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Proximity and Terrorism News in Social Media: A Construal-Level Theoretical Approach to Networked Framing of Terrorism in Twitter

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This study investigates networked framing of terrorism news in Twitter by distinguishing three proximity effects (geographic, social, and temporal proximity) on audience and media institutional frames (i.e., episodic/thematic and space frames), based on construal-level theory. An analysis of tweets during the Boston Marathon bombing and the Brussels Airport attack finds that institutional and audience frames show similarity but do not always converge on Twitter. Similarities in the audience and institutional frames are attributed to a universal human tendency for social categorization, inherent in the minds

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of not only ordinary citizens but also journalists. Proximity effects, however, were more salient on audience frames than on institutional frames.

When the explosion of two bombs on Boylston Street in Boston—a trailhead to the 2013 Boston Marathon’s finishing line—killed three civilians and injured 264 others, social media users in the United States and other nations expressed sadness, fear, outgroup hostility, and various attributions of responsibility. Three years later in 2016, another terrorist attack at the Brussels Airport in Belgium resulted in 33 civilian deaths and more than 300 injured. People took to social media yet again to express their emotions and opinions, not only within Belgium but also in other European countries and the United States.

Social media platforms have become popular channels through which global audiences receive, share, and discuss relevant news topics including terrorism events. Although terrorism has been a news topic with high currency value for decades, media coverage on terrorism has become particularly salient in the United States since the 9/11 attack in 2001 (Norris, Kern, & Just, 2003). Moreover, several global attacks thereafter have ensured terrorism news occupies a prominent position not only in the media of the attacked country but also in other “culturally proximate” countries, reinstating the role of news coverage in shaping domestic perception of global threats (Nossek & Berkowitz, 2006, p. 694).

This study explores the global nature of public’s terrorism sense-making in the contemporary social media environment. Specifically, it aims to advance terrorism framing literature in two ways. First, we revisit “proximity” as a news value in the context of social media framing of terrorism. Proximity is one of the conventional indicators of newsworthiness that influences the ways in which foreign news events are reported, including terrorist attacks (Nossek & Berkowitz, 2006). A premise has been that a distant event will be either not covered or covered only superficially because of lack of newsworthiness. In the social media milieu, however, audiences are often exposed to and willing to engage with faraway crisis events in real-time, easily transcending geographic and editorial boundaries (Kwon, Xu, Wang, & Chon, 2016). Especially, an increased awareness of international terrorism is known to have some impact on shifting domestic public opinions (Finseraas & Listhaug, 2013). Therefore, it is timely to reconsider proximity effects on terrorism news framing among networked social media publics. For this goal, we elaborate the notion of proximity along three axes—geography, time, and social closeness—by borrowing Trope and Libermann’s (2010) discussion of

“psychological distance” (p.440), a core concept in their construal-level theory (CLT).

Second, we distinguish the two types of social media actors who engage with networked framing—media and institutional actors, and ordinary citizens—and compare their framing on terrorism. The notion of “networked framing” has insightfully addressed the interplay between narratives of media institutions and general publics in shaping news stories in networked environments (Meraz & Papacharissi, 2013). Nonetheless, few studies have actually compared the differences or similarities between institutional frames (e.g., media organization, government institutions) and organic, spontaneously occurring audience frames in social media platforms. The comparison between these two frames are especially pertinent in the context of terrorism because terrorism news coverage is known to have direct impact on public perceptions of policies such as national security (Davis & Silver, 2004), civil liberties (Huddy, Khatib, & Capelos, 2002), and intercultural relations (Das, Bushman, Bezemer, Kerkhof, & Vermeulen, 2009). The particular focus of this study is on the ways in which proximity-as-news-value influences audience frames of terrorism, which is juxtaposed with media institutional frames.

For the empirical analyses of similarities and differences in narratives of media organizations and audiences, we examine Twitter. This platform is a popular space where ordinary citizens can and do easily express their feelings and perspectives on terrorism events. Thus, networked frames on Twitter may manifest public understanding of this issue. Two questions are addressed: First, how does proximity influence the ways in which terrorism is framed on social media platforms, specifically Twitter? Second, how does social media audience’s framing differ from institutional framing of terrorism? Statistical analyses were carried out on Twitter samples collected during two recent terrorism events: the Boston Marathon bombing in 2013 (hereupon, BMB13) and Brussels Airport bombing in 2016 (BAB16). Overall findings suggest that despite some similarities between institutional and audience frames, differences exist in terms of proximity effects on frames.

BACKGROUND

Understanding Terrorism in Western Democracies

Terrorism refers to “the systematic use of coercive intimidation against civilians for political goals” (Norris et al., 2003, p. 2). Public opinion on terrorism is often closely interwoven with citizens’ overall assessment of

sociocultural values. For example, the World Value Survey (2015) suggests that U.S. citizens in the post-9/11 decade have increasingly stressed “survival” values with an emphasis on security and ethnocentric stances while drifting away from “self-expression” values that give priority to diversity and democratic rights. The terrorism rhetoric of “safer society” also influences political decision making, facilitating the trade-off between liberties and security (Davis & Silver, 2004; Huddy et al., 2002).

Media and institutional frames such as “war on terrorism” have contributed to the heightened sense of threat in public minds and bolstered citizen support for preemptive measures related to national defense, including unilateral foreign policy (Lewis & Reese, 2009) and domestic wiretapping (Landau, 2011). Such fear-invoking frames, however, are contradictory to official statistics that have tracked the number of terror-related incidents that took place between 1985 and 2000 and between 2001 and 2015 (National Consortium for the Study of Terrorism and Responses to Terrorism, 2015). During 1985–2000, terrorist acts in the United States and Western Europe accounted for 1.9% and 13.5% of the total attacks worldwide. From 2001 to 2015, however, the proportion dropped sharply to account for only 0.4% (the United States), and 2.75% (Western Europe) of terrorist attacks worldwide (National Consortium for the Study of Terrorism and Responses to Terrorism, 2015). This discrepancy between number of terrorism incidents and heightened public fear is partly attributable to news media effects on public construction of terrorism (Dalal, 2017).

Media Institutional Framing of Terrorism

Terrorism has a tremendous impact on the news agenda—regardless of specific framing patterns chosen by the media—triggering an “unconscious death anxiety,” a primer of fear-driven judgment and prejudice (Das et al., 2009, p. 455). News framing is a process of meaning construction based on a series of “organizing principles” (Reese, 2001, p. 11). Even if the same terrorism event is reported, news can induce dissimilar public opinions depending on the level of emotional appeal in the story narrative. Audiences were increasingly supportive of the “hawkish” policy when they were exposed to high fear-inducing cues, whereas support for a “dovish” policy remained consistent when exposed to information-centric and neutral toned news coverage (Gadarian, 2010, p. 471).

In general, terrorism news research has centered on the organizing principles held by “elite” media or professional journalists (e.g., Fahmy, 2010; Iyengar, 1994; Morin, 2016; Nossek & Berkowitz, 2006). There is consensus that media frames constructed as a result of journalists’ ideology,

gatekeeping practices, and their emphasis on newsworthiness, determine audiences' views on terrorism (Iyengar, 1994; Lewis & Reese, 2009).

Audience Framing of Terrorism

Framing research has matured based on two methodological branches that examine relationships between news frames and audience responses. One is the "idealistic approach" based primarily on experiments, and the other is the "pragmatic approach," based on survey data or public opinion polls (McLeod & Shah, 2015, p. 15). The idealist approach ensures internal validity, whereas the pragmatic approach is better suited for research that emphasizes ecological validity. Nonetheless, both approaches lack perspective in naturally occurring, spontaneous discourse among audiences on social media platforms. Therefore, examining audience framing of terrorism may further elucidate whether public frames converge with media institutional frames.

Audience frames are especially pertinent to terrorism research because some studies have suggested it is *not* always the case that media directly represents public assessment of an issue. For example, Nacos and Torres-Reyna (2003) found that news coverage of the Muslim population after 9/11 had become increasingly positive and included more diverse thematic issues (e.g., civil liberties) than the pre-9/11 period. However, a public poll in post-9/11 conversely indicated increased biases of U.S. citizens toward American Muslims. Another nationwide survey post-9/11 found although news coverage emphasized aspects of national security and terrorist individuals or groups in their news frames, these features were relatively infrequent in the public responses (Traugott & Brader, 2003). Instead, the authors found that hatred-based attribution of responsibility and foreign policy issues were dominant in the public frames.

In addition, social media has further evolved the concept of news framing. The audience is no longer a silent actor in what Meraz and Papacharissi (2013) called "networked framing," in which the act of news redistribution by online users not only sets frames but also builds or evolves existing frames (p. 6). Audiences on Twitter can retweet an elite media frame or, in most cases, add their own narrative to the current frame, thus evolving or creating a new frame. Meraz and Papacharissi found in a discourse analysis of the 2011 Egyptian uprising, frames by prominent actors on Twitter "were persistently revised, rearticulated, and re-dispersed by both crowd and elite" (p. 138). In addition, a study of China's social media site Weibo found evidence of networked framing; retweets from audiences often revised the frame of the original post creating new definitions or diagnosis of a given event (Nip & Fu, 2016). This evolution of frames points to the importance of understanding the formation of public opinion on social media.

Also, networked framing points to the interaction of media or institutional actors with the general public on social media. For instance, popular hashtags often emerge from the public in a bottom-up manner, but popularity is gained through both elite and nonelite use of these hashtags (González-Ibáñez, Muresan, & Wacholder, 2011). Hashtags can produce dominant, thematic frames that shape the narrative of an event while it unfolds. Furthermore, with increased and extensive use, they can “thus enact, enable, and sustain the framing of select interpretations, aspects, or frames, to an event over time” (Meraz & Papacharissi, 2013, p. 144). That said, comparative explorations between the institutional actors and the online public audience have been sparse. In particular, proximity is an important criterion for newsworthiness that affects media institutional framing of global crisis including terrorism (Nossek & Berkowitz, 2006): Understanding how proximity as a news value influences audience’s spontaneous frames as well as institutional frames will thus help expand knowledge on networked framing of terrorism.

Terrorism News and Proximity

Proximity is a particularly critical element in deciding to what extent and in which way foreign news is covered (de Vreese, Peter, & Semetko, 2001). For example, Schaefer (2003) examined local, national, and international coverage of two terrorist attacks—the U.S. embassy bombing in Kenya and Tanzania, and the 9/11 attack in the United States—and found prevalence of the “local angle” and “domestication” of distant news by both African and American press (p. 103). More recently, a comparative review of 137 international terrorism news stories covered by media in China and the United States revealed Chinese newspapers’ frugal coverage and social value-oriented news framing, contrary to the more prevalent politicized framing in the United States, due to the political distance China maintains with most foreign terrorism events (Zhang, Shoemaker, & Wang, 2013).

In this sense, news proximity—nearness of an individual/entity to a news event itself and/or the subject involved in the event—should affect the ways in which terrorism news is developed. For example, local newspapers of the affected city tend to have not only more coverage but also more action-oriented, concrete depictions of the situation than geographically distant newspapers (Schaefer, 2003); and national newspapers often “domesticate” international attacks by favoring domestic sources and highlighting the impact of the event on their own citizens and government policies (Gerhards & Schafer, 2014; Schaefer, 2003). A comparative study of terrorism news between the United Kingdom and the United States media suggests that different news frames reflect discrepant international relations and foreign policies that each country maintained (Papacharissi & Oliveira, 2008). Coverage of terrorist attacks among the

major TV channels in four countries (CNN, Al-Jazeera, BBC, and ARD) also showed that CNN and Al-Jazeera stories contained geopolitical conflict-oriented frames, whereas BBC and ARD depoliticized the attacks by framing them as individualized criminal acts against humanity (Gerhards & Schafer, 2014); such framing differences have been found not only in news texts but also in photo-journalism (Fahmy, 2010).

That said, the proximity effect on terrorism news has not always been straightforward due to an unclear definition of the concept. Some studies claim that proximity does not have much impact on differentiating international news practices because of global standardization of terrorism news coverage, which leads to the prevalence of episodic frames, moral outrage, and illegitimacy frames (Gerhards & Schafer, 2014; Schaefer, 2003). In the majority of literature, proximity is simply reduced to geographic distance; in other literature, researchers emphasize “cultural” proximity without offering an operational definition. For example, news coverage of the Afghan war by English and Arabic media (Fahmy, 2005) or the 1996 and 2002 terrorist events in Israel by U.S. and Israeli newspapers (Nossek & Berkowitz, 2006) have been comparatively studied under the premise that one country’s media represents a more culturally proximate case than the other. Such context-contingent references to proximity lack conceptual generalizability and may result in inconsistent findings regarding the role of proximity as a news value. Besides, extant studies have paid little attention to the effects of proximity on *audience’s minds*. Further conceptual elaboration is needed to engender generalizable knowledge on the impact of proximity as a news value on audience as well as journalistic frames of terrorism.

Construal-Level Theory: Three Axes of Proximity

To conceptualize proximity in a generalizable and operational way, we introduce CLT. CLT explains the effects of proximity on human cognitive processing. Researchers were originally motivated to study it to understand how people thought of the future and made plans for it (Trope & Liberman, 2010). It proposes that individuals use more abstract mental representations—high construals—when an object is perceived as distant from self, thus focusing on the *why*. Conversely, individuals use more concrete representations or details—lower construals—when they perceive the object to be closer to them, focusing on the *how* (Trope & Liberman, 2010). For example, when thinking about a terrorist event that occurred far away, a long time ago and to a group that is different from self, one would likely think of social and political reasons that address why it happened, but closer to the place or date of the event, one may likely focus on specific issues such as how to locate missing families, find the perpetrators, steps for reassuring the affected community and other logistical concerns. According to CLT, the perception of distance can dilute individual differences and

situational uniqueness, and even intervene in the process of social categorization and stereotyping.

Therefore, proximity is the central concept underlying CLT. Trope and Liberman (2010) pointed out that proximity is a multifaceted concept beyond geographic propinquity, referred to as “psychological distance” (p. 440). Psychological distance is perceived as a combination of social, geographic, and temporal proximities (Stephan, Liberman, & Trope, 2010). First, *geographic proximity* relates to the physical distance of an individual from the place where the event occurs. Experiments showed that respondents used generic language and words when thinking or talking about events that took place in a faraway location. In contrast, when asked to think about the same scenario closer to where they lived, respondents used more specific vocabularies that described tangible and concrete actions (Fujita, Henderson, Eng, Trope, & Liberman, 2006). Henderson (2009) also contended that judging someone’s action either as an extension of his or her inherent trait or as circumstantial depends on the geographic and social proximities to the person. For example, individuals tend to evaluate misdeeds more harshly when they occur in a geographically distant place or are conducted by someone outside one’s own social boundary compared to proximate misdeeds (Eyal, Liberman, & Trope, 2008). In a similar vein, people tend to perceive distant others as a homogeneous collective unit and their behaviors as representative of the group as opposed to perceiving close others’ behaviors as a mark of individuality (Henderson, 2009).

Second, *social proximity* refers to how close one perceives another person as an individual or member of a group (Nan, 2007). An individual feels socially closest to strong ties such as family and friends, followed by weak ties such as colleagues and neighbors and members of an imagined collective community (e.g., compatriots), and socially distant to outsiders who do not belong to his or her community. Thus, when talking about individuals who are socially proximate, a person is more likely to use specific, situational factors versus the dispositional qualities they attribute to individuals who belong to “out-groups” (Trope & Liberman, 2010). For example, if you or a friend arrived late to a meeting, you are likely to blame the circumstances at the time, such as traffic (low construal), but if a third person arrived late to a meeting, you are more likely to blame the person’s attitude, such as he or she is not punctual and/or does not value your time (high construal).

Last, *temporal proximity* refers to the time when an event occurs—past or future—and its influence on how individuals think about the event (Trope & Liberman, 2010). Distant futures—events that are scheduled to occur in months or even years—are talked about in abstract and general terms, although near future events—scheduled for the same week or the next—are addressed in specific and concrete details. For example, Carter and Sanna (2008) conducted an experiment in which they asked respondents to imagine meeting a prospective

employer for a position and list the qualifications that made them suitable for the job. The authors found that respondents were more likely to use indirect self-presentation statements such as highlighting connections to others, talking positively about their group associations (“I graduated from Harvard”), if they imagined the meeting will take place in 3 months—higher construals. On the contrary, those who thought they would meet the employer immediately were more likely to use direct self-presentation statements such as specific qualities and self-attributes (“I have published solo-authored papers in top peer-reviewed journals”) to describe their suitability for the job—lower construals.

RESEARCH QUESTION AND HYPOTHESES

The tenet of CLT that three axes of proximity—social, geographic, and temporal—are important in shaping human perceptions and judgments has resonance with framing literature. Framing contends that proximity as a news value influences the ways in which an event is perceived. For example, previous framing studies have shown that proximity is directly related with resource availability and gatekeeping practices and thus influence journalists’ choices of frames (Papacharissi & Oliveira, 2008; Weimann & Brosius, 1991). However, this view has not sufficiently addressed what influences the general public’s choice of frames.

CLT-based understanding is advantageous in this sense because it focuses on universal human cognitive reactions to psychological distance, an amalgam of perceived geographic, temporal, and social proximities (Trope & Liberman, 2010). Audience framing could reveal stronger proximity effects than media institutional framing because global standardization of news reporting style can result in uniform institutional frames (Gerhards & Schafer, 2014; Schaefer, 2003), whereas audiences may not internalize journalism norms.

In their analysis of how dominant frames emerged in Twitter discourse around an event, Meraz and Papacharissi (2013) found that even though tweets by news organizations and journalists were among the first to be widely shared and retweeted by audiences, other individuals who were providing consistent updates and relevant information were also retweeted by the crowds, thus affording both news media entities and influential citizens an “elite” status. Although these elites played an important role in creating and disseminating narratives that defined the dominant frames around the event on Twitter, further understanding is needed in terms of the differences or similarities between elite and nonelite actors (Meraz & Papacharissi, 2013). Therefore, we ask whether nonelite audiences will be more susceptible to proximity effects on their framing of terrorism than media institutional actors.

RQ1: Do geographic, temporal, and social proximities influence more on audience frames than on media-institutional frames in Twitter?

Linking CLT to framing research allows an examination of the effects of psychological distance on the level of “abstractness” in terrorism discourse. Two existing frames are pertinent to address the level of abstractness: *episodic-thematic frames* (Iyengar, 1994) and *space frame* (Chyi & McCombs, 2004).

Episodic-thematic frames distinguish between two ways of storytelling: whether the news narrative provides concrete information on how the event occurred and evolved (*episodic* frame) or more abstract, generic views on the event (*thematic* frame). We posit a series of hypotheses regarding the effect of each dimension of proximity on the use of the *thematic* frame (as opposed to an *episodic* frame). In line with CLT’s propositions, we hypothesize that for a user, the more distant the terrorist attack, or an entity related to the attack, the more likely he or she will use a *thematic* frame.

H1: *Thematic* frames will be deployed more frequently than *episodic* frames if (a) the terrorist attack occurs in a more distant physical location (i.e., geographic proximity), (b) the message posting time is further from the moment of the attack (i.e., temporal proximity by posting time), (c) the referenced temporal perspective is further from the moment of the attack (i.e., referenced temporal proximity in message), and (d) the perceived social actors in the context of the attack are outside their social boundary (i.e., social proximity).

Per CLT, psychological distance influences a person’s decision to apply individual-oriented or social identity-based criteria when judging others (Henderson, 2009). This resonates with Chyi and McCombs’s (2004) contention that temporal proximity influences the breadth of coverage in the cycle of news life. That is, at the onset of the event (close in time), news coverage tends to emphasize individual-oriented storytelling (low construal). However, as days go by (temporally further from the event), news coverage begins to focus on topics related to social groups, community, region, national, and even geopolitical issues (higher construal). This shift from micro- to macrolevels of framing is indicative of the use of higher construals as the event moves further away in time. Thus, we hypothesize that not only temporal proximity but also other proximity factors influence the spatial orientation of frames, such that

H2: A higher level of *spatial* frame will be deployed in news messages as (a) the terrorist attack occurs in a more distant location, (b) the message posting time is farther from the moment of the attack, (c) the referenced temporal

perspective is farther from the moment of the attack, and (d) perceived social actors in the context of the attack are outside the users' social boundary.

METHODS

Data Collection

Twitter data were collected for about two weeks in the immediate aftermath of BMB13 on April 15, 2013, and BAB16 on March 22, 2016. The BMB13 data collection began a few hours after the incident and continued until April 29, 2013. Twitter StreamingAPI was used to collect tweets with three search keywords: *#BostonMarathon*, *Boston Marathon*, and *Boston*. Two sessions of data collection were held each day. The total number of tweets collated was 23,300. The BAB16 data were collected using NodeXL-Basic (2014) with the search keyword *Brussels*. NodeXL-Basic (<http://www.smrfoundation.org/nodexl/>) uses StreamingAPI and permits the collection of 2,000 tweets every few minutes. The collection began a few hours after the incident on March 22 and continued until April 3, 2016. Two sessions of data collection were held each day. Each collection session lasted for 2 to 3 hours. The data set contained 80,933 tweets.

We organized the data from each data set into a subset by selecting messages that originated in the Western European region or the United States via the tweets' geolocation. As a result, 14,054 tweets from BMB13 and 27,433 from BAB16 were retained in this subset.

Sampling and Geographic Proximity

Geography-based stratified, nonprobabilistic sampling of 4,000 tweets (2,000 for each event) was performed on the chronologically ordered data set for a balanced sample that represents various geographic proximities while also minimizing temporal bias.

Geographic proximity was defined on three levels of distance: For BMB13, we defined the East Coast area in the United States to be the most proximate to the attack (the region in which Boston is located), and the rest of the United States was the second proximate (national); Western European countries were considered the farthest from the place of the incident (international). For BAB16, on the other hand, Brussels/Belgium was defined as the most proximate location to the attack, and other Western European countries were the second proximate (nearby European Union nations); the United States was considered the farthest location (international).

Stratified random sampling of 2,000 from BMB13 resulted in the selection of 867 tweets from the East Coast, 896 from the rest of the United States, and 237 from Europe. When sampling the East Coast tweets, we oversampled the most

proximate tweets. All tweets associated with mid-Atlantic areas (New England states) were included for the best representation of local tweets.

Regarding BAB16, only 952 tweets (3.4%) originated from Brussels/Belgium, suggesting that random sampling would result in very few tweets from Brussels. Accordingly, we separately generated 500 randomized samples from this pool and then performed stratified random sampling of 1,500 tweets from the pool of those messages that originated from the United States and the rest of Western Europe. As a result, 1,026 U.S. tweets, 474 Western European tweets, and 500 Brussels/Belgium tweets were included in the final sample presented here. Although this sampling strategy is not perfectly probabilistic, it corresponds with our goal of exploring the nature of tweets from different geographic locations in a balanced way.

Content Analysis: Variables

Data embedded in the tweets were of three subcategories: user profiles, tweet messages, and the news resources (URL). Four graduate students were trained multiple times to code the relevant variables in this content analysis. Based on the intercoder reliability test of 400 tweets, coders with the highest agreement rate were paired together to complete the coding for the entire data set. Although all reliability scores fell into the acceptable range based on Fleiss's (1971) criteria, Cohen's kappa scores for some variables had somewhat low kappa values largely due to the unbalanced category sample size. The intercoder agreement rates for these variables, however, were high, ranging between 82% and 97%, thus confirming the acceptable coding framework. Table 1 presents more details of the coding framework and reliability test results.

User Profile. A binary category of "personal user" was used to identify audiences. Drawn from Kwon, Oh, Manish and Rao (2012), a profile was *not* considered as a personal user account if it was closely reflective of journalism, media actors, or institutional news sources or specifically meeting any of the five criteria specified in Table 1.

Frames. Frames were analyzed based on tweet messages. We used Iyengar's (1994) original conceptualization of *episodic-thematic* frames in this study. For the *space* frame, we modified Chyi and McCombs's (2004) original five-level variable (individual, community, regional, societal, and international) into a four-level variable due to the rare occurrence of the regional level frame in our sample. The *space* frame was treated as an interval variable (individual = 1, international = 4).

TABLE 1
Coding Framework and Intercoder Reliability

<i>Variable Description (Example)</i>	<i>% CK</i>
Personal profile: belongs to laymen/audience if <i>NOT</i> falling into any of the following: (a) politicians or government personnel; (b) clear indication of the primary career in journalism, such as journalist, anchor, reporter, news editor, radio host, etc., or affiliation with a specific media organization or media-centric advocacy institution; (c) strict, career-only description with clear identification with certain organization without providing any personal information; (d) having only a series of URLs or hashtags; (e) group/organizational account (“ <i>News talk 980 CKNW. Vancouver’s news. Vancouver’s talk.</i> ”)	.87 .72
Iyengar’s frame: The message frames the event . . . (1) Episodic = in specific terms describing the place, event or person involved (“ <i>A top-ranking rep. says more arrests possible in #Bostonbombing.</i> ”) (2) Thematic = in political/social/cultural context, or in an abstract manner (“ <i>We live in a sad, mad, tragic world. #prayersforBoston</i> ”)	.91 .63
Space frame: The message is framed by highlighting. . . (1) Individuals directly involved in the event (“ <i>FBI interviewed Boston bombing suspect in 2011.</i> ”) (2) Community, city, region (“ <i>Cell phones in Boston are out of service.</i> ”) (3) The whole society or nation (“ <i>After the arrest of Boston Bomber I think American security services are good and swift.</i> ”) (4) International repercussions (e.g., “ <i>Christians are in Jail in #Iran for being Christian. Why aren’t American Muslims speaking out?</i> ”)	.84 .61
Social distance: The message includes any reference to . . . (1) Strong ties: family and friends (“ <i>617-635-4500 is the number concerned families can call if you can’t find family/runners</i> ”) (2) Compatriot: fellow citizens, or public servants (“ <i>Come on. Our country is better than this MT @PatchTweet Muslim woman assaulted, blames #BostonMarathon bombing</i> ”) (3) Empathic strangers: victims or affected who are sympathized (“ <i>An innocent man running for charity and this happens. It’s sickening.</i> ”) (4) Outsiders: otherness such as immigrant, foreigner, alien (“ <i>To immigrants. If you don’t want to change your life style to that of the west, don’t come.</i> ”)	.97 .91 .83 .70 .89 .84 .93 .77
News resource: Whether the hyperlink is broadcast websites (TV/radio); newspaper website; digital news or information sites; social media	.82 .75
Referenced temporal proximity: The message talks about . . . (1) Present issues/happening (“ <i>Sending prayers to those families hurt.</i> ”) (2) Past (“ <i>Most American Muslims supported the insulting mosque at ground zero, a monument the ideology inspired the 911.</i> ”) (3) Future (“ <i>#Bostonmarathon probe and #bigdata use hints at the future.</i> ”)	.84 .5

Note. CK = Cohen’s kappa scores.

Social Proximity. Snefjella and Kuperman’s (2015) conceptualization of social proximity was adopted to identify the different markers of this variable in

a tweet message. The authors defined it as an individual's "willingness to establish social contacts with representatives of a racial, ethnic, socioeconomic, occupational, or other social group" (p. 1455). The modified *social proximity* variable include four categories of social references: strong ties (family and friends), compatriots, empathic strangers (victims of the terror attack toward whom people express sympathy on social media), and outsiders (visitors and foreigners).¹ We treated each one as a categorical variable because a single message could refer to multiple categories. Among them, "outsiders" was the exclusionary reference, whereas other categories commonly pertained to in-group members despite varied relational strengths.

Temporal Proximity. Two kinds of temporal proximity were examined. First, the posting time of tweet messages was used. Studies suggest that event-oriented news coverage tends to occur the most during the first couple of days immediately after the incident, then drastically decrease about a week later (Chyi & McCombs, 2004). The time span of Twitter activity is even shorter as the vast majority of tweeting/retweeting occurs within a few hours of the event, and very little occurring beyond 2 days (Kwak, Lee, Park, & Moon, 2010). Thus, we split the chronologically ordered data into three time windows: 1 = Day 1–2, 2 = Day 3–7, 3 = Day 8 and the rest. Second, the temporal reference in tweet messages was used as another dimension of temporal proximity. For this, we adopted Chyi and McCombs's (2004) time frame composed of present, past, and future references.

Control Variables. First, referencing a news resource could affect audiences' frame construction, as sharing reported stories could perpetuate media frames. Accordingly, we controlled for types of *news resource reference* (i.e., URLs embedded in tweets) conceptualized as per Kwon et al. (2012): TV/radio originated, press originated, social media, and other digital resources (such as online journalism, database, academic resource, etc.). Second, we considered the use of *hashtags*, as these are shared markers reveal the ways in which the event is portrayed.

RESULTS

Descriptive Analyses

Descriptive statistics suggest that BMB13 and BAB16 are similar in some ways. The majority of tweets in both data sets were sent from nonmedia personnel or audience

¹The original categories included "weak ties" composed of neighbors and coworkers. This category was excluded due to rare occurrences.

(61.45% for BMB13, 57.85% for BAB16), were heavily episodic (89.46% for BMB13, 69.06% for BAB16), and mentioned present issues as opposed to conveying future or past points of view (79.59% for BMB13, 94.72% for BAB16). Among social proximity categories, both data sets showed relatively frequent reference to “compatriots” (17.5% for BMB13, 23.24% for BAB16) and “empathic strangers” (16.20% for BMB13, 13.22% for BAB16).

Meanwhile, differences emerged in terms of the *space* frame and reference to the “outsiders” category. In the BMB13 tweets, individual story-oriented framing was predominant (77.61%). Community/regional level framing (42.98%), however, was as frequent as individual level (37.79%) in the BAB16 set. Moreover, BAB16 contained more references to outsiders (11.85%) compared to BMB13 (6.65%) (Figure 1).

Before investigating the relative effects of proximity variables, we examined mean or frequency difference of frames, using chi-square and Kruskal-Wallis rank analysis of variance tests. The frame differences were found consistently in terms of geographic proximity and posting time. The referenced temporal proximity also resulted different frames except the thematic/episodic frames in BAB16. Audiences and media actors’ framing were different in BMB13 but not in BAB16. The test results are summarized in Table 2.

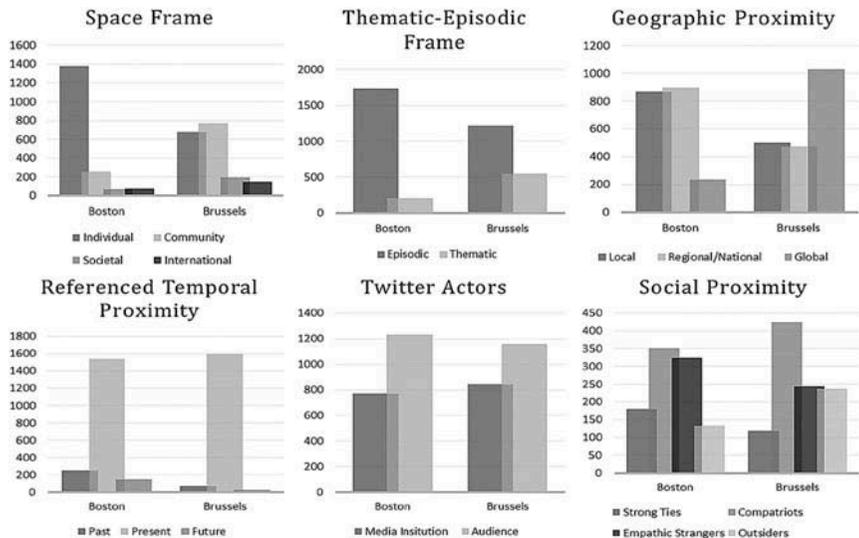


FIGURE 1 Frequency of +.

TABLE 2
Frame Differences by Proximity Variables

	Boston Marathon Bombing 2013		Brussels Airport Bombing 2016	
	Space ^a	Iyengar ^b	Space ^a	Iyengar ^b
Geographic	$\chi^2(2) = 14.201^{***}$	$\chi^2(2) = 7.276$	$\chi^2(2) = 23.761^{***}$	$\chi^2(2) = 15.154^{**}$
Temporal: Referenced	$\chi^2(2) = 13.578^{**}$	$\chi^2(2) = 16.885^{***}$	$\chi^2(2) = 13.712^{**}$	$\chi^2(2) = 5.120$
Temporal: Posting time	$\chi^2(2) = 3.775$	$\chi^2(2) = 23.317^{***}$	$\chi^2(2) = 7.769^*$	$\chi^2(2) = 8.711^*$
Actors (Audiences vs. Media/Organizations)	$\chi^2(1) = 5.743^*$	$\chi^2(1) = 18.139^{***}$	$\chi^2(1) = 3.539$	$\chi^2(1) = 3.042$
Social distance				
Strong ties	$\chi^2(2) = 28.001^{***}$	$\chi^2(2) = .974$	$\chi^2(2) = 47.962^{***}$	$\chi^2(2) = 33.585^{***}$
Compatriots	$\chi^2(2) = 0.005$	$\chi^2(2) = 1.101$	$\chi^2(2) = 34.689^{***}$	$\chi^2(2) = 0.236$
Empathic strangers	$\chi^2(2) = 13.774^{***}$	$\chi^2(2) = 11.439^{**}$	$\chi^2(2) = 85.677^{***}$	$\chi^2(2) = 38.878^{***}$
Outsiders	$\chi^2(2) = 207.267^{***}$	$\chi^2(2) = 287.959^{***}$	$\chi^2(2) = 14.034^{***}$	$\chi^2(2) = 64.249^{***}$

^aKruskal-Wallis test (nonparametric one-way analysis of variance) was used due to the unequal population variances. ^bChi-square test.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Proximity Effects on Thematic/Episodic Frames

Logistic regression modeling was performed to examine proximity effects on the use of Iyengar's frames (thematic = 1). As shown in Table 3, geographic proximity was significant only for BAB16; the farther the event, the more thematic the frame. The U. S. media ($b = .51$, odds ratio [OR] = 1.67, $p < .05$) and audiences ($b = .69$, OR = 1.99, $p < .01$) were 1.67 times and 1.99 times more likely, respectively, to use a thematic frame to talk about BAB16 than domestic media and audiences in Belgium.

Social proximity effect was consistent with the hypotheses. The outsiders category increased the likelihood of thematic framing more than 13 times in BMB13 ($b = 2.58$, OR = 13.19, $p < .001$, for media; $b = 2.61$, OR = 13.65, $p < .001$, for audience) and almost three times in BAB16 ($b = 1.10$, OR = 2.99, $p < .001$, for media; $b = 1.07$, OR = 2.91, $p < .001$, for audience). Also, empathic strangers and strong ties in some models decreased the likelihood of a thematic frame—and thus increased the use of episodic frame. For example, references to empathic strangers decreased the chance of the audience using the thematic frame in BMB13 by 64% ($b = -1.02$, OR = .36, $p < .01$) and by 51% for BAB16 ($b = -.71$, OR = .49, $p < .01$).

In regards to temporal proximity effects, only audience-related tweets showed thematic framing ($b = .77$, OR = 2.15, $p < .05$ for BMB13; $b = .47$, OR = 1.60, $p < .05$, for BMB16) with decreasing temporal proximity between the event and tweet posting time (i.e., 1 week or later). Another significant finding was that the referenced temporal proximity showed the *opposite* pattern than hypothesized. Specifically, the audience frame in BMB13 showed a negative effect of past and future references, suggesting that decreasing temporal proximity (moving further away from the time of the event) was associated with the episodic frame ($b = -1.06$, OR = .35, $p < .01$, for past reference; $b = -1.54$, OR = .21, $p < .05$, for future reference).

Proximity Effects on Space Frame

Ordinary least squares regression modeling was performed to examine the *space* frame. Significant geographic proximity effect was found only in the audience frames of BMB13, suggesting that European audiences were more likely to use a higher level of space frame (Table 4) to talk about the Boston Bombing, compared to local audiences on the East Coast of the United States ($\beta = .09$, $t = 2.99$, $p < .01$). In all other models, geographic proximity effect was not significant.

Among social proximity categories, strong ties were consistently associated with the lower level (more individual oriented) space frame for both, audiences ($\beta = -.09$, $t = 2.22$, $p < .05$, in BMB13; $\beta = -.12$, $t = 3.52$, $p < .001$, in BAB16), and news media ($\beta = -.09$, $t = 2.89$, $p < .01$, in BMB13; $\beta = -.14$, $t = 3.64$, $p < .001$, in BAB16). Reference to empathic strangers in BAB16 was also associated with the lower space

TABLE 3
Proximity Effects on Terrorism Framing in Social Media: Iyengar's Frame (Thematic = 1)

	Boston Marathon Bombing 2013						Brussels Airport Bombing 2016						
	Media ^a			Audience ^b			Media ^c			Audience ^d			
	b	SE	OR	b	SE	OR	b	SE	OR	b	SE	OR	
Geographic	1	.42	.34	1.52	.09	.23	1.09	.33	.28	1.40	.86	.26	2.37**
	2	.70	.62	2.00	.38	.30	1.47	.51	.24	1.67*	.69	.23	1.99**
Temporal: Posting time	3-7	-.41	.60	.66	-.21	.33	.81	.25	.23	1.29	.12	.18	1.13
	8+	.39	.61	1.48	.77	.34	2.15*	.02	.25	1.02	.47	.22	1.60*
Temporal: Referenced	Past	-.80	.56	.45	-1.06	.39	3.55**	-.23	.61	.80	-.41	.51	.66
	Future	-1.13	.67	.32	-1.54	.78	2.1*	-.50	1.13	.61	—	—	—
Social distance	ST	.36	.50	1.43	-.17	.40	.84	-2.69	1.03	.07**	-1.52	.45	.22**
	CMP	-.05	.42	.95	.49	.25	1.64	.17	.20	1.18	-.13	.18	.88
	ES	-.81	.53	.45	-1.02	.37	3.65**	-1.15	.38	.32**	-.71	.27	.49**
	OS	2.58	.42	13.19***	2.61	.26	13.65***	1.10	.27	2.99***	1.07	.22	2.91***
Hashtags	Broad	.07	.11	1.08	.16	.06	1.17	.20	.09	1.22*	.18	.06	1.20**
	Press	-1.12	.65	.33	-.83	.52	.44	-.64	.31	.53*	-1.04	.32	.35**
	Digital	.08	.51	1.08	-.98	.55	.38	.28	.27	1.32	.45	.24	1.58
	SM	.10	.39	1.10	-.29	.27	.75	-.07	.24	.94	-.52	.22	.59*
Model		-1.78	1.09	.17	-1.46	.39	2.3***	-.35	.42	.70	-.67	.32	.51*
		$\chi^2(15) = 68.63***$						$\chi^2(15) = 82.80***$					
		Pseudo- $R^2 = .184$						Pseudo- $R^2 = .107$					
		$\chi^2(14) = 114.34***$											
		Pseudo- $R^2 = .105$											

Note. OR = odds ratio; Geographic 1 = the United States and 2 = Europe in Boston Marathon bombing 2013, 1 = Europe and 2 = the United States in Brussels Airport bombing 2016 (Reference = the East Coast in Boston Marathon bombing 2013 and Belgium in Brussels Airport bombing 2016); ST = strong ties; CMP = compatriots; ES = empathic strangers; OS = outsiders; Broad = broadcast (TV/radio); SM = social media.
^aN = 748. ^bN = 1,175. ^cN = 643. ^dN = 846.
 *p < .05. **p < .01. ***p < .001.

TABLE 4
Proximity Effects on Terrorism Framing in Social Media: Space Frame

	<i>Boston Marathon Bombing 2013</i>				<i>Brussels Airport Bombing 2016</i>				
	<i>Media^a</i>		<i>Audience^b</i>		<i>Media^c</i>		<i>Audience^d</i>		
	β	SE	t	β	SE	t	β	SE	t
Geographic									
1	-.02	.05	-.57	.02	.04	.59	.03	.10	.59
2	.00	.10	.12	.09	.06	2.99**	-.08	.08	-1.77
Temporal:									
3-7	.01	.09	.20	.02	.06	.52	-.02	.08	-.43
8+	.00	.09	-.06	.00	.07	-.04	.05	.08	1.01
Temporal:									
Past	-.05	.06	-1.43	-.02	.06	-.77	-.04	.20	-1.07
Future	-.11	.07	-2.95**	.00	.11	.08	-.01	.34	-.16
Referenced									
ST	-.09	.08	-2.89**	-.06	.07	-2.22*	-.14	.13	-3.64***
Social distance									
CMP	-.02	.06	-.48	.01	.05	.34	-.07	.07	-1.79
ES	-.09	.06	-2.55*	-.02	.05	-.90	-.18	.10	-4.69***
OS	.53	.10	16.22***	.50	.07	18.84***	.06	.10	1.45
Hashtags									
Broad	-.01	.02	-.27	.04	.01	1.64	.10	.03	2.64**
News resources									
Press	-.07	.07	-1.93	-.04	.09	-1.39	-.10	.10	-2.35*
Digital	-.01	.08	-.25	-.01	.09	-.53	-.04	.10	-.86
SM	-.06	.06	-1.68	-.03	.06	-1.06	-.07	.09	-1.46
Model									
	.00	.09	-.02	.09	.06	3.29**	-.02	.15	-.51
	$F(15, 669) = 20.92***$			$F(15, 1064) = 28.85***$			$F(15, 625) = 5.16***$		
	Adj. $R^2 = .304$			Adj. $R^2 = .279$			Adj. $R^2 = .089$		

Note. Geographic 1 = the United States and 2 = Europe in Boston Marathon bombing 2013, 1 = Europe and 2 = the United States in Brussels Airport bombing 2016 (Reference = the East Coast in Boston Marathon bombing 2013 and Belgium in Brussels Airport bombing 2016); ST = strong ties; CMP = compatriots; ES = empathic strangers; OS = outsiders; Broad = broadcast (TV/radio); SM = social media.

^a $N = 685$. ^b $N = 1,080$. ^c $N = 641$. ^d $N = 841$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

frame ($\beta = -.18, t = 4.69, p < .001$, for media; $\beta = -.17, t = 4.92, p < .001$, for audience). In contrast, reference to outsiders in BMB13 was associated with the higher level of space frame, and the explained variance was large ($\beta = .53, t = 16.22, p < .001$, for media; $\beta = .50, t = 18.84, p < .001$, for audience).

The posting time effect was not significant. Reference to future was significant for news media's space frame in BMB13; the effect was opposite to our hypothesis, suggesting that future reference was associated with lower level of space frame ($\beta = -.11, t = 2.95, p < .01$).

News Resource Effects

The effects of hyperlinking to news sources are noteworthy, although they were not hypothesized. In some models, linking to news sources was significant, most of which was negatively associated. That is, compared to those not including any external news links, tweets that included a news media url were associated with the episodic frame and lower level space frame. The exception, however, was the effect of social media reference on audience's space frame in BMB13, which showed an increase in the thematic frame ($\beta = .09, t = 3.29, p < .01$). Also, the hyperlinking effect appeared more frequently in audience framing than in media institutional framing.

DISCUSSIONS AND CONCLUSION

By comparatively exploring media/institutional frames and audience frames on Twitter, this study builds on discussions around social media–afforded networked framing in the context of terrorism (Meraz & Papacharissi, 2013). This study also delved into the role of news “proximity” in both audience and media frames of terrorism. A unique contribution of this study was to elaborate three generalizable and operational dimensions of proximities drawn from CLT—spatial, social, and temporal proximity.

By applying CLT, we clarified the notion of proximity and examined its impact on terrorism framing as a universal human cognitive mechanism. Framing research focuses on how news media portrays an event. By including audience framing in the picture, analyzed through CLT, this article adds to communication scholars' understanding of audience discourse and framing of a dynamic news event. Audiences' comments and tweets on social media influenced news coverage, especially in the aftermath of the Boston Bombing (Ziv, 2015), and therefore it becomes imperative to analyze people's cognitive response and subsequent information sharing on Twitter during a crisis such as a terrorist attack.

In addition, this study shows interdisciplinary value by adding to audience-centered crisis management scholarship that focuses on how publics respond to crisis information received through various media channels, including social. This information is often a cocreation between people and official sources and an examination of how people may influence one another versus how institutions may influence them becomes important (Liu, Fraustino, & Jin, 2016). Interestingly, a study of Arab audience tweets by Alkazemi, Fahmy, and Wanta (2017) also suggests that audiences on social media may attempt to influence media coverage by posting nonobjective messages of an issue in which they are personally vested. This line of research becomes even more important as journalists themselves look to social media for information as they wrestle with cuts in manpower and financial resources (Alkazemi et al., 2017).

Proximity Effects on Frames

Results of the entire sample revealed that the tweets were predominantly based on the “present” frame, rather than the past or future, and included concrete, detailed accounts of the event (i.e., episodic) rather than abstract ideas. These findings are unsurprising considering that instantaneousness and personalized information sharing are the defining characteristics of Twitter (Oh, Agrawal, & Rao, 2013). These findings also are in line with previous terrorism framing research.

The two sets of hypotheses were posited such that temporal, geographical, and social distances will produce more high construal frames. Although not all hypothesized relationships were significant, overall trends—where significant—were consistent with CLT’s proposition that greater distance engenders more abstract storytelling in the form of a *thematic* frame or a higher order *space* frame. Among proximity effects, social proximity was particularly noteworthy: The significant association between the reference to outsiders (i.e., socially distant others) and *thematic* frames was observed across the different news events (BMB13 and BAB16) and user types (i.e., media institutions or audiences). Such findings fall in line with the premise of CLT and imply the potential for social categorization and stereotyping of outsiders constructed by high construal discourse. In our sample, the nontrivial portion of tweets that referred to outsiders were about immigrants, refugees, or religious groups, and users portrayed these groups as “them” versus “we.” An audience tweet exemplifies this observation: “To immigrants. If you don’t want to change your lifestyle to that of the west, don’t come. If you don’t like it here, go back.” One possibility is the media’s *thematic* account could inadvertently spill over to audience frames in a manner that reinforces their social-categorical view of these populations. We did not test the interaction effect between media’s thematic frame and references to

outsiders as framed in the audience tweets and recommend further research in this direction.

Distant temporal reference was associated with more episodic and lower level space frames, particularly in BMB13. This finding seems contradictory to previous framing research (e.g., Kwon & Moon, 2009; Chyi & McCombs, 2004) and the posited hypothesis. However, a closer look at the data suggests that a majority of tweets with a past or future reference in our sample were actually about the *short-term* past and future, extending only a few days. Therefore, those tweets continued to talk about “what has been done,” “what is going to be done,” and “anomalies of terrorists’ personalities,” as opposed to “why it happens.” Audiences continue to focus on specific details when they discuss the immediate past and future, such as information about the individual attackers or forthcoming official statements on terrorists. Such narratives align with previous research that the American media tend to respond to a domestic terror attack by dedicating much coverage to the perpetrators (Kwon & Moon, 2009; Morin, 2016).

Comparison Between Media Institutional and Audience Frames

In response to RQ1, results suggest that overall, proximity effects were more prominent on audience frames than media institutional frames. Most proximity variables were significantly associated with the audience’s use of the *thematic* frame in both events, whereas the number of significant variables reduced when media institutional samples were modeled.

We conclude that media and audience frames show a great deal of similarities but do not always converge on Twitter. The episodic frame especially was more frequent in media institutional tweets than audiences’ tweets. This is possibly because media and institutional personnel get direct access to attack-related news sources and thus perceive closer psychological distance to the terror event than the general publics. Also, journalistic norms such as objectivity and accuracy could lead to a more concrete, episodic description of events.

Another related observation is that audiences were more prone to hyperlinking information received on social media than media actors. This tendency affects audiences’ adoption of the broader spatial frame in terrorism discourse during BMB13. Audiences may be more likely to use alternative resources than journalists, who usually cite institutional sources and official spokespeople. Also, social media is a global and transborder platform. Majority of audiences during BMB13 were the American public, and it is unsurprising that they would choose social media resources that primarily use the English language to look for global views on the terrorism event.

Differences Between the Two Events

Despite some consistent patterns with regard to proximity effects and audience versus media institutional frames in the two samples, some differences emerged. Tweets during BMB13 focused on individual-oriented storytelling and episodic frames, whereas tweets during BAB16 included more of the community/regional frame and the *thematic* frame. Although this difference between the events was not hypothesized, CLT offers a convincing rationale. As a majority of our sample comprised U.S.-originated tweets, it is possible that tweets related to BAB16 (a geographically distant event from the United States) included higher order frames more frequently than BMB13 (a closer event within their own country).

More importantly, geopolitical antecedents surrounding each event may explain this difference even more convincingly. BAB16 occurred 4 months after the Paris terrorist attacks, and police found strong connections between the two events. Concurrently, Western Europe has been struggling with a humanitarian crisis with hundreds of refugees from war-torn Iraq and Syria seeking asylum in various European Union nations. Meanwhile, BMB13 was the first major terrorist attack on American soil in more than a decade since 9/11. Also, it was perpetrated by an American citizen and permanent resident (the Tsarnaev brothers). It is likely, then, the narrative around BAB16 took place within a *thematic* frame and at a higher construal level by incorporating geopolitical perspectives into the terrorism discourse.

That said, inconsistent results between the two events could limit the generalizability of our findings unless geopolitical factors were put into consideration. We recommend future research attend to contextual variables to minimize unknown variances. Another limitation of this study is the unequal data collection and sampling methods between the two events. We are aware of the possibility of sampling bias on the results. Despite the limitation, this research builds on terrorism scholarship and social media research by showing how temporal, social, and physical proximities influence audience and media institutional framing of terrorism. Terrorism news in social media spreads rapidly and efficiently, well beyond domestic audiences. With many people relying on social media for their news, social media framing research may help advance our knowledge about the ways in which terrorism is constructed by publics and institutions in a fast-paced, contemporary information environment.

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