person was severely injured. From 21:40 to 00:20 the biggest attack of the night occurred. It happened at a concert venue, called the Bataclan Theatre with the capacity of 1,500 persons, on Boulevard Voltaire, where the Californian rock band Death Metal was playing a sold out show. Eighty-nine people died and at least 99 others were in critical condition. Following the attacks, the local authorities imposed curfews, and encouraged people to stay inside. The French President announced that the borders were closing, and that the military would be patrolling the streets.

On November 15th, 2015, the French officials coordinated a massive manhunt for the 8th assailant. French military forces launched airstrikes on the Syrian city of Raqqa, where the Islamic State is centered. On November 16th, investigators announced that they believe Abdelhamid Abaaoud, a Belgian national, was the mastermind behind the attacks and joined the Islamic State in Syria. The French and Belgian officials raided the homes of suspected terrorists and make several arrests of people who were involved in the planning of the attacks. Officials announced that they identified five of the seven known assailants. On November 17th, officials announced a manhunt for another possible suspect, while the French military continued airstrikes in Raqqa, resulting in the destruction of post and training camps. On November 18th, the French police raided the Parisian suburb Saint-Denis, to find the attackers. Following a seven hour stand off, two of the suspects were killed and seven other suspects were arrested.

Literature Review

Social Media and Crises

Social media has changed the way the public receives news, and how the public responds to it. News is now on a 24/7 cycle, and within minutes of the occurrence of an event, even if it happens on the opposite side of the world, the news spreads like wildfire, due to advancing technologies and social media platforms, such as Twitter. In times of crisis, such as natural disasters, or human disasters, social media has become a participatory platform where the public receives news and discusses it. “In recent years, social media has evolved from being a passive outlet of information (i.e., disseminating static information on how to prepare for disasters) to an emergency management tool that is capable of distributing real-time warning information, receiving requests for assistance, and establishing situational awareness based on user activities” (Xiao, Huang & Qu, 2015, p. 1664). During the 2007 and 2008 Californian wildfires, the 2008 Mumbai massacre, the 2009 crash of U.S flight 1549, the Haiti earthquake, and the 2011 Tunisian uprising, and most recently the Paris attacks, many quickly turned to Twitter to share information, ask for updates, and look for support (Allameh, 2015).

. In the last few years there has been an increase in the use of cell phones and mobile technology throughout the day, which enables greater levels of connection to people through their posts, discussions, and activities. Due to the successful report of Twitter, even the U.S Federal Emergency Management Agency added Twitter to their national emergency response network (Tynan, 2009). Many findings of crisis research reports that victims avoid mainstream media and actively adopt informal communication channels during social crisis events (Quarantelli & Wenger, 1989). During the 2008 Mumbai terror attack, information spread very quickly through social media, to mainstream media around the world, and local eyewitnesses shared tweets and videos that were used in live TV (Oh, 2013).

Watching the Paris attacks unfold, the same things can be said for this crisis. People from around the world turned to Twitter to read more about the Paris attacks, and to also provide

support for those in Paris affected by the attacks. The hashtag #prayforparis was trending on Twitter after the attacks occurred, with people around the world showing support for the city and its people during a difficult time.

Social media is not only used as a platform to provide support, and to seek information, it is also a platform where individual share their opinions. There are different types of social media tools emerging on a regular basis, creating more platforms for the public to voice their opinions and emotions, which in turn can also lead to new challenges for crisis managers, in terms of how to monitor issues created and disseminated via social media (Jin, Liu, & Austin, 2014, p.41). Jin et al. (2014) findings suggest that organizations no longer have a choice of whether or not to incorporate social media into crisis management anymore, they simply have to. However, Jin et al. (2014) found that only 29 percent of U.S. companies have formal social media policies, indicating that there is a need for more literature to validate the importance of social media in order for crisis managers to create formal social media policies.

Twitter

According to Andrew Nusca (2009), (as cited in Oh, 2009), Twitter launched in 2006 and has experienced approximately 900 percent growth during 2008. According to Smith (2016), there are 320 million people that use Twitter, and there are 100 million daily active Twitter users. Twitter is ranked as one of the top three most used social networks and the fastest-growing member community site in early 2009 (Kazeniak, 2009). The Pew Research Center for the People and the Press (2013) highlights one example: A full one-quarter of Americans turned to Twitter for information concerning the Boston Marathon bombings. According to Goolsby (2009) (as cited in Smith & Rainie, 2010), Twitter is useful to learn about public perceptions. A large aggregate of tweets on the same issue can provide a picture of the publics' opinion.

The Publics' Uses, and Expressed Emotion on Social Media During a Crisis

As well as Twitter being a place to share opinions, DiFonzo and Bordia (2007) conceptualize social media as participatory social reporting, and argues that collective

intelligence and information processing is a way in which users “make sense of, cope with, and adapt to situational and informational uncertainties under crises” (as cited in Oh, 2013, p.24). According to Peck (2012), during a tragedy social media creates a platform within a community to publically share personal understanding of the situation at hand, and allows the community to provide feedback and interact with others. It offers an “immediacy and connectedness among people, providing anticipated and unanticipated benefits and concerns” (p.1). Twitter allows people going through and experiencing the same thing to connect through the social construction of words, pictures, and videos, creating a common bond, “through enabling publics to virtually band together, share information, and demand resolution” (Choi & Lin, 2009; Stephens & Malone, 2009). Through these online conversations, relationships and bonds develop and provide comfort and familiarity. “Real-time interactions replicate someone listening to them, as others lend a sympathetic word” (Peck, 2012, p.8). Choi and Lin (2009) and Kin and Lio (2010), argue that emerging research shows that publics seek out social media because they uniquely provide emotional support during times of crises.

The literature suggests that mainstream media have a tendency to focus in on the sensational aspects of a disaster from only a one perspective, which are highly influenced by cultural and institutional policies (Wenger & Friedman, 1986). Instead of trusting the mainstream media, people often turn to formal or informal social networks to get information to understand what is happening. The more ambiguous and unclear the information content provided by mainstream media is, the more the public will seek communication elsewhere, and share and collaborate with community members (Oh, 2013, p.31). For example, during the 2008 Mumbai tragedy, Twitter and Flickr users generated content that was used as eyewitness account, also known as citizen journalism, and was utilized by mainstream media. This can also be seen during the November 2015 Paris attacks. People that were on the scene of the attacks, were able to take videos, and conduct citizen journalism because they had their smartphones on hand. There were

many news outlets that took photos and information from citizens and used them as their source for the news.

When these unexpected crises occur, it creates collective anxiety, improvised group behavior, and collaboration among the public. A study carried out by Kaufmann (2014) on the Norway attacks in 2011, identified that social media was used not only to access information but it was used as a tool of self care. In addition to studying how self care and governance was a use of social media during the Norway attacks, Kaufmann (2015), also states that it is a place where emotions are expressed and dealt with. It is clear that this is what happened during the November 2015 attacks, as we see the hashtag #PrayforParis emerge, and #PorteOuverte (open doors).

Research Objectives and Question(s)

The purpose of this study is to understand people used Twitter during the November 2015 Paris attacks. By analyzing the tweets sent out at different stages of the crisis, this study looks to understand how over time peoples' use of Twitter may have changed in correspondence with the stage of the crisis. This study will specifically look at:

- The major themes in terms of information related, opinion related, emotion related and action related tweets in correlations to the stage the crisis is at (initial, maintenance, resolution and evaluation)

The main research question for this study is:

- How did people use Twitter during the November 2015 Paris Attacks?

The following are the sub-questions that will be explored:

- Which themes (information related, emotion related, opinion related, technology related, or action related) were most prevalent during each stage of the crisis?
- How did the use of Twitter change over time?

Method, Methodology and Research Design

Sample

Due to the scale of the case chosen to be analyzed, the Paris attacks, it will be a challenge to collect a random sample that is representative of the population. Brynielsson *et al.* study on hurricane Sandy, and Oh O., *et al* (2014) study on the Mumbai bombings encountered this problem as well, especially due to the fact that they were all 7,000 tweets were coded by hand. Many of the studies reviewed in this paper used a social media analytic tool, such as Tweetstream to collect data. This would be ideal, but due to the difficulty in obtaining historical tweets, during specific time frames, I manually collected the data for this study. Oh (2013), conducted a study on the Mumbai terrorist attacks that occurred on November 26, in 2008, and manually collected the data, using a qualitative hand coding method, and removed thematically irrelevant tweets (Oh, 2013, p.38). This study will follow Oh (2013) study and will hand collect the data, but due to time and resource constraints, the sample will be a lot smaller. It was possible for Oh (2013), to collect a larger sample because undergraduate students helped collect the data.

According to Trajkovic, J., (2015), the most used hashtags were #PrayforParis and #ParisAttacks. Instead of only looking at tweets with these hashtags, the study will instead use Twitter advanced search and look at the top tweets with the word “Paris”, as both these hashtags include this word. By searching for posts that contain Paris, rather than searching for tweets with only the hashtag, it does not limit the results, and exclude people that may not have used a hashtag in their tweet.

Using Twitter’s advanced search tool, the top 20 English tweets sent out during each stage of the crisis will be collected. According to the Washington Post, a study conducted by New York University Media and Political Participation (SMaPP) lab, 2,604, 775 tweets were sent out in English within 24 hours of the attacks, which accounts for majority of the tweets.

Data Collection Methods

Heverin (2012) coded the tweets into categories and then used a quantitative analysis. This study will use Heverin (2012) coding scheme, and then analyze the data in a similar way to

Heverin's study. After all the tweets were collected and put into a table using Microsoft Word, they were coded in one of the five categories: information related, opinion related, technology related, emotion related and action related. The number of retweets of each tweet was also recorded. If a tweet fit in both coding categories, it was put into both. The following illustrates examples from the five different coding categories.

- The information related tweets contain any information related to what happened during the attacks, and are purely factual.
 - Information: "BFMTV reports that the siege at the Bataclan concert hall in Paris has ended, leaving two attackers dead"
- The emotion related tweets express how someone is feeling because of the attacks.
 - Emotion: "I thought I had a bad day and then I stopped and realized it was actually great. My heart is breaking for everyone in Paris. #prayforparis"
- The opinion related tweets express what people think about the attacks – like the attacks happened and why.
 - Opinion: "@Tinawanis @RickCanton We seen what they preach. 9/11. Boston bombing. Paris massacre. Beheadings. Pedophilia. Stonings. No thanks."
- The action related tweets contain information that elicit an action.
 - Action: "Anybody who's stranded in Paris and needs shelter and somewhere safe, any Sikh Gurdwara (temple) will be happy to accommodate"
- The technology related tweets contain any reference to technology, like social media sites.

Technology: "Watch to the end to hear why social media cannot help us mourn what happened in #Paris.

[https://www.periscope.tv/w/aR5ZeDFYSmprclpvUIBLTHI8MU1ZR05XQldnWVBKd_RN8xk6YxBBvXEHEsop8V_X8KqnVrQNNovbrB_E3Q18 ...](https://www.periscope.tv/w/aR5ZeDFYSmprclpvUIBLTHI8MU1ZR05XQldnWVBKd_RN8xk6YxBBvXEHEsop8V_X8KqnVrQNNovbrB_E3Q18...)”

- The following is an example of a tweet that fits into two categories, information and opinion.
 - “Truly sad people are only thinking of Paris, 40 people were killed in Beirut, a bomb went off at a funeral in Baghdad and 147 dead in Kenya”

Theoretical Foundation

For the purpose of this study I used a qualitative and quantitative content analysis. The study an existing framework, the CERC, therefore this is a deductive study. In order to organize and make sense of the tweets they first needed to be coded into categories, therefore I used a qualitative content analysis to start. According to Crewsell (2013), “qualitative researchers build their patterns, categories, and themes from the bottom up by organizing the data into increasingly more abstract units of information” (p.234), and this is exactly what I did, coding tweets into information related, opinion related, emotion related, technology related, and action related. To further understand the data, a qualitative analysis was also conducted to understand the top retweeted tweets and what opinions or issues were most prevalent. As I conducted the research and began analyzing, my initial plan shifted, which is very common in qualitative methods, and is known as emergent design. I originally planned to only put tweets into one category and if it fit into more than one category I was going to create another category (ex. Information related and emotion related), instead of putting it into two categories.

So the tweets that fit multiple coding categories, were recorded in both categories, therefore the total number of tweets did not equal the same for each stage of the crisis. A quantitative analysis was used in order to compare the tweets in each category – the percentages for the tweets of each coding category during each stage of the crisis was calculated, and compared. According to Crewsell (2013), “an interpretation in quantitative research means that

the researcher draws conclusions from the results” (p.209), which, as seen below in the analysis the quantitative analysis played a large role in answering the research question for this study.

Ethical Considerations

Although there are no human subjects used in this research there are some ethical considerations. People write and send out tweets for personal use, and do not write tweets for the intention of them being used for research. So, it is important to ensure that the the tweets being used are not linked to the person who wrote them. When collecting the tweets the twitter handles and usernames were not recorded to maintain the confidentiality of these people.

Findings and Discussion

Table 1 shows the top 20 tweets returned from the advanced Twitter search were first coded, and is reflected in the table below.

Table 1 Number of Tweets in Each Coding Category in Each Stage of the Crisis

| Stage of Crisis | Coding Category | | | | |
|-----------------|-----------------|---------|---------|--------|------------|
| | Information | Opinion | Emotion | Action | Technology |
| Initial | 10 | 3 | 6 | 3 | 1 |
| Maintenance | 12 | 6 | 4 | 2 | 0 |
| Resolution | 14 | 6 | 5 | 0 | 0 |
| Evaluation | 15 | 9 | 3 | 0 | 1 |
| Total | 51 | 24 | 18 | 5 | 2 |

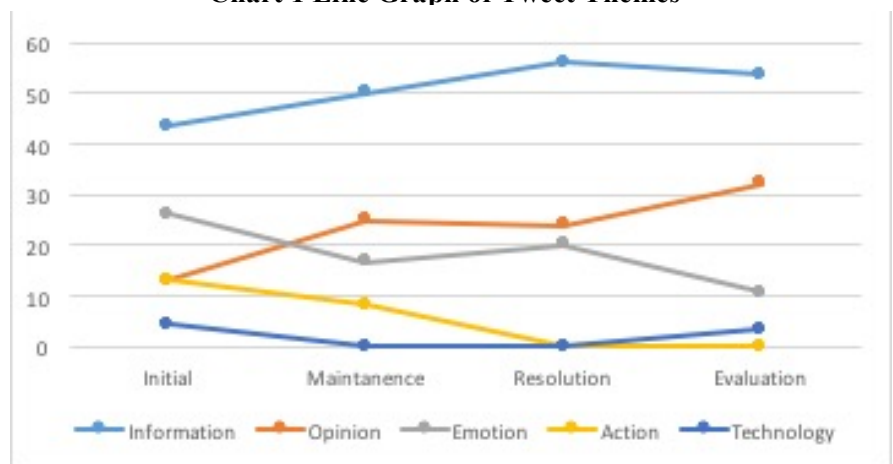
Table 2 Percentage of Tweets in Each Coding Category in Each Stage

| Stage of Crisis | Coding Category | | | | |
|-----------------|-----------------|---------|---------|---------|------------|
| | Information | Opinion | Emotion | Action | Technology |
| Initial | 43.47% | 13.04% | 26.09% | 13.04 % | 4.35% |
| Maintenance | 50% | 25% | 16.67% | 8.33 % | 0% |
| Resolution | 56% | 24% | 20% | 0% | 0% |
| Evaluation | 53.57% | 32.14% | 10.71% | 0% | 3.57% |

Some tweets were coded into more than one category so the number of tweets (Table 1) is put into percentages (Table 2) in order to compare each category. As shown in Table 2 the largest number of tweets are information related. To answer the central research question, the English speaking public's main use of Twitter during the 2015 Paris attacks was information related. Looking at the totals in Table 1, from November 13th until November 18th, the time period the tweets were collected, the majority of tweets were information related, followed by opinion related, emotion related, action related, and then technology related. This data indicates that during the November 2015 Paris attacks the English speaking public mainly used Twitter to find information, and to express their opinions on the crisis. A common theme in the opinion tweets expressed issues of Islamophobia and the lack of coverage in the media of other terrorist attacks occurring at the same time in other cities around the world. This shows that Twitter acts as a platform where users can express their opinions, and find like minded individuals. No longer are they confined by what the media just reports on, enabling the public to be more active audiences. It allows people with similar opinions to come together and discuss feelings and thoughts. As mentioned above in the literature review, it validates how social media is a participatory platform and helps individuals going through the same thing to come together.

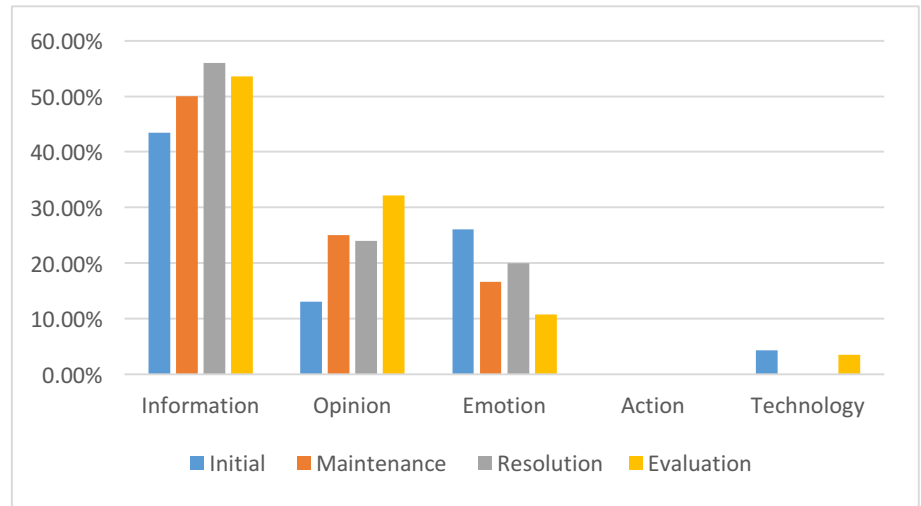
Chart 1 Line Graph of Tweet Themes

Chart1 shows that as the crisis moves into the different stages the amount of information related tweets increase, but as it enters the evaluation stage the number of information tweets decrease. The number of opinion related tweets



increase as the crisis progresses, and has the highest amount during the evaluation stage. This is also the case for Heverin (2012) study: he saw an increase in opinion related tweets as time went on. The least amount of tweets were in the technological related area, which is what was expected considering Heverin found the same results.

Chart 2 Bar Chart of Tweet Themes During Stages of Crisis



Along with collecting the tweets, the number of retweets were also recorded. According to Oh (2013) retweeted messages have more relevant information than non retweeted ones. That is, “the frequency of retweeted messages or its authors can be good proxy measures for informational values or the influence of its authors” (p.68). Therefore, the number of retweets can “identify the emergence of influential ideas which are shared and supported by a multitude of connective online users” (p.68). In each stage of the crisis, three out of the four most retweeted tweets are information related. Heverin (2012) study, found that during the initial stage, tweets were primarily information related. The number of times a tweet is retweeted can be a measure of “popularity” for the message or its author (Oh, 2013, p.67). Although majority of the tweets during the initial stage are information related, as seen in Table 2, the most retweeted, or most popular tweet is opinion related.

Table 3 The Most Retweeted Top Tweets during Each Stage

| | Tweet | Number of times retweeted | Coding Category |
|----------------|--|----------------------------------|------------------------|
| Initial | To people blaming refugees for attacks in Paris tonight. Do you not realise these are the people the refugees are trying to run away from..? | 77,342 | Opinion |

| | | | |
|--------------------|--|--------|----------------------|
| Maintenance | Anybody who's stranded in Paris and needs shelter and somewhere safe, any Sikh Gurdwara (temple) will be happy to accommodate | 14,160 | Information & Action |
| Resolution | The effects the terror attacks are having on commerce in Paris and the eurozone: http://nyti.ms/1N8BY1a | 36 | Information |
| Evaluation | Updated known nationalities of Paris attackers French: 5 Belgian: 1 Syrian: 0 http://www.nytimes.com/interactive/2015/11/15/world/europe/manhunt-for-paris-attackers.html?rref=collection/newseventcollection/attacks-in-paris&action=click&contentCollection=europe&region=rank&module=package&version=highlights&contentPlacement=2&pgtype=collection ... | 2,855 | Information |

Limitations and Future Research

The biggest limitation of this study is the lack of resources. Without enough time and money to purchase more advanced social media data analysis software, I was unable to collect a very large sample. So although the results showed some very interesting results, in order to draw any concrete conclusions from the study, further research must be conducted. Although the majority of the tweets sent out during the attacks were in English, it does not truly represent the global population that uses Twitter, and therefore the results only reflect the English speaking parts of the world. This creates an opportunity for future research to study whether or not the dominant themes expressed through the English tweets are the same as expressed in other languages and countries around the world. It also opens up the opportunity to research how the publics in different countries received and reacted to the Paris attacks via Twitter. Another implication is that not all tweets on Twitter are accessible to the public, some users have private accounts, and therefore their tweets are not able to be a part of the study which may have impacted the results. Like Heverin (2013) said, there needs to be more studies on a range of different crisis to truly understand how people use social media during a crisis. Further research on other crisis, not only man made crises, will help contribute to crisis communication literature, and help communication professionals understand how people use social media during a crisis,

and in turn tailor their crisis communication plans to the needs of the publics.

Appendix 1: Framework

| | Definition | Application |
|--------------------------|--|--|
| Initial Stage | the trigger of the crisis, when the crisis first emerges, where the communication emphasizes the uncertainty reduction by reassuring the public and offering strategies of self efficacy | The first explosion happened at the Stade de France. Collect tweets from the moment the first explosion, happening at 21:20 on November 13 th . |
| Maintenance Stage | One must continue uncertainty reduction and reassurance, and tell people what they should do. | The French President announced that it was closing its borders and that the military were taking the necessary measures and would be patrolling the streets. Collect tweets sent out after all attacks occurred, on November 14 th , after 00:20 until the end of the day on November 14 th . |
| Resolution Stage | During the resolution stage the public should continue to receive updates about the resolution of the crisis, and what is being done to get to the root cause of the issue. Normally the resolution stage offers insight into new risk understandings how to avoid and handle similar crisis in the future | On November 15 th , 2015, the French officials coordinate a massive manhunt for the 8 th assailant. French military forces launch airstrikes on the Syrian city of Raqqa, where the Islamic State is centered. The French police raid the Parisian suburb Saint-Denis, to find where the attackers were said to be hiding. Following a seven-hour stand off, two of the suspects were killed and seven other suspects were arrested (Fang, 2015). All people that died in the attacks have finally been identified. Collect tweets from beginning of the day on November 15 th until end of November 18 th . |
| Evaluation | The final stage is the evaluation stage, where the crisis is debated and lessons learned are discussed | Collect tweets from 19 th , until the end of the day on November 20 th . |

References

- Allameh E.M. (2015). Analyzing Emotions on Twitter During the 2014 Purdue University Shooting Crisis. Master of Science. Purdue University.
- Brynielsson, J., Johansson, F., Jonsson, C., & Westling, A. (2014). Emotion classification of social media posts for estimating people's reactions to communicated alert messages during crises. *Security Informatics*, 3(1), 1-11.
- Choi, Y., & Lin, Y.-H. (2009). Consumer responses to Mattel product recalls posted on online bulletin boards: Exploring two types of emotion. *Journal of Public Relations Research*, 21(2), 198-207.
- Davis, E. F., Alves, A. A., & Sklansky, D. A. (2014, March). *Social media and police leadership: Lessons from Boston*.
- DiFonzo, N., and Bordia, P. (2007). "Rumor Transmission," in: *Encyclopedia of Social Psychology*, R.F. Baumeister and K.D. Vohs (eds.), Thousand Oaks, CA: Sage.
- Fang, M. (2015). Timeline of the Paris attacks and aftermath. The Huffington Post. Retrieved from http://www.huffingtonpost.com/entry/paris-attacks-timeline_us_56490a09e4b0603773499133.
- Fink, S., & American Management Association. (1986). *Crisis management: Planning for the inevitable*. New York, NY: American Management Association.
- Heverin, T., & Zach, L. (2012). Use of microblogging for collective sense-making during violent crises: A study of three campus shootings. *Journal of the American Society for Information Science and Technology*, 63(1), 34-47
- Huang, Q., & Xiao, Y. (2015). Geographic Situational Awareness: Mining Tweets for Disaster Preparedness, Emergency Response, Impact, and Recovery. *ISPRS International Journal of Geo-Information IJGI*, 4(3), 1549-1568.

Janssen, M., Lee, J., Bharosa, N., and Cresswell, A. (2010). "Advances in Multi-Agency Disaster Management: Key Elements in Disaster Research," *Information Systems Frontiers* (12) 1), 1-7.

Jin, Y, Fisher Liu, B, and Austin, L., (2014). Examining the Role of Social Media in Effective Crisis Management: The Effects of Crisis Origin, Information Form, and Source on Publics' Crisis Responses. *Communication Research* 41(1), 74-94.

Kaufmann, M. (2015). Resilience 2.0: Social media use and (self-)care during the 2011 Norway attacks. *Media, Culture & Society*, 37(7), 972-987.

Kazeniak, A. (2009, February 9). Social networks: Facebook takes over top spot, Twitter climbs.

Mileti, D.S., and Darlington, J.D. (1997). "The Role of Searching in Shaping Reactions to Earthquake Risk Information," *Social Problems* (44:1), pp. 89-103.

Mills, A., Chen, R., Lee, J., & Rao, H. R. (2009). Web 2.0 Emergency Applications: How Useful Can Twitter be for Emergency Response? *Journal of Information Privacy and Security*, 5(3), 3-26. doi:10.1080/15536548.2009.10855867

Oh, O., Rao, H., Kishore, Rajiv, Smith, Sanjukta, & Upadhyaya, Shambhu. (2013). *Three Essays on the Role of Social Media in Social Crises: A Collective Sensemaking View*, ProQuest Dissertations and Theses.

Paris Attacks: What happened on the night. (2015, November 21). *BBC News*. Retrieved from: <http://www.bbc.com/news/world-europe-34818994>

Patric R. Spence, Kenneth A. Lachlan, Xialing Lin & Maria del Greco (2015) Variability in Twitter Content Across the Stages of a Natural Disaster: Implications for Crisis Communication, *Communication Quarterly*, 63:2, 171-186

Peck, D. S. (2012). *Constructing meaning amidst tragedies within social media groups*. Doctor of Philosophy in Psychology, Fielding Graduate University. Retrieved

- from <http://ezproxy.msvu.ca/login?url=http://search.proquest.com.ezproxy.msvu.ca/docview/1009710172?accountid=12617>
- Sellnow, T., & Seeger, M. (2013). *Theorizing Crisis Communication*. Chichester, West Sussex: Wiley-Blackwell.
- Shibutani, T. 1966. *Improvised News: A Sociological Study of Rumor*, Indianapolis: The Bobbs-Merrill Company INC.
- Smith, C. (2016, February 26). 170 Amazing Twitter Statistics. Retrieved February 29, 2016, from <http://expandedramblings.com/index.php/march-2013-by-the-numbers-a-few-amazing-twitter-stats/>
- Stephens, K. K., & Malone, P. (2009). If the organizations won't give us information . . . : The use of multiple new media for crisis technical translations and dialogue. *Journal of Public Relations Research*, 21(2), 229-239.
- Trajkovic, J. (2015). Analysis of twitter hastags following the Paris attacks. Retrieved from <https://public.tableau.com/s/gallery/analysis-twitter-hashtags-following-paris-attacks>
- Tynan, D. (2009) *Twitter added to federal emergency response network*.
<http://www.infoworld.com/d/adventures-in-it/twitter-added-federal-emergency-response-network-719>
- Veil, S. R., Buehner, T., & Palenchar, M. J. (2011). A Work-In-Process Literature Review: Incorporating Social Media in Risk and Crisis Communication. *Journal of Contingencies and Crisis Management*, 19(2), 110-122.
- Wenger, D., and Friedman, B. (1986). "Local and National Media Coverage of Disasters: A Content Analysis of the Print Media's Treatment of Disasters Myths," *Journal of Mass Emergencies and Disasters*, 4 (3), 27-50.

Xiao, Y., Huang Q., Qu, W. (2015). Understanding social media data for disaster management. *Natural Hazards*. 79 (1). 1663-1679.