Expanding Visibility on Twitter: Author and Message Characteristics and Retweeting

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Abstract
Retweeting is not simply to get messages out to new audiences, but also to validate and engage with others. Using a content analysis of 3,429 tweets about the South Korean Anti-Terrorism Act of 2016, this study finds that the tweets created by civil society, political actors, and mass media/journalists are more likely to be retweeted than the tweets written by ordinary individuals, suggesting the role of heuristic strategy. This study also finds that content factors influence retweeting. Emotionally toned tweets are more likely to be retweeted, and rationality of tweets moderates the association between author types and retweeting.

Keywords
retweeting, visibility, Twitter, heuristic-systematic model, information processing

Twitter is one of the most popular social media sites with hundreds of millions of users around the globe (Pew Research Center, 2017). Even though its 280-character message limitation gives Twitter the reputation as a venue for superficial engagement (Gladwell & Shirky, 2011), it is more of a “collection of communities of knowledge, ad hoc groups where individual voices are aggregated into flows of dialog” (Murthy, 2018, p. 12), which circulates around the world in an instant (Nahon & Hemsley, 2013).

Tweeting, however, is not simply about getting messages out to an audience, but it is also about receiving responses from other users, and hoping that an original tweet will be “retweeted” (reposted in either its original form or altered in some way), as during the Occupy Wall Street Movement, about 20% of the 64 million tweets were retweets (Hemsley, 2016). With every retweet, a larger audience is reached and far-flung users are engulfed in viral conversation even when they do not directly contribute (boyd, Golder, & Lotan, 2010).

Retweeting is the key mechanism for information diffusion on Twitter (Suh, Hong, Pirolli, & Chi, 2010). Studies of retweeting have focused on examining (1) content types frequently retweeted (e.g., Li, Vishwanath, & Rao, 2014; Zubiaga, Spina, Martinez, & Fresno, 2015), (2) motivations for retweeting (boyd et al., 2010), and (3) other determinants, such as information completeness (e.g., Liu, Liu, & Li, 2012). This study, however, furthers the understanding of retweeting by drawing upon the heuristic-systematic model of information processing (HSM; Chaiken, 1980), which features two modes of social information processing—a relatively effortless heuristic mode and a more effortful systematic mode. The HSM is used to explain how cognitive processes and message characteristics (rationality) as a proxy of systematic mode work together with emotionality, author characteristics, and embedded message content (URL, “@-mention”) as representations of heuristic mode in explaining how Twitter users determine whether to retweet an original message about a socially and politically controversial issue.

For this study, 3,429 tweets about the Act on Anti-Terrorism for the Protection of Citizens and Public Security (hereafter South Korean Anti-Terrorism Act) are analyzed. The Anti-Terrorism Act was passed on 3 March 2016, by the then ruling Saenuri Party (current Liberty Korea Party) and then President Park Geun-hye, contending that it was necessary to grant the National Intelligence Service (NIS), the country’s main spy agency, greater power to investigate people and organizations. The bill was highly controversial and
it polarized the nation as supporters and detractors argued its merits and consequences on social media, especially on Twitter (Hong, 2016).

Twitter was one of the main fora on which public discussion of the bill took place (“What Is Anti-Terrorism Act?” 2016). Because retweeting creates a snowball-like effect—the more times a message is retweeted, the larger its presence within the network, the more important it seems (Nahon & Hemsley, 2013) and the stronger its influence on public opinion (boyd et al., 2010)—understanding retweeting behavior about the anti-terrorism act has substantial practical and democratic implications (Park, 2013). Twitter is a prominent public space, shaping public opinion, sparking controversy, and creating instant buzz about social and political issues (Pew Research Center, 2017), and thus it provides a unique opportunity to study the changing nature of communication and the dissemination of news and information (Murthy, 2018), in the context of deliberative discourse about public concerns.

**Literature Review**

**Retweeting and Expanded Visibility**

Twitter facilitates real-time and naturally occurring (Nahon & Hemsley, 2013) dissemination and reception of material and serves as an always-on, “ambient media system” (Hermida, 2010, p. 301). Tweeting and retweeting weave news and information into a constantly updated public account of the experiences, interests, and opinions (Murthy, 2018; Webberley, Allen, & Whitaker, 2011). When messages are retweeted, they are pulled apart, reinterpreted, reassembled, and recycled throughout the network. Retweets hold considerably more authority and leverage than original tweets because they not only transmit an original message from a source but also confer tacit approval on the original tweet and its creator, as well as the person who retweeted it (Parmelee & Bichard, 2013). The importance of retweeting is that it increases the visibility of the original tweet and its creator, as well as the person who retweeted it (Parmelee, 2014; Singer, 2014).

Twitter was an especially important venue for understanding the nuances of the South Korean Anti-Terrorism Act. A similar version of this act was proposed right after 9/11, but it did not pass the Parliament because of worries about human rights invasion, particularly privacy (D. Lee & Chun, 2015). The South Korean Anti-Terrorism Act was introduced in response to provocations by North Korea (Cho, 2016) and safety concerns arising from the series of coordinated terrorist attacks in Paris in 2015 that killed at least 130 people (“2015 Paris Terror Attacks Fast Facts,” 2018).

The act greatly expands the power of the NIS to wiretap phone calls and collect personal information on suspected terrorists, including South Korean citizens. The bill’s vague definition of terrorism has created the fear that, rather than exclusively targeting legitimate threats to the state, the law could end up being used to intimidate anyone who runs afoul of the government (Fattig, 2016). To block the bill, 38 opposition lawmakers spoke in the Parliament for more than 193 hours for eight straight days, creating the longest filibuster in the world (Im, 2016).

The mainstream media of South Korea were divided regarding the necessity for the bill. While conservative newspapers and two public broadcasters (KBS and MBC) aligned with the ruling party strongly supported the bill, liberal media outlets (such as Hankyoreh and Kyunghyang) opposed the bill, arguing that the government and the ruling party were more interested in stifling dissent than in sustaining a vibrant democracy (Hwang, 2016). The public turned to Twitter to learn more about the bill and how it would affect them personally and the nation as a whole. Moreover, they used the site to advance their own opinions and knowledge of the anti-terrorism act and to retweet messages sent from others as a showing of democratic deliberation (Hong, 2016).

**The HSM and Retweeting**

The HSM (Chaiken, 1980) has been linked to the influence of social media on support for political candidates (Johnson & Kaye, 2017) and to perceived credibility of Twitter posts (Westerman, Spence, & Van Der Heide, 2014), and thus the model could explain why some Twitter messages are retweeted more often than others. HSM delineates two parallel, co-occurring modes of information processing that determine attitudes and other social judgments (Chen & Chaiken, 1999). **Systematic processing** is a deliberative mechanism in which message-relevant cognition plays a critical role in forming a judgment about the information received (Chaiken, 1987). It requires a high level of motivation, ability, and cognitive resources (Chen & Chaiken, 1999). In contrast, **heuristic processing** involves the use of easy-to-understand cues and cognitive shortcuts to make a judgment (Chaiken, 1980; Metzger & Flanagin, 2015; Trumbo, 1999). When high-level precision is needed, systematic methods of verifying information and sources is most appropriate, and thus systematic mode is closely associated with democratic deliberation (Griffin, Neuwirth, Giese, & Dunwoody, 2002), but for more casual concerns, such as entertainment news, heuristics suffice (Chen & Chaiken, 1999; Metzger, 2007).

Whether systematic or heuristic processing dominates the decision to retweet could be based on message quality (Hu & Sundar, 2010; Metzger, Flanagin, & Medders, 2010). For example, users who have expertise and the time to judge message quality will do so systematically. But information overload challenges these processing abilities of even the most experienced users (L. Zhang, Peng, Zhang, Wang, & Zhu, 2014). The glut of information on Twitter often surpasses the upper limit of users’ cognitive capacity, leaving them to set up their own “triage” system of responding, thus they ease their decision to retweet by relying on efficient heuristic evaluation (Morris, Counts, Roseway, Hoff, & Schwarz, 2012) of a
message’s contextual features, such as message emotionality and rationality, embedded message content, author characteristics, and the author’s number of followers (J. Y. Lee & Sundar, 2013; W. Zhang & Watts, 2008).

**Message Emotionality.** General emotional appeals are effective persuasive devices, and as Forgas (2006) noted, emotions can influence “what we notice, what we learn, what we remember, and ultimately the kinds of judgments and decisions we make” (p. 273). Emotionality of content magnifies the vividness of information, makes an author’s position seem more extreme and emphatic, creates feelings of warmth and intimacy (Huffaker, 2010; Schweiger & Quiring, 2005), draws greater interest from readers (Nisbett & Ross, 1980), and is more viral than non-emotional content (e.g., E. Kim, Hou, Han, & Himelboim, 2016; Spence, Lachlan, Edwards, & Edwards, 2015; L. Zhang et al., 2014). From this perspective, expressing emotion is a form of social influence that evokes strong responses. Such reasoning is based on the proposition that emotionally toned messages are processed in heuristic mode (Pallak, Murroni, & Koch, 1983), which requires less effort than in systematic mode.

Drawing on the literature, the following hypothesis is posed:

**H1:** Twitter users more frequently retweet emotional messages than non-emotional messages about the South Korean Anti-Terrorism Act.

**Message Rationality.** A rational communication style entails a tweet structure that is more complex than an emotional style because it presents both rigorous facts and solid arguments (Liu & Weber, 2014). Rationality of a message is crucial in determining information quality (Habermas, 1991), and thus whether a post will be retweeted. High-quality political discourse encourages participants to make rational arguments supported by logical explanations. Rational tweets, therefore, require systematic processing because of their more complex stimulus structure. Considering that little research has tested the association between rationality of a tweet and retweeting, this study poses the following research question:

**RQ1:** Does the rationality of a tweet about the South Korean Anti-Terrorism Act predict retweeting?

**Embedded Message Content.** Embedded content, such as a URL or an “@-mention,” within an original tweet plays an important role in retweeting (Suh et al., 2010; L. Zhang et al., 2014). URLs and mentions are especially important for assessing the quality of tweets, which, because of the limited number of characters, often do not contain enough information processing cues for a reader to make a reliable judgment (Suh et al., 2010). Because URLs and mentions provide additional prompts, this study poses the following hypothesis:

**H2a:** The presence of a URL in a tweet about the South Korean Anti-Terrorism Act is positively associated with retweeting.

**H2b:** The presence of an “@-mention” in a tweet about the South Korean Anti-Terrorism Act is positively associated with retweeting.

**Author Characteristics and Number of Followers.** An author’s authoritativeness is a prime criterion for evaluating credibility of a given message. Posts by people who lack expertise in certain domains are rarely considered trustworthy, while posts by those with perceived or actual authority are seen as important and credible (J. Y. Lee & Sundar, 2013).

Author characteristics (number of followers, identity, and reputation) are key heuristic cues for evaluating the credibility of a tweet (Metzger et al., 2010; Zaman, Herbrich, van Gael, & Stern, 2010), with preference often given to authors who are perceived as being close to the situation (Murthy, 2018). Twitter users also make judgments of truthfulness by relying on content alone without taking the author into consideration (Morris et al., 2012), but when author characteristics are used as the main heuristic, they have a stronger influence on retweeting than the content of the tweet itself (Wang & Huberman, 2012).

An author’s larger occupational or social role might also cue retweeting. For example, messages from “civil society,” such as those issued by civic activists or union members, “political actors,” such as legislators or their spokesperson, or “journalists” could elicit retweeting simply because of the author’s standing. Ample empirical evidence shows that an author’s reputation, expertise, endorsement, and trustworthiness serve as heuristic cues for evaluating the credibility of online information (Liu et al., 2012; Metzger et al., 2010). Tweets posted by “officials” are considered trustworthy and valuable (Castillo, Mendoza, & Poblete, 2011), and those authored by professional journalists are retweeted more frequently than tweets by ordinary users (Cha, Benevenuto, Haddadi, & Gummadi, 2012).

Because the decision to retweet is often made on author characteristics, the third hypothesis asserts:

**H3:** Twitter users more frequently retweet messages about the South Korean Anti-Terrorism Act originally posted by elite users (mass media, political actors, civil society) than those written by ordinary citizens.

Twitter is a game of numbers, and users with a large number of followers are judged as more influential and popular than those with fewer followers (Cha, Haddadi, Benevenuto, & Gummadi, 2010). A large following induces the bandwagon cue, a type of heuristic mode (J. Y. Lee & Sundar, 2013). Celebrities, politicians, and mass media outlets tend to have more followers than ordinary users (Fuchs, 2014). The
pressure to acquire a large audience has become so strong that Twitter users can now buy “automated bots” to inflate their number of followers and make themselves appear more important (Confessore, Dance, Harris, & Hansen, 2018). The payoff is that messages penned by tweeters who are seen as opinion leaders vis-à-vis their large number of followers are retweeted more often than those written by ordinary individuals with fewer followers (Wu, Hofman, Mason, & Watts, 2011).

Accordingly, this study expects that an author’s number of followers is positively related to retweeting, thus the fourth hypothesis posits:

**H4: An author’s number of followers positively predicts retweets about the South Korean Anti-Terrorism Act.**

**Interplay of Message and Author Characteristics**

The systematic and heuristic modes can be viewed as endpoints on a continuum (Bohner, Moskowitz, & Chaiken, 1995); however, that continuum is asymmetrical in the sense that the deliberate use of more effortful strategies does not preclude the possibility that less effortful processes continue to operate (Bohner et al., 1995).

Heuristic or systematic information processes may be additive, in that the two modes influence each other, with judgments based on how heuristic-cue information is congruent with other available judgment-relevant information (Chen & Chaiken, 1999). The above logic supports that author characteristics and message features may co-work to predict retweeting. Applying the expert heuristic for elite users may be congruent with a rational style because experts are perceived as competent, and the expert heuristic may be combined with the systematic information processing of experts’ messages. Conversely, messages by laypersons that are judged as less credible or less competent could be combined with the affective heuristic. For example, tweets by expert authors that contained objective information are retweeted more often than subjective tweets created by amateur authors (Liu et al., 2012).

Based on the literature, this study formulates two research questions concerning how the author and message characteristics of a tweet work independently or influence each other:

**RQ2:** Do author characteristics and emotionality interact to influence whether messages about the South Korean Anti-Terrorism Act were retweeted?

**RQ3:** Do author characteristics and rationality interact to influence whether messages about the South Korean Anti-Terrorism Act were retweeted?

**Method**

**Sampling**

To test the hypotheses and research questions, this study conducted a content analysis of tweets pertaining to the South Korean Anti-Terrorism Act. This study collected tweets written between 19 February and 1 March 2016, when the public discourse about the bill was very active on social media, including Twitter. The following Korean keywords were used to collect relevant tweets: “테러방지법 (anti-terrorism act),” “테러방지 (anti-terrorism),” and “#테러방지법 (#anti-terrorism act).” In total, 82,255 tweets were collected via Twitter’s streaming API, researcher-developed tracking software. API tracked the author’s identity of each tweet and the number of retweets per tweet, and deciphered shortened Tweet URLs. Out of the total tweets, 5% were randomly selected for analysis as a representative sample and to keep the data manageable. After excluding duplicate tweets, and irrelevant (i.e., spam) tweets and retweets, this study obtained a final sample of 3,429 initial tweets.

**Variables**

Two graduate students majoring in mass communication and who are fluent in both Korean and English coded the final sample of tweets (N=3,429). They coded the author types of tweets using account names and user descriptions on Twitter profiles. Drawing upon Habermas (1984) and Larsson and Ihlen (2015), four types of *authors* were identified: (1) ordinary citizens (non-professional/private citizen), (2) civil society (NGOs, unions, and civic activists), (3) political actors (government bodies, legislators, and political parties), and (4) mass media/journalists. Intercoder reliability was measured using Cohen’s kappa (κ = .85).

*Rationality* (κ = .78) was operationalized as the expression of a reasoned argument for or against the bill. Drawing upon Chaudhuri and Buck (1995), a tweet was coded as rational if a thoughtful, factual mode of expression was observed with regard to the benefits and/or problems of the bill. For example, the tweet “I am for the bill because it protects us from any threats” was coded “rational,” while “The Democratic Party is an idiot, messing up anti-terrorism act” was coded “non-rational.”

*Emotionality* was measured as a binary variable, by considering the presence of emoticons (e.g., :-) [sarcasm], ^^ [agree], and: -) [happy]), exclamation point (!), grammatically modal particles (mood-indicating words such as “damn” and “shit”), and strong emotional adjectives such as “horrible,” “excited,” or “ugly” (κ = .82). For example, the post “Wow:-) NIS keeps me safe!” was coded as “emotional” because it contains one emoticon (the sarcastic face), one modal particle (“Wow”), and two exclamation points. If any of the emotionality indicators is not included, the tweet was coded as “non-emotional.”

Although emotions can take various forms (i.e., sad, happy, positive, and negative), this study assesses emotions as one variable for three reasons. First, the current study is interested in whether and how emotionally toned tweets as a counterpart of rationality influence retweeting. Second, emotionality is measured as a binary variable, thus categorizing different
types of emotions is not appropriate. Finally, this study tests interaction effects between systematic mode and heuristic mode, and segmenting emotions into various forms would blur the focus of this study. Indeed, several studies about Twitter also analyze emotion as a single variable (e.g., Hemsley, Garcia-Murillo, & MacInnes, 2018; L. Zhang et al., 2014).

The number of followers was obtained from the Twitter account of each author. The number of retweets per initial tweet represents the dependent variable, retweeting. Following Suh et al. (2010), this study used the existence of a URL (i.e., http://h21.hani.co.kr/arti/politics/politics_general/41246.html) or an @-mention (i.e., “@securas, be careful what you say!”) as control variables in the analysis (see appendix).

Data Analysis

Regression analysis sets the dependent variable (retweeting) as the outcome, and with author characteristics, message style characteristics (emotional and rational), number of followers, and control variables (i.e., URLs and mentions) as covariates. To estimate the retweeting level of an initial tweet, a negative binomial regression model with maximum likelihood procedures for parameter estimation was used. A traditional linear regression model using the ordinary least squares (OLS) method for parameter estimation is not appropriate in this study (Hardin & Hilbe, 2007) because the dependent variables—the number of retweets—are not normally distributed and highly skewed.

Of all investigated initial tweets, 22% received at least one retweet. On average, each initial tweet in the analyzed sample received 0.73 retweets (Min=0, Max=104, SD=28.48). Because 78% of tweets had zero retweets, the zero-inflated adjustment to the estimation model was used. To test whether author or message characteristics affected retweeting, the baseline model was estimated (lq \( \chi^2 = 182.04, df=2, p < .001 \)) for the two control variables. Next, author and message characteristics were added to the baseline model as main and interaction variables (lq \( \chi^2 = 391.33, df=14, p < .001 \)).

In the baseline regression model, the control variables of URLs (present in 54% of all initial tweets) and @-mentions (17%) were included first. The number of followers (\( M=984.29, SD=1,526.33 \)) and tweet author types were added next: civil society (14%), political actors (10%), or mass media/journalists (23%), with ordinary citizen users as the reference category. Next, the message style characteristics (emotional = 39%, rational = 38%) were added to the model. Finally, the interaction variables with the four author types and the two message styles were included.

Predictors of retweeting are given as incidence rate ratios (IRRs). The IRR for each independent variable demonstrates the change in the probability of retweeting (the dependent variable) for a one-unit change in the independent variable. IRR greater than 1 indicates the percent increase in the count of dependent variable (number of retweets), while IRR below 1 represents the percent decrease in the count of the dependent variable.

Results

The first hypothesis predicted that emotional tweets about the South Korean Anti-Terrorism Act were more often retweeted than those that were rational. This hypothesis is confirmed, as emotional tweets are more frequently retweeted than non-emotional tweets (IRR = 1.582, SE = 0.171). Conversely, for RQ1, which addressed the impact of rationality on retweeting, the results demonstrate that rationality did not predict retweeting (IRR = 1.081, SE = 0.325) (Table 1).

The second hypothesis predicted that URLs and @-mentions in a tweet are positively related to retweeting. Both the presence of a URL (IRR = 1.539, SE = 0.122) and the presence of an @-mention (IRR = 1.216, SE = 0.324) were significantly associated with retweeting, supporting H2a and H2b.

The third hypothesis predicted that tweets by the three elite user groups were retweeted more times than those by ordinary citizens. This hypothesis is supported. Tweets written by civil society (\( N=480, IRR = 1.902, SE = 0.23 \)), mass media/journalists (\( N=789, IRR = 1.733, SE = 0.261 \)), and political actors (\( N=343, IRR = 1.458, SE = 0.318 \)) garnered 90%, 73%, and 46% more retweets than those inked by ordinary citizens, respectively. Each tweet written by a civil society author was retweeted 1.05 times, whereas each tweet penned by an ordinary citizen was retweeted 0.55 times (Tables 1 and 2).

The fourth hypothesis (the positive association between the number of followers and retweeting) was confirmed (IRR = 1.49, SE = 0.31). The larger the number of followers, the more times an author’s message about the South Korean Anti-Terrorism Act was retweeted. Civil society, mass media/journalists, and political actors had an average of 1,533; 1,306; and 997 followers, respectively, and also garnered significantly more retweets than ordinary citizens (102 followers) (Tables 1 and 2).

In regard to interactions between author types and the emotional message style (RQ2), the regression model showed no effect on retweeting. The interplay of the three author types and rationality (RQ3) is significant for civil society and mass media (Table 1). Rational tweets written by civil society reaped 122% more retweets than those created by ordinary citizens (IRR = 2.22, SE = 0.33), and those by mass media/journalists picked up 119% more retweets (IRR = 2.19, SE = 0.29). No interaction effect was found for political actors. None of the three interaction variables of author types (civil society, political actors, and mass media/journalists) and emotionality predicted retweeting of initial tweets.

Discussion

Using the theoretical framework of the HSM and the backdrop of the South Korean Anti-Terrorism Act, this study
Table 1. Zero-inflated Negative Binominal Regression Results for Retweeting.

| Author type            | No. of tweets | Exp(B) (SE) |
|------------------------|----------------|-------------|
| Ordinary citizens      | 0.502 (0.234)  |
| Mass media/journalists | 1.539*** (0.122)|
| Political actors       | 1.216*** (0.324)|
| Civil society          | 1.492*** (0.313)|
| Mass media/journalists | 1.902*** (0.230)|
| Political actors       | 1.458*** (0.318)|
| Civil society          | 1.733*** (0.261)|
| Ordinary citizens      | 0              |

Emotionality          | 1.582*** (0.171) |
Rationality (=1)      | 1.081 (0.325)    |

Interactions

Civil society × emotionality | 0.876 (0.205) |
Political actors × emotionality | 0.862 (0.241)|
Mass media × emotionality | 0.752 (0.275) |
Civil society × rationality | 2.221*** (0.332)|
Political actors × rationality | 0.829 (0.254)|
Mass media × rationality | 2.193*** (0.290)|

Nagelkerke R² | 38.7|

The models were estimated using a negative binominal regression model (N=3,408, dispersion parameter \( \alpha = 4.29, SE = 0.31 \)). Ordinary citizen users were entered as the reference category. The estimated regression coefficients are interpreted as incidence rate ratios if they are the exponent of base e (Exp(B)). Ordinary citizens as authors of initial tweets form the reference category.

**p < .01; ***p < .001.

Table 2. Retweet Rates of Four Author Types.

| Author type         | No. of tweets | No. of retweets | Retweet rate | Average no. of followers |
|---------------------|---------------|-----------------|--------------|--------------------------|
| Civil society       | 480           | 502             | 1.05         | 1553                     |
| Mass media/journalists | 789         | 752             | 0.95         | 1306                     |
| Political actors    | 343           | 275             | 0.80         | 997                      |
| Ordinary citizen users | 1817       | 999             | 0.55         | 102                      |

The number of retweets can be used to assess the relative visibility and influence of different author types. The finding that tweets about the South Korean Anti-Terrorism Act posted by ordinary citizens (non-professional/private citizen) were retweeted less often than those by civil society (NGOs, unions, and civic activists), political actors (government bodies, legislators, and political parties), and mass media/journalists implies that these elite users are perceived to be more expert sources than ordinary tweeters, and that their offline reputations may extend to Twitter. Original tweets by political actors such as governmental agencies, lawmakers, and political parties are frequently retweeted, presumably because these groups and individuals are usually perceived to be good at dealing with politically complicated issues. For controversial issues, the word of civil society may be relied on heavily because of wide visibility and experiences. Through retweeting, civil society becomes more influential in social and political decision-making processes. Therefore, it seems that the decision to retweet a message is based on the “expert” heuristic.

Taken together, the above findings indicate that Twitter users rely mostly on heuristic cues such as author occupation and authoritativeness to determine whether to retweet. Twitter users also seem to draw on author heuristic strategy as evidenced by the positive relationship between the number of followers and retweeting. As this study found, the fast-paced conversational environment of Twitter fosters the
use of heuristic cues and thus reduces users’ cognitive load (boyd et al., 2010).

At first glance, this study seems to suggest that the succinctness and superficiality of Twitter messages coupled with the relatively low levels of interactivity and cognitive effort needed to participate make it not such a good venue for deliberative discourse. However, the fact that embedded content (URL and “@-mention”) within a tweet is positively associated with retweeting demonstrates the systematic mechanism is also strong on Twitter. Twitter is limited in its information completeness because of the character limit. To compensate for the brevity of a tweet, users insert a URL into their posts to direct readers to external websites for more information and presumably for in-depth analysis. The inclusion of embedded content promotes systematic processing, which yields more retweets than posts without such links.

Deeper analysis of the interplay of author types and message emotionality and rationality also shows that the decision to retweet is often made systematically. When both author characteristics and message content are considered, rational tweets by civil society and mass media/journalists are retweeted significantly more often than non-rational tweets by the same author types. This finding suggests that Twitter users are not just firing off random thoughts but are seeking guidance and clarity from experts. Tweets authored by mass media are often filtered and edited by news professionals, thus they are likely to be regarded as high quality and credible attract more attention from Twitter users. Civil society and mass media/journalists may be perceived as having more expertise than ordinary citizens and are seen as less biased than political actors, thus rational tweets from civil society and mass media/journalists could be deemed highly credible and worthy of discussion through retweeting. In other words, tweets by elite users may be more congruent with a rational style because experts are perceived as competent, while tweets by ordinary people may be more congruent with an emotional style.

This rationale is consistent with a study that found that tweets by expert authors that contained objective information were retweeted more often than subjective tweets originated by amateur authors (Liu et al., 2012). Perhaps, Twitter users have come to expect “experts” to tweet logical arguments but ordinary people to write emotional messages. The decision to retweet a post is not made solely on whether it is emotional or rational but in tandem with consideration of author characteristics and standing.

Overall, this study makes two theoretical contributions to the literature of HSM in the context of social networking sites. First, this study revealed the nuanced channels of information processing by considering message rationality/emotionality and author traits as stimuli for retweeting. Regarding information sharing or information diffusion on Twitter, prior studies focused mainly on the impact of influential users such as celebrities, experts, mass media (i.e., Cha et al., 2010; Kwak, Lee, Park, & Moon, 2010) instead of tweet characteristics.

This study, however, extended the HSM to Twitter and elucidated how author and message characteristics work independently and together in terms of motivating users to expand the visibility of tweets by retweeting. Second, this study explicates the complex interaction of the heuristic mode and the systematic mode. The results that author types (heuristic mode) together with rationality (systematic mode) resulted in more frequent retweeting suggest three possibilities: (1) heuristic processing may boost systematic processing; (2) systematic processing may suppress heuristic process; and (3) heuristic and systematic processing creates a synergy. These possibilities expand the HSM, particularly the attenuation hypothesis, which posits that systematic processing often attenuates the effects of heuristic process (Chaiken & Maheswaran, 1994). For instance, sometimes Twitter users may rely on either heuristic or systematic processing of information, while other times they may leverage both heuristic and systematic processing modes simultaneously.

This study’s findings also have practical implications, particularly in terms of political discussion about controversial public issues. By spreading a tweet to a broader audience who might otherwise not encounter it, retweeters bring people into a social and political conversation (boyd et al., 2010). But if they retweet a post simply on the basis of heuristic cues, it is not easy to shape more deliberative social or political conversation because heuristic cues often result in an intuitive or biased judgment (Gilovich, Griffin, & Kahneman, 2002). Indeed, after the South Korean Anti-Terrorism Act was proposed by the then ruling party of South Korea, Twitter was inundated with conflicting, sometimes groundless, posts about the bill (H. Kim, 2016). However, this study’s finding of the interplay of heuristic cues (i.e., author characteristics) and systematic cues (i.e., message rationality) indicates that Twitter played a unique role in forming a social and political discussion about a controversial topic. Put another way, the interaction analysis suggests that ordinary Twitter users of South Korea filtered the contents made by elite users by picking up rational posts to retweet. Taken together, the current study shows that Twitter played an important part in leading users to engage in social discussion about the bill.

Limitations and Future Research

South Korea is ideologically divided between the conservative group and the liberal faction. Tweets about the anti-terrorism bill reflected the divisive political landscape (Hahn, Ryu, & Park, 2015), thus the findings of this study are best limited to controversial issues in polarized countries rather than generalized to the overall Twittersphere. In addition, though this study investigated several key factors that determine whether a message will be retweeted, it did not investigate message topics, or the characteristics of those who retweeted the original tweets, who are mostly likely to retweet messages, and what motivates someone to do so.
Such research is needed to link retweeting to user characteristics and to shed light on Twitter itself as a forum for democratic deliberation.

Additional research of systematic information processing with regard to retweeting is also needed to boost understanding of how the decision to retweet rational messages is made and how the need for deliberation on Twitter may play a role in that decision.

This study focused on Twitter, which is in some ways an enigma. It is largely viewed as a forum for unsubstantiated claims and reckless remarks, yet at the same time, it is lauded as a venue for free and open ideas and for advancing political and social ideals, therefore generalizations to other social media should be made with caution.

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**Appendix**

**Codebook**

| Variable                  | Operationalization                                                                 | Examples                                                                 |
|---------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Emotionality              | If a tweet contains any of the following four elements, code as “emotional.” If not, code as “non-emotional.”
(1) Emoticons
(2) Exclamation points: !, !!, !!!
(3) Grammatically modal particles: mood-indicating words such as “damn,” “Jesus,” “Shit”
(4) Strong emotional adjectives: horrible, excited, terrible, ugly | Emoticons: :-] (sarcasm), ^^(agree): -)
(happy): -o (shocked, amazed): - (sad, displeasure): . (crying), \( \langle \_ \_ \_ \rangle \) (angry) |
| Rationality               | Code as “rational” if a thoughtful, factual mode of expression was observed with regard to the benefits and/or problems of the bill. If not, code as “non-rational.” | “I am for the bill because it protects us from any threats.” (rational)
“The Democratic Party is an idiot, messing up anti-terrorism act.” (not rational) |
| Presence of a URL         | Whether a URL is attached to a tweet. Presence = 1, absence = 0                    | http://www.hani.co.kr/arti/politics/politics_general/731873.html
“@protectprivacy, want to be free from government!” |
| Presence of an @-mention  | Whether an @-mention is contained to a tweet. Presence = 1, absence = 0          |
| Author’s number of followers | Number of followers in the author’s profile                                       |
| Civil society             | NGOs, unions, civic activists                                                     |
| Mass media/journalists    | Traditional and online media, journalists                                         |
| Political actors          | Government bodies, legislators, political parties                                 |
| Ordinary citizen users    | Non-professionals, private citizens                                               |
| Peoplepower21, Hrights, Nodong
KBS, JTBC, MBC, Hankyoreh
Saenuri Party, Democratic Party