

The sculpture of tick-borne disease media coverage in the United States and China

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Abstract

Media's ability to enhance the salience of certain topics for the public and affect governmental policy-setting processes is widely recognized. This is particularly evident in health communication, where newspapers are one of the most important sources of health information. This study compares media depictions of tick-borne disease in the United States and China. Both countries are experiencing an increase in tick-borne diseases and have vastly different media landscapes. To investigate US and Chinese newspaper coverage of tick-borne diseases, a content analysis was conducted of four US and four Chinese newspapers. The analysis considered length, tone, chief actors, and themes present in articles covering tick-borne diseases from 2010-2015. The findings reveal significant differences between the two nations on length of the articles, chief actors portrayed in the articles, and themes present in the articles. The data also show: tick-borne disease stories were overwhelmingly framed in a neutral way in both nations; newspapers in the US featured more celebrity-related stories compared to newspapers in China; and US stories as opposed to those in China focused more on health policies.

Keywords: *Agenda setting, health care, content analysis, Lyme disease*

Introduction

The ability of media to enhance the salience of certain topics for the public and affect governmental policy-setting processes is widely recognized. Thus, media is often employed as a tool to disseminate health information and educate the public about salient health issues (Feeley, O'Mally, & Covert, 2016). Culture as a factor is receiving more and more scholarly attention in health communication research. There has been a significant increase in studies showing media landscapes are vastly different in different countries. Culture not only influences how health news are reported in media, but also how the public responds to the news. The media differences are particularly evident between the US and China. Cross-cultural media research has found significant differences between the US and China in terms of reporting on key public issues, such as disasters (He & Tiefenbacher, 2015), censorship (Chun & Mastin, 2014), war (Jin, 2008), climate change (Xie, 2015), and health/medical issues (Peng & Tang, 2010). These differences in news coverage are rooted in the media system discrepancies between two nations. The media system in the US is primarily market driven while the media system in China is relatively closed and heavily influenced by the party and governmental forces.

Both the US and China are experiencing a significant increase in tick-borne diseases, it is thus crucial to explore the difference in newspaper coverage of tick-borne disease in the US and China. The current study aims to compare media depictions on one salient health issue: tick-borne diseases (such as Lyme disease or neuroborreliosis). Specifically, this study compares media depictions of tick-borne diseases in the United States and China. Lyme disease is a multisystem illness caused by *Borrelia burgdorferi*, a member of the spirochaetes family of bacteria, mostly prevalent among children aged 2 to 15 and adults aged 30 to 59 years of age (Marques, 2010). Early diagnosis is crucial; otherwise the disease can cause serious damage to the heart and nervous system (Depietropaolo, Powers, Gill, & Foy, 2005). However, there is debate over the long-term effects of the disease. In recent years, tick-borne diseases have received more attention due to the rising number of global cases (de Carvalho & Nuncio 2006; Hinckley, Connally, Meek, Johnson, Kemperman, Feldman, White, & Mead, 2014; O'Connell, Granström, Gray, & Stanke, 1998), and rising societal burden (Adrion et al., 2015; CDC 2013).

Agenda setting in the health context

Agenda setting as a concept was originally introduced to explain the influence of news media on public opinions (McCombs & Shaw, 1972). During the last four decades, two levels of agenda setting have received significant attention (Luo, 2013). The first level of agenda setting focuses on the transfer of the salience of issues (the "objects") from media agenda to public agenda, whereas the second level of agenda setting argues the salience of attributes of issues (the "attributes") can also be transferred from media agenda to public agenda. In this sense, media not only tell people what to think about but also how to think about it (McCombs, 2005). Despite the similarity, scholars typically consider the second level of agenda setting as different from framing as frames can be seen as one attribute and not all attributes are frames (McCombs, 2005). In an attempt to build on the existing two levels of agenda setting, Lei, Hong Tien, and McCombs (2012) explored the third level of agenda setting by developing the Network Agenda Setting Model, which argues "news media can bundle different sets of objects or attributes and make these bundles of elements salient in the public's mind simultaneously" (p. 15). Agenda-setting effects on issues of immigration, several days of time lag of agenda-setting effects on issues of health care and taxes, and no agenda-setting effects on abortion issues. Soroka (2002) argued issues are likely to have more intensive agenda-setting effects when they 1) affect a minority group, 2) have been significantly covered over a short time-frame, 3) are concrete instead of abstract, and 4) are dramatic. In addition to the difference of agenda-setting effects among different issues, individuals also respond to media agenda differently. People with higher need for orientation are more likely to be influenced by the media agenda (McCombs & Shaw, 1972).

Historically, the focus of the agenda-setting research has been placed on political issues (Ogata Jones, Denham, & Springston, 2006). As the influence of media on public opinions became more and more apparent, scholars have started to apply agenda-setting theory to study

other issues, including health-related behaviors (Ogata Jones et al., 2006). Media as a powerful tool of reaching the public has been widely used in health campaigns. Health information disseminated in mass media educates the public and raises awareness of certain diseases, conditions, and health risk factors. Various media campaigns on public health issues such as obesity, smoking, alcohol, and drug use, as well as STD/AIDS were witnessed worldwide (Apollonio & Malone, 2009). Media campaigns have been confirmed effective in terms of promoting healthy behaviors. For example, a campaign called “Hombres Sanos” was launched to promote health sexual behaviors among bisexual Latino men in the US in 2006. 87% of the target audience reported exposure of the campaign. In addition, out of the exposed audience, 20% stated they have started to use condoms and another 20% have sought an HIV or STI test (Martinez-Donate, Zellner, Sañudo, Fernandez-Cerdeño, Hovell, Sipan, & ... Carrillo, 2010).

Cultural differences in health reporting between US and China

Both similarities and disparities are apparent between US and China in terms of how health-related stories are covered in mass media. Most citizens from both nations claimed mass media serve as their main source of health-related information (Brodie, Hamel, Altman, Blendon, & Benson, 2003; Liu, Yao, Lin, Jia, & Zhang, 2003). In both countries, the first, second, and third most covered diseases in newspapers were cancer, mental illnesses, and heart/cardiovascular diseases (Tang & Peng, 2015). In both US and Chinese newspapers, the coverage of diseases is more related to their mortality rates rather than incidence rates (Adelman & Verbrugge, 2000). Health problems of high mortality and morbidity in China received significant coverage in newspapers (Peng & Tang, 2010). Certain diseases such as AIDS and other sexually transmitted diseases (STDs) have been receiving significant coverage in US for years, however are underreported in China (Yu, 2006).

Culture differences between the US and China are also manifested in the health reporting styles. Studies in health communication have explored national cultural differences in health reporting. In particular, three cultural dimensions of Hofstede (2001): *individualism/collectivism*, *long- and short-term orientation*, and *power distance* have been used to explore the cross-cultural differences in health reporting. The dimension *individualism/collectivism* has been associated with controllable/uncontrollable attribution (Leigh & Choi, 2007; Tang & Peng, 2015). Controllable attribution refers to individual’s likelihood to attribute a health condition to causes that individuals can control, such as dietary choices and excises. On the contrary, uncontrollable attribution denotes one’s tendency to attribute a health condition to uncontrollable causes such as the genetics and the environment (Kim & Willis, 2007). Previous studies show people from individualist cultures are more likely to make controllable attributions, whereas people from collectivistic cultures tend to attribute diseases or risk factors to uncontrollable causes (Leigh & Choi, 2007; Miller, Fellows, & Kizito, 2007). An explanation proposed by the authors is that people from collectivistic cultures tend to make uncontrollable attributions to avoid blaming each other to maintain group harmony. In health communication, *long- and short term orientation* has an impact on individual’s perception of long-term or immediate consequences of their health-related behaviors. Cheong, Kim, and Zheng (2010) found Chinese newspapers are more likely to discuss long-term prevention methods in health reporting than US newspapers. In term of the impacts of *power distance* on health reporting, cultures are characterized by high power distance are more likely to cite sources with legitimate authority. In this sense, sources of legitimate authority tend to be considered more credible and thus more frequently cited in Chinese newspapers (Perea & Slater, 1999).

Tick-borne diseases news coverage

A specific health topic can be disseminated in various ways, which may have different public influences (Peng & Tang, 2010). This is particularly evident in a global context. Presenting detrimental risks to public health, tick-borne diseases have garnered much attention recently due to increasing incidences worldwide, and to increasing global health costs (Xian-Bo, Ren-Hua, Shan-Shan, Jin-Song, & Hong-Juan, 2013). The epidemiology of tick-borne diseases, including host availability, vector abundance, and pathogen transmission, is closely associated with various environmental factors (Robinson, Neitzel, Moen, Craft, Hamilton, Johnson, & ... Pelican, 2015). The US and China suffer greatly from tick-borne diseases due to their large geographic territories, diverse landscapes, and climate conditions (Robinson et al., 2015; Xian-Bo et al., 2013). Mass media has been employed to aid in dissemination of information about tick-borne diseases in both nations. However, the media coverage on tick-borne diseases, a major role in informing the public and policy makers, and facilitating public opinions about the diseases, has not been studied. In the present study, we are interested in examining and comparing the newspaper coverage of tick-borne disease in the US and China to gain a greater understanding of how the media in both nations influence people’s knowledge about tick-borne diseases. Following a framework developed by Iyengar (1997), and adapted by Collins Abelson, Pyman, and Lavis (2006), we explore the representation of tick-borne diseases in US and Chinese newspapers. Specifically, we pose the following three research questions:

RQ1: In what way does the tone of US and Chinese coverage of tick-borne disease differ?

RQ2: Who are the key actors discussed in US and Chinese newspaper articles about tick-borne diseases from 2010-2015?

RQ3: What are the key tick-borne disease themes discussed in US and Chinese newspapers from 2010-2015?

Method

Quantitative content analysis was applied in this study. To find the most current pattern of tick-borne diseases coverage in the US and China, news articles from January 2010 to August 2015 were analyzed. The key words for article selection were: tick, tick-borne diseases, Borrelia, and Lyme. Articles that contained any of the aforementioned key words were included in the analysis.

Newspaper selection

The four newspapers from the US selected for this study were: *Los AngelesTimes* (LAT), *The Washington Post* (WP), *The Wall Street Journal* (WSJ), and *The New York Times* (NYT). The NYT along with and the WP are major national newspapers (Weber, 2014) and the WSJ has the highest circulation in the US (Top ten, 2014). The LAT is a prominent daily on the west coast (Haigh, 2014). These four newspapers are also among the top 5 high circulation dailies in the US (Top ten, 2014). However, these dailies have different policies and ideologies in dealing with news stories. While the NYT has a more liberal attitude in dealing with issues such as environmental problems

(Castilla, Rodríguez, & Quesada, 2014), the WSJ takes a more conservative ideology, publishes op-eds skeptical of global warming for example (Cook, et al, 2013). The WP also has a conservative approach (Porpora, Nikolaev, & Hagemann, 2010). The LAT is an influential and prominent newspaper with a more moderate approach (Peng, 2004).

Two kinds of media co-exist in China: state-controlled “party organs” and “market-oriented ‘mass appeal media’” (Chan, 2003). Historically, all Chinese newspapers were owned and controlled by Chinese government. Commercial newspapers started to emerge three decades ago at the end of China’s planned economy era, which are responsible for their own profits and losses. Today, national newspapers in China are typically state-controlled, conservative, and serve as the mouthpiece for the ruling Party. On the other hand, local commercial newspapers have more autonomy over their contents and are generally more diverse and assertive (Massey & Luo, 2005). To examine representative newspapers in China, two national newspapers, *People’s Daily* (PD) and *China Youth Daily* (CYD), and two local daily newspapers, *Bandao Metropolis Daily* (BMD) and *Yangtse Evening News* (YEN). PD, one of the world’s top 10 most circulated newspapers, serves as a leading key conduit of official interpretations of political, economic, social, and cultural events in China (Fu, Zhang, Chan, & Burkhart, 2012; Lynch, 1999). CYD is the first for-profit governmental newspaper and its daily circulation exceeds one million in over 40 countries and regions (China Youth Daily Blog, 2005). BMD is the most influential newspaper in Northeast China with a circulation of 1.15 million in 2012 (Bandao News, 2012). In 2010, YEN had a daily circulation of 1.74 million, which was the fourth largest among Chinese newspapers (Yangtse Evening News, 2010).

Coding of articles

Coder training and intercoder reliability

Three coders were working in two teams separately coding newspapers from the US and China. The same coding schema was applied both for the Chinese and US newspaper articles. The first author was involved in both teams to ensure congruity in the coding process. The coding protocol was developed from two rounds of pilot tests. Cohen’s kappa (κ) was used to assess intercoder reliability, $\kappa = .84$ and $.81$ for coding the US and Chinese newspapers. All discrepancies were discussed and resolved among coders. Each article was coded to assess agenda setting, informer, and framing effects. To accomplish this, all articles were coded on the following basis: date, length of article, tone of article, main actors in article, and theme of article.

Article tone

Article tone was determined according to how tick-borne disease stories were framed. Articles with a positive tone typically reported successful control of an outbreak of tick-borne diseases or breakthroughs in diagnosing or treating tick-borne diseases. Articles for example raising criticism against the health system or government policies on tick-borne diseases were coded as having a negative tone. Articles that did not clearly employ a positive or negative tone were coded as neutral.

Key actors

The key actor in each article was based on the key individual(s) who were the focus of the article. The key actor was coded based on the following: medical, government, celebrity, public, and other. The most prominent actor in the article would be coded when multiple actors were mentioned.

Table 1: Article Characteristics by Newspaper

| | LAT | WPS | WSJ | NYT | US Total | PD | CYD | PMD | YEN | China Total |
|----------------------------|--------|--------|--------|--------|----------|---------|---------|---------|---------|-------------|
| Number of articles | 27 | 185 | 57 | 99 | 368 | 388 | 85 | 66 | 20 | 561 |
| Average length of articles | 852.48 | 991.37 | 912.61 | 890.56 | | 1101.37 | 1427.36 | 1305.50 | 1246.50 | |
| Tone | | | | | | | | | | |
| Positive | 2 | 3 | 3 | 3 | 11 | 27 | 1 | 1 | 0 | 29 |
| Negative | 7 | 12 | 10 | 5 | 34 | 21 | 6 | 0 | 0 | 27 |
| Neutral | 18 | 170 | 44 | 91 | 323 | 340 | 78 | 65 | 20 | 503 |
| Key actors | | | | | | | | | | |
| Government | 7 | 61 | 10 | 8 | 86 | 32 | 35 | 24 | 2 | 93 |
| Medical | 8 | 62 | 23 | 42 | 135 | 316 | 22 | 24 | 9 | 371 |
| Celebrity | 10 | 19 | 4 | 27 | 60 | 7 | 0 | 0 | 1 | 8 |
| Public | 0 | 1 | 0 | 5 | 6 | 3 | 25 | 16 | 7 | 51 |
| Other | 2 | 42 | 20 | 17 | 81 | 30 | 3 | 2 | 1 | 36 |

Themes

Articles were inductively coded into 13 categories/themes based on the emergent content within the articles (Neuendorf, 2002). Codes were based on: (1) diagnosis, (2) what is Lyme and how to protect yourself, (3) celebrity with Lyme, (4) health and government policies, (5) notices of Lyme spreading, (6) passing mention of Lyme, (7) climate and Lyme, (8) animals (not pets) that carry Lyme, (9) pets with Lyme, (10) metaphors and similes about Lyme, (11) pesticides to kill ticks, (12) official (government and health etc.) misconducts, and (13) ways to profit from tick-borne diseases. The ordering of the themes is not related to the significance of the themes. See Table 1 for further information regarding article characteristics by newspaper.

Table 2: Themes

| | LAT | WPS | WSJ | NYT | US Total | PD | CYD | PMD | YEN | China Total |
|--|-----|-----|-----|-----|----------|-----|-----|-----|-----|-------------|
| Diagnosis | 4 | 18 | 11 | 8 | 41 | 2 | 2 | 0 | 0 | 4 |
| What is Lyme and how to protect yourself | 4 | 14 | 3 | 4 | 25 | 257 | 49 | 51 | 14 | 371 |
| Celebrity with Lyme | 7 | 18 | 4 | 27 | 56 | 6 | 0 | 0 | 1 | 7 |
| Health and Government policies | 3 | 32 | 4 | 6 | 45 | 0 | 0 | 0 | 0 | 0 |
| Notice of Lyme spreading | 1 | 9 | 3 | 6 | 19 | 10 | 14 | 1 | 1 | 26 |
| Passing mention | 4 | 41 | 14 | 19 | 78 | 7 | 6 | 0 | 0 | 13 |
| Climate and Lyme | 0 | 1 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 |
| Animals (no pets) that carry Lyme | 0 | 37 | 11 | 22 | 70 | 12 | 0 | 0 | 0 | 12 |
| Pets and Lyme | 0 | 6 | 0 | 3 | 9 | 12 | 4 | 4 | 4 | 24 |
| Metaphors and Similes | 1 | 2 | 0 | 2 | 5 | 2 | 1 | 0 | 0 | 3 |
| Pesticides to kill ticks | 0 | 5 | 3 | 0 | 8 | 63 | 4 | 9 | 0 | 76 |
| Official misconducts | 0 | 0 | 0 | 0 | 0 | 14 | 4 | 0 | 0 | 18 |
| Way to profit from tick-borne diseases | 3 | 2 | 4 | 0 | 9 | 3 | 1 | 1 | 0 | 5 |

Results

Statistical Analysis

Based on the newspaper and article selection criteria, relevant articles were chosen and coded. All relevant articles were entered into and analyzed in SPSS version 22. Statistical analysis included frequency distributions, independent samples *t*-tests, and Pearson's chi-square analyses.

Quantity of Coverage

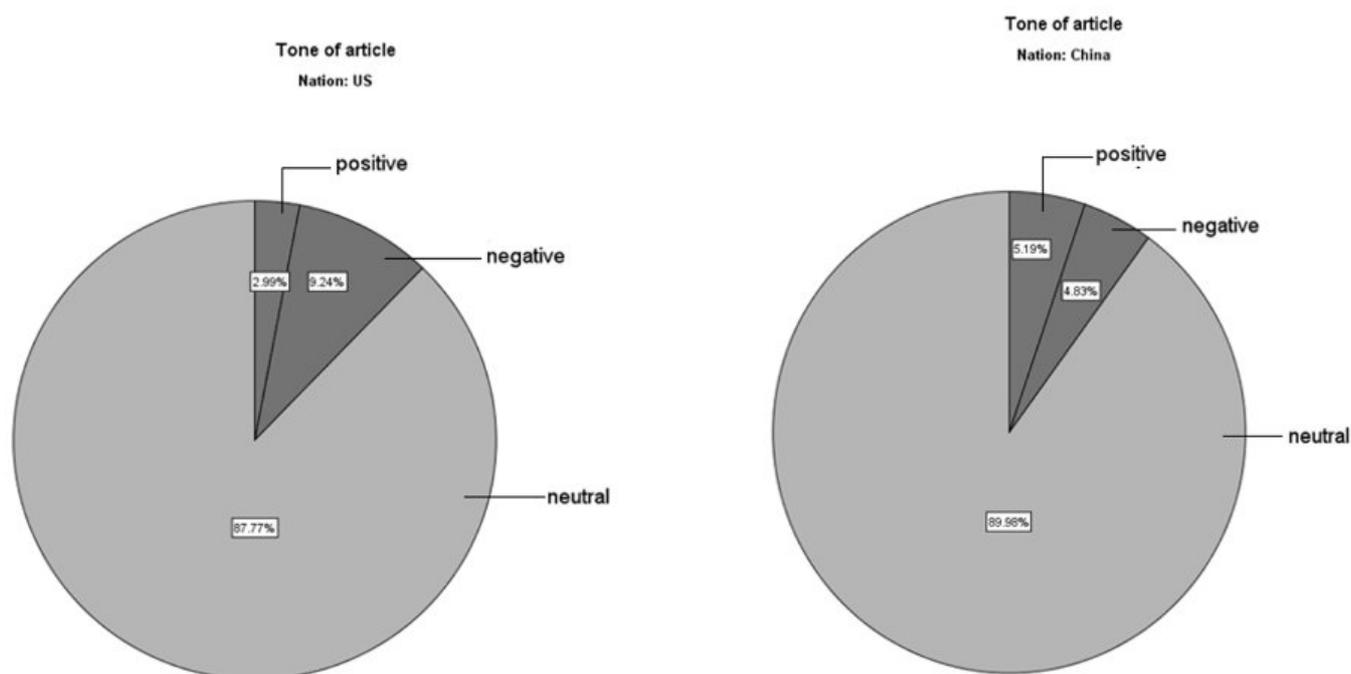
To analyze informer and agenda setting effects, differences in the quantity of coverage between the US and China was examined. There was a significant difference in the quantity of coverage between the two nations, with China ($n = 559$) having significantly more articles than the US ($n = 368$); $t(925) = -48.45, p < .0001$. Chinese newspaper articles ($M = 1180.57$; $SD = 1008.71$) had significantly more words than US produced newspaper articles ($M = 925.97$; $SD = 688.75$); $t(925) = -4.24, p < .0001$.

Article Tone

To assess framing effects, the tone of the coverage in the articles was explored. Articles were coded as having either: positive, negative, or a neutral tone regarding tick-borne diseases. In China, the tone was overwhelmingly neutral ($n = 503, 90.0\%$), as opposed to positive ($n = 29, 5.2\%$), or negative ($n = 27, 4.8\%$); $\chi^2(2) = 807.26, p < .0001$. In the US, the tone was also overwhelmingly neutral ($n = 323, 87.8\%$), as opposed to positive ($n = 11, 3.0\%$), or negative ($n = 34, 9.2\%$); $\chi^2(2) = 492.92, p < .0001$. There was a significant difference between the two nations on tone, and thus framing; China had a statistically higher percentage ($n = 29, 5.2\%$) of articles take a positive tone, as opposed to US articles ($n = 11, 3.0\%$); $\chi^2(2) = 9.16, p < .01$.

Analyzing article tone distribution across the newspapers revealed vast differences. Differences in article tone between Chinese and US newspapers are visually represented in Figure 1. In China there was a significant difference in how tone was distributed/discussed in the four papers, with the People's Daily being the only paper to significantly frame tick-borne diseases in a neutral ($n = 340, 87.4\%$), negative ($n = 21, 5.4\%$), and positive ($n = 27, 6.9\%$) light; $\chi^2(6) = 9.94, p < .01$. In the US, there was not a significant difference in tone distribution.

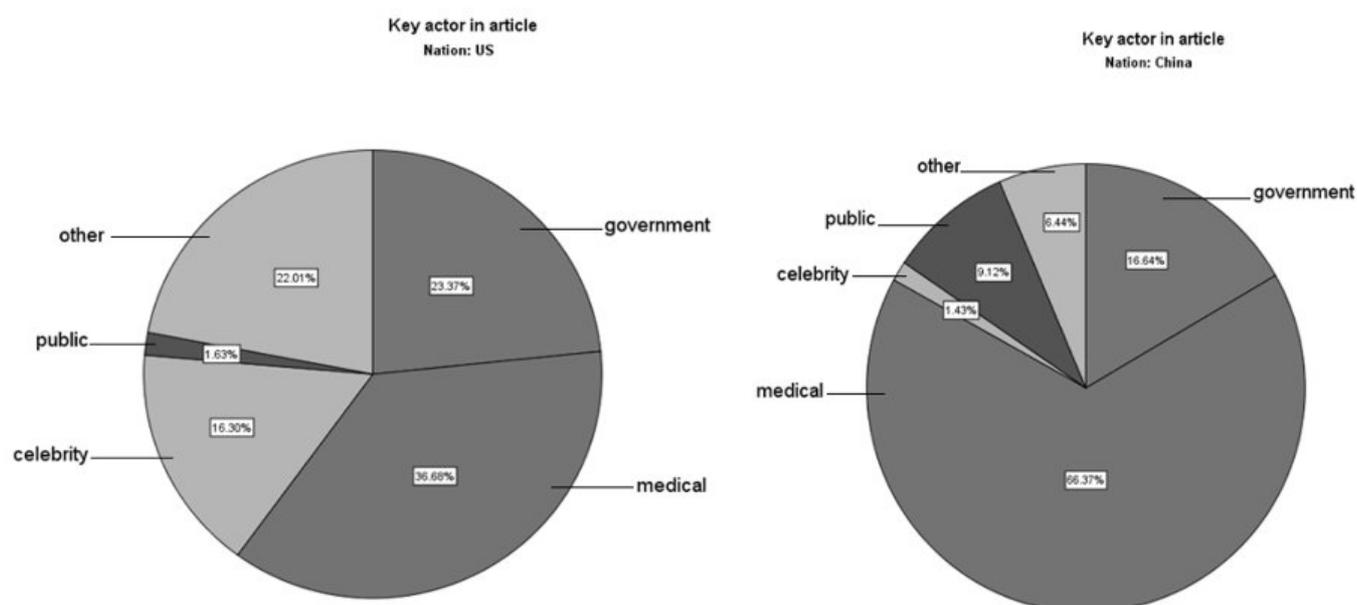
Figure 1: Tone of articles in the US and China



Article Themes

Framing effects were also assessed through exploring the themes that emerged from the coded articles. Differences in emergent themes between Chinese and US newspapers are visually represented in Figure 2. In the Chinese articles, 11 themes emerged, with one theme covering the overwhelming majority of the articles: what is Lyme and how to protect yourself ($n = 371$, 66.4%). The remaining 10 themes accounted for 33.6% of the articles, with one theme not emerging in the US articles but only in the Chinese newspapers, government/official misconduct ($n = 18$, 3.2%); pesticides ($n = 76$, 13.6%), notifications about disease spread ($n = 26$, 4.7%), pets and Lyme ($n = 24$, 4.3%), passing mention of tick-borne disease ($n = 13$, 2.3%), animals (not pets) that carry Lyme ($n = 12$, 2.1%), celebrities with Lyme ($n = 7$, 1.3%), ways to profit from Lyme ($n = 5$, 0.9%), diagnosis ($n = 4$, 0.7%), and metaphors and similes about Lyme ($n = 3$, 0.5%). In the US articles, 12 different themes emerged, which covered a broad spectrum of issues: passing mention of tick-borne disease ($n = 78$, 21.2%), animals (not pets) that carry Lyme ($n = 70$, 19%), celebrities with Lyme ($n = 56$, 15.2%), health and governmental policies about Lyme ($n = 45$, 12.2%), diagnosis ($n = 41$, 11.1%), what is Lyme and how to protect yourself ($n = 25$, 6.8%), notifications about disease spread ($n = 19$, 5.2%), pets and Lyme ($n = 9$, 2.4%), ways to profit from Lyme ($n = 9$, 2.4%), pesticides ($n = 8$, 2.2%), metaphors and similes about Lyme ($n = 5$, 1.4%), and climate and Lyme ($n = 3$, 0.8%).

Figure 2: Key actors in articles in the US and China

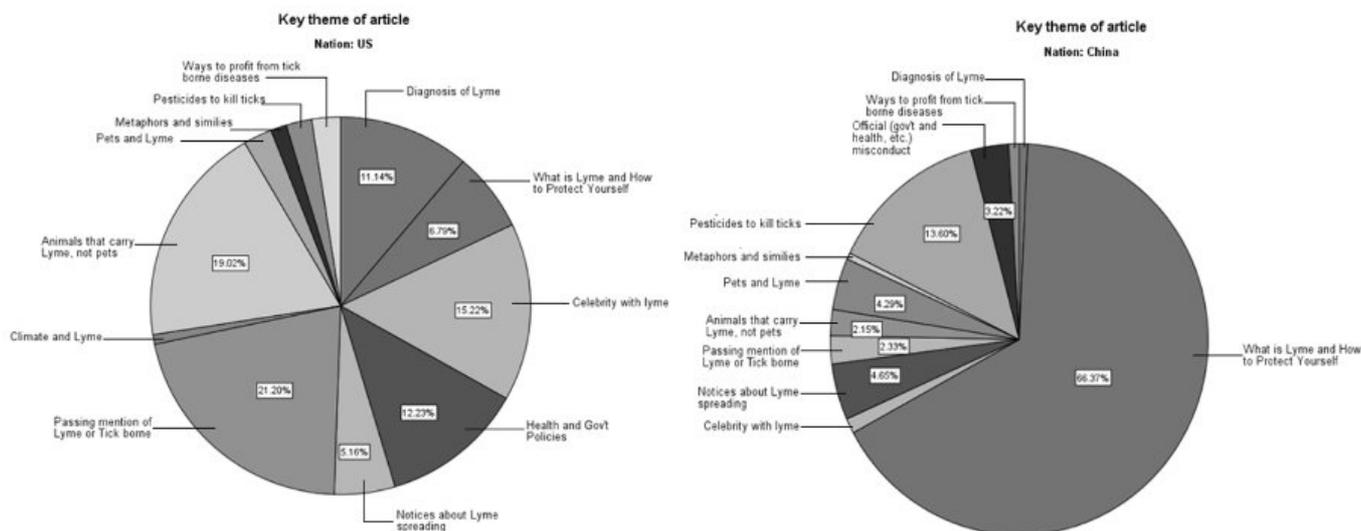


Key Actors

To address the key persuaders, or agenda setters, the key actors in the articles were examined. Differences in the key actors represented in Chinese and US newspapers are visually represented in Figure 3. In the Chinese newspaper articles there was a significant difference in

the frequency of key actors represented, with one group dominating the coverage: medical/scientific ($n = 371, 66.4\%$); $\chi^2(6) = 784.93, p < .0001$. While in the US newspaper articles there was a significant difference in the frequency of key actors represented, with three categories of actors representing statistically similar numbers: medical/scientific ($n = 135, 36.7\%$), governmental officials ($n = 86, 23.4\%$), and other, like insurance ($n = 81, 22\%$); $\chi^2(4) = 118.66, p < .0001$. In comparing US and Chinese newspapers, the key actors differed in three ways. First, Medical/scientific actors ($n = 371, 66.4\%$) were more prevalent in Chinese newspapers than in US newspapers ($n = 135, 36.7\%$). Second public/private citizens ($n = 51, 9.1\%$) were more prevalent in Chinese newspapers than in US newspapers ($n = 6, 1.6\%$).

Figure 3: Key theme of the articles in the US and China



Discussion

One finding of this study is that tick-borne disease stories were overwhelmingly framed in a neutral way in both the US and China. This is hardly surprising as disseminating health information in a negative way might create fear, cause patients to lose hope, and discourage them from seeking further information (Brashers, Goldsmith, & Hsieh, 2002). Thus, reporting health issues with a neutral tone could be a universal phenomenon. In addition, national characteristics may also contribute to the usage of neutral and positive frames in health reports. For example, the fact that China has experienced severe public panics caused by health crises may further discourage the use of negative tones in Chinese newspapers. During the Severe Acute Respiratory Syndrome (SARS) crisis in 2003, excessive media coverage on SARS stirred up public anxiety across China. It was rumored that a traditional herb called Ban lan gen is “the magic remedy” for SARS. Panic buying and hoarding of Ban lan gen were witnessed all over China, which also led to huge price inflation of the herb (Wan, 2013). Similar panic buying took place in China during the Fukushima accident in 2011. Chinese public was highly concerned about the possible radiation poisoning from the wrecked Japanese nuclear power plant. A large scale of panic shopping of salt in China was triggered by rumors claiming iodized salt could protect human from radiation poisoning (Anonymous, 2011). Although it is universal that ambiguity conceives fear and anxiety which may further lead to the birth of rumor, the unique characteristics of Chinese culture and society may help explain the large scale of panic buying behavior and fast rumor spreading in China. It has been witnessed in China that important messages always spread rapidly due to the collectivistic values (Ma, 2008). Ter Haar (2006) found disturbing stories that locals share with each other have fatal consequences as early as in the tenth century in China. In terms of getting reliable information in the times of crisis, Chinese have the tendency to rely on their social networks such as close friends and relatives. This tendency is still highly visible today in the digital era because of the controlled online environment in China. In collective cultures, social networks could become the warm bed for rumors during the times of crisis and confusion. This is probably why it has been a paramount concern to avoid triggering public panic for Chinese government.

Another noteworthy finding of this study is newspapers in US featured more celebrity-related stories compared to newspapers in China. The transfer from media agenda to public agenda can be accelerated when well-known individuals get involved (Lang & Lang, 1983). Celebrities have an influential role in the promotion of public awareness and sensitivity toward a wide range of societal health issues such as the sale of pharmaceuticals, safe sex, avoiding illegal drugs, and disease campaigns (Nattinger, Hoffman, Howell-Pelz, & Goodwin, 1998; Wilkes, Bell, & Kravitz, 2000). A previous study showed a significant increase in the number of the colonoscopy utilizations after, and as a result of Katie Couric’s March 2000 TV series even though she does not have a disease that required a colonoscopy process (Cram et al., 2003). In the same way, Magic Johnson’s disclosure of his HIV test effectively promoted the campaign for HIV test (Brown & Basil, 1995). Media cover the celebrities’ news because they are socially influential and attractive and people are emotionally involved and identified with them, which means people want to imitate and be like them (Brown & Basil, 1995).

Celebrity activism on various social issues such as democracy, human rights and health is common in Europe-American societies. However, celebrity philanthropy is a rather new phenomenon which is only gaining more attention recently in China. Pu Cunxin, a movie celerity and Communist Party member, was known as the first public figure in China to join anti-HIV/AIDS campaigns in 2001 by acting as the goodwill ambassador. The majority of celebrities in China engaged in their first philanthropic activity after 2004. The celebrity activism on public health in China primarily deals with issues such as HIV/AIDS, leukaemia and depression. Private foundations are emerging rapidly in China. There were no private foundations in China in 2004 and the number of registered private foundations exceeded 1 700 by 2012. Many of these private foundations are directly established by celebrities. For example, actor Jet Li founded the One Foundation in 2007 and Wen Zhang established the Dafu Care Autism Fund in 2010. China’s number is still small compared to US which has approximately 86,000 private foundations in 2013 (Hood, 2010). However, with the rapid growth rate, China is expected to experience

a massive expansion of private foundations in the near future. Although celebrity philanthropy is relatively a recent phenomenon in China, the new generation of celebrities appears to be more proactive in supporting philanthropic causes (Jeffreys, 2015). Thus, the news coverage of celebrity involvement in health issues in China is likely experience a significant increase in the future.

This study also indicated the tick-borne disease stories in the US focused more on health policies as opposed to in China. One possible explanation is health policies have been consistently one of the top public concerns as healthcare cost in the US is enormous. US healthcare expenditure was about 11% of GDP in 2011 and it is heading to 20% by 2020 (Berwick & Hackbarth, 2012) and 29% in 2040 (Fogel, 2009). However, the amount of the financial burden of healthcare expenditure is different among the various age groups, for example at 85 and older it is 6 times as high as it is in 50-54 (Fogel, 2009). In an international scale, US Americans pay one of the highest amounts of healthcare expenditure. The higher amount healthcare cost in the United State brings more into focus the health care policies as it put a higher financial burden on the American society than it does in China.

There are a lot of more pass mentions in US newspapers. On the other hand, Chinese newspapers overwhelmingly put more emphasis on “what is lyme and how to protect oneself” than US newspapers. It appears that Chinese articles tend to send the message that people are in control of their health. In this sense, Chinese newspapers are attributing tick-borne diseases to more controllable factors. This is incongruent with previous research which suggests individuals from collectivist cultures are likely to make uncontrollable attributions. It is highly possible that the overemphasis on individual behaviors in Chinese newspaper is to avoid making uncontrollable attributions which are often environment and social issues related. In China, journalists may consciously avoid any possible criticism to the government (Tang & Peng, 2015). It is also revealed in this study that there were zero articles on health policies and government in Chinese newspapers, whereas the theme “health policies and government” made up of 12.23% of US newspapers articles. Thus, Hofstede (2001)’s cultural dimension individualism/collectivism seems to fail in explaining more controllable attribution articles in Chinese newspapers than in US. Instead, the unique media environment in China might be the primary reason for more controllable attributions in health reporting in China.

Limitations and Directions for Future Research

The current study demonstrates newspapers in both nations overwhelmingly frame tick-borne diseases in a neutral way. Furthermore, newspapers in the US tend to feature more entertaining celebrities in tick-borne disease stories. Finally, there are significantly more discussions of health policies in the newspapers in the US than in China.

One limitation in the current study is non-print media outlets such as television and internet were not included. Newspaper circulation is rather small in rural areas in China (Peng & Tang, 2010). In addition, new media are becoming a major source of health information. Thus, future research should also consider television and internet coverage of health stories. The current study suggests entertainment celebrities in the US are more effective in promoting health stories. Numerous factors could impact an individual’s response to celebrities. Studies have found a celebrity’s influence is stronger among people with a lower income and educational status (Nattinger, et al., 1998), and those emotionally connected to a celebrity (Brown & Basil, 1995). Therefore, future studies are warranted to analyze individual and contextual factors to fully grasp the role celebrities play in health reporting.

While employing a quantitative content analysis method, this study could be strengthened through also employing a qualitative approach. A qualitative approach would permit an analysis of cases where different tones were generated from similar content and the dynamics when multiple key actors co-exist. Furthermore, the sampling in this study is a potential limitation. The US and China were selected for this study because both nations have experienced an increase in tick-borne diseases, and are diverse in terms of landscape and climate conditions. It is imperative to expand our understanding of public’s perception of tick-borne diseases in other parts of the world where frequent tick-borne diseases incidences are also observed.

Peng and Tang (2010) urged future studies should compare health reporting between the US and China, as culture can be a social determinant. This study answers that call by exploring the newspaper coverage of tick-borne diseases in China and the US. Our findings did not support the positive relationship between individualism and controllable attribution suggested by previous research. Thus, we argue the applicability of Hofstede’s culture dimensions on health communication needs to be further examined. Factors such as political system and media environment need to be taken into consideration when exploring differences in health reporting between different cultures.

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