

# Developing a Theoretical Framework for Processing the Negative Information in Social Media: Analysis of Twitter User Interaction with Negative Political Misinformation

**Jinwook Lee**

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Jinwook Lee from South Korea holds a Bachelor of Arts degree in Liberal Arts from Soka University in Japan. He also went to Griffith University in Brisbane, Australia for the Study Abroad Program. This article is a revised version of his capstone project for his graduation requirement. He plans to pursue his academic career in the Master of Arts and Ph.D. program in political science. Jinwook's academic interests include international relations, political behavior, the influence of conspiracy theory in individuals' political decision-making, and contemporary war crimes. Email: [jason.jinwook.lee@gmail.com](mailto:jason.jinwook.lee@gmail.com).

## **Abstract**

The author explores the fundamental aspects of the rational decision-making process with the aim of understanding that negative information has the possibility to distort processing of political information. This article further develops a theoretical framework of the relationship between negative information on social media and its receiver. This article conducts an empirical analysis to partially prove this framework with the Twitter texts spread by the Internet Research Agency (IRA). This analysis indicates that: (1) tweets containing negative information had more interaction than tweets containing positive information; (2) tweets containing anger-inducing content had more interaction than tweets containing fearful content. These results suggest that negative emotion would have a more significant effect on this process, and different negative emotions can have a distinct effect on information processing.

## **Keywords**

Information Processing; Rationality; Emotion; Agenda-setting; Social Media

## Introduction

A critical aspect of studying political behavior is gaining vital insights into how individuals are affected when processing the information required to make a political judgment. This entails attention due to the increased threats of misinformation which may distort the political behavior of individuals. Various elements of misinformation require deeper research into their effectiveness in distorting political behavior. Therefore, this article focuses on the role of emotion in processing political information and compares specific emotions to identify which emotions are more compelling in influencing political decisions.

Among the various providers of public information, the media is the main supplier of political information. In this regard this article introduces agenda-setting theory to demonstrate the ability of the media to sway the focus of individuals on an issue. Although agenda-setting theory mainly examines the relationship between traditional media and its audience, researchers have found that information shared on social media can have a similar effect on its viewers. Further research on agenda-setting demonstrates that the intensity of emotions in the information has a distinct impact on shaping the issues for the information receiver.

This article provides a theoretical framework for the ability of negative information to affect a voter's behavior. To conduct an empirical analysis to partially prove this framework, the author analyzed tweet texts from the Internet Research Agency (IRA) demonstrating false information in US society, and finds that negative emotions in tweet texts elicit more interaction than positively written tweet texts. These results will be corroborated with agenda-setting theory to indicate that information from those tweets may have distorted the voting behavior of Americans as well as their perspective on various domestic social issues.

## Literature Review

### *The Theory of Agenda-Setting*

The theory of agenda-setting originated from a US presidential election experiment conducted by Maxwell McCombs and Donald Shaw in 1969 (McCombs and Guo 2014, 251). Based on this experiment, the researchers found that there was a significant positive correlation between public issues as ordered by media descriptions and the perceptions of the participants regarding which issues were the most important for them (McCombs and Guo 2014, 252). The results suggest that issues covered by the media's agenda had a compelling influence on constructing individuals' agendas concerning those issues (McCombs and Guo 2014, 251).

The theory of agenda-setting broadly has two determinant factors, namely the formation of accessibility by a certain degree of exposure by the media and the need for orientation (NFO). The degree of issues' salience among individuals is decided by how relevant the issues are to them

and how accessible the information about those issues are to them from their memory storage. In this aspect, it is essential to acknowledge agenda-setting as an excellent tool to make information more accessible. The degree of media exposure is a critical factor for familiarizing individuals with these issues and eventually leading them to bear a desired attitude of the media toward the issues (Kim, Scheufele, and Shanahan 2002, 9).

The NFO implies that the degree of desire to understand specific issues varies between individuals. The significance of the NFO is that it provides a psychological explanation of the impact of agenda-setting on individuals (Matthes 2005, 423). The conditions of the NFO are systematically organized by focusing on the relevance of specific issues for individuals and their certainty about these issues being discussed in the media ((Matthes 2005, 424). If individuals are not interested in a specific issue and have a low level of uncertainty about it, they are regarded as having a low NFO (424). Conversely, if individuals realize that an issue is relevant to them but they are less certain of this issue, they will have a high NFO (Matthes 2005). Considering the relationship between the NFO and the agenda-setting effect, individuals who have a high NFO would have a similar agenda to the media, due to the tendency that more information is available from mass media (McCombs and Weaver 1973). To summarize, the relation between NFO and the issues works as follows:

- High need for orientation: relevance of issue is high, but certainty is low
- Low need for orientation: relevance of issue is low, but certainty is high

The theory of agenda-setting was further developed to understand how the portrayal of issues can make individuals focus on certain aspects of the issue rather than viewing it as a whole. Attribute agenda-setting theory suggests that various attributes of an issue, which are described and ranked according to their importance by the media, can lead individuals to focus on those attributes as well (McCombs and Guo 2014, 254). Attributes here are primarily defined and clarified in terms of political decisions. Attributes are classified into two groups, namely substantive and affective attributes (McCombs et al. 1997). The substantive attributes of a political candidate consist mostly of personal information about the candidate, such as their personality and educational background, whereas the affective attributes are the positive, neutral, or negative descriptions of the substantive attributes (McCombs et al. 1997, 706).

The distinction between the two types implies that the effect of agenda-setting can exploit the various attributes to deliver the salience of the objectives. The emphasized attributes resonate more significantly among individuals than other attributes disregarded by the media (McCombs 2005, 547). This hypothesis is also called a compelling argument which suggests that the salience of an issue is decided mainly by which attributes are accentuated by the mass media; individuals

would be isolated in a salient area of attributes when it comes to information processing (McCombs and Ghanem 2001, 76; McCombs and Guo 2014, 257).

Attribute agenda-setting has more impact on individuals when the information is negatively described than when it is positively depicted (Wu and Coleman 2009, 784). For example, frequent negative exposure of the government's economic performance by the media resulted in individuals having a lower assessment of the government (Sheafer 2007, 30-31). Another research similarly indicates that when individuals were asked to express their feelings regarding presidential candidates, more attention was given to candidates' negative attributes than their positive ones (Klein 1991, 412-18).

Although agenda-setting theory was chiefly developed by focusing on traditional media outlets, social media has also emerged in the area of agenda setting for its powerful ability to connect with individuals and diffuse information among people. People do not only share information on social media, but they are also exposed to numerous pieces of information from people with whom they have relationships. These relationships on social media can be built with people they know or with people with whom they share an interest in a specific topic. The diffusion of information derived from this connectivity has been a significant target for political campaign advertisements.

Social media can be a transmitter of political information from mass media, which results in shaping the salience of issues for its users (Feezell 2017, 2). As the communication distance between traditional media and the audience has become less, reverse information sharing between online social media and traditional media can also occur, due to the agility of sharing events on social media (Harder, Sevenans, and Aelst 2017, 13; Sayre et al. 2010, 5). It suggests that social media plays an intermediate role in agenda setting between social media and traditional media, meaning that the salient information about specific events can be shared from traditional media to social media, and vice versa.

This article follows the suggestion by Feezell (2017) that social media does not only play an intermediate role but, as a platform, has a direct agenda-setting effect for individuals. Camaj (2014, 695-96) identified that agenda-setting effect is great among individuals who have a high interest and low uncertainty on the issues – known as having an active involvement NFO – due to their tendency to actively receive the information. The source of information of the individuals who have an active involvement NFO is mostly politically biased media sources, inferring that the reason for consuming those media is that their political behavior and beliefs are already shaped (Camaj 2014, 695-96). Empirical research by Taber and Lodge (2006) clearly illustrates that individuals whose political values are firmly formed display the tendency to be more polarized in

their political point of view by seeking more agreeable information than incongruent political information. This biased way of searching information does not mean that those individuals constantly refrain from receiving incongruent political opinions. Rather, they are prone to consume information which solidifies their political preference and even engage in a mental process with noticeable efforts to negate disparate political opinions (Garrett 2009, 692).

In contrast, Feezell (2017, 4) has indicated that agenda-setting effects, through unexpected exposure to information shared on social media, are compelling to individuals who have less political inclination on specific issues but have a passive involvement NFO as being less interested and uncertain on the issues. The reason for this phenomenon is that incidental exposure to political information through social media undermines the deliberate avoidance of information on specific topics (Feezell 2017, 4). It also signifies the salience of information from mass media shared in social media, because this information sharing takes place in a trusted relationship on a social media platform. Hence, it is considered that:

- Active involvement NFO: the level of relevance and certainty is high on the issues
- Passive involvement NFO: the level of relevance and certainty is low on the issues

Agenda-setting through social media will have a varying impact among individuals depending on (a) how the shared information accentuates certain aspects of political issues since its connectivity provides an opportunity for individuals to encounter various political information from diverse sources for similar topics, and (b) the extent to which their political inclination is firmly formed. Thus, recognizing what type of NFO is necessary to correctly estimate how their angle on the issues will be similar compared to the agenda from information sources.

### ***Bounded Rationality***

Rationality is a central concept in social science which helps to understand the decision-making processes of individuals. The development of rational choice theory (RCT) and its application to decision-making processes on various social phenomena were initiated by the extensive application of rational interaction among individuals to economic behavior (Scott 2000, 126). According to RCT, decision-making is based on individual rationality. The theory suggests that individuals behave in a way that utilizes their cognitive abilities to maximize their self-interest (Smith 1991, 878). The basic assumption of rational decision-making is that individuals who are rational when making decisions have a concrete preference for a specific decision-making process, and will eventually choose the best alternatives using criteria based on that preference (Osborne and Rubinstein 1998, 834).

Another premise of RCT postulates that individuals will have complete information regarding their decision at their disposal (Green 2002, 10). This suggests that individuals, when

making a rational decision, are fully capable of cognitively calculating the outcomes of all alternatives using all relevant information. However, considering the limited conditions under which individuals have all the information when making decisions, individuals who have inadequate information would have an increased degree of uncertainty when deciding on a rational alternative. This does not necessarily mean that the alternative chosen under these conditions is always irrational and thus undesirable. Lipshitz and Strauss (1997, 153) have suggested that individuals can even use the tactics of utilizing the information which they have already accumulated using their cognitive capacity to predict a set of highly possible outcomes. In this process, the role of such information is that it reduces uncertainties with the help of constraints inherent in individuals, and therefore it allows individuals to acknowledge the risk of each alternative (Grunig 1966, 18).

The opposition of RCT has criticized its limited application of various social circumstances because of its mathematically calculated methodologies. There is also suspicion regarding individuals' lack of the capability to process information, which often results in making undesirable decisions. In this regard, the theory of bounded rationality emerged from the need to produce an empirical prediction of human behavior while acknowledging that complete rationality is unrealistic and that emotion is crucial in cognitive decision-making (Selten 1999, 3). Jones (2003) has pointed out that perfection in calculating and comparing the pay-offs of each alternative is highly unrealistic, because individuals' cognitive capacity is often limited by their attention span for each alternative, suggesting that individuals tend to focus on alternatives sequentially (399). Such lack of calculation capacity is connected to their limited ability to process information, as suggested by the difference between the marginal utility calculated by a normative RCT model and models including frequent errors based on individuals' limited ability to process information (De Palma, Myers, and Papageorgiou 1994, 420).

The capability of individuals to process the information is not the only crucial attribute when making a decision, but the environment also becomes a primary factor in decision-making. The social networks to which individuals belong become places of distinctive analysis and searches for similar information (Forester 1984, 27). Searching for information on such networks can strengthen an individual's decision-making boundaries, due to the highly selective information found on such networks (Forester 1984, 28). Considerable research on political communication suggests that social media have an echo chamber effect which magnifies this penchant for searching political information. Algorithms in social media discreetly curate user's experiences in a platform and often dominate the selection of the information the user will encounter. Social media platforms apply various primary features to render its algorithm, such as the popularity of

the topics in specific regions, interaction history of users with other users, and highlighting recent information over old information (Bozdag 2013, 216). Those algorithms filter undesirable information and suggest the most suitable information for the users (211). Social media users do have some degree of authority on adjusting the preference of information exposure, but receiving personalized information through their adjustment is one of the reasons for having an echo chamber effect, as individuals are mostly exposed to their preferred information. Individuals circumscribed in this filter bubble will sacrifice the opportunities to encounter diverse opinions on specific political subjects and be eventually willing to withdraw from the discussion with other individuals with contrasting political points of view (Spohr 2017, 151; Cinelli et al. 2021, 5).

Bounded rationality states that individuals use heuristic decision-making. The use of heuristics suggests a reasonable explanation for reaching a decision based on a limited amount of information or by neglecting unnecessary information to reduce uncertainty and complexity (Kurz-Milcke and Gigerenzer 2007). In terms of political decision-making, heuristics are used as shortcuts by individuals who normally lack information and concerns about politics, allowing them to reach decisions with less cognitive efforts (Lau and Redlawsk 2001, 952). One of the notable examples of using heuristic skills for political decisions is endorsement. Endorsement is defined as an announcement of public support by other groups or individuals to the specific political candidate or activity on a specific matter. Individuals use endorsement as reliable information on complicated political decisions along with low-cost information when they do not have the motivation to obtain expensive political information (Lupia 1992, 393). However, it has been found that these individuals are vulnerable to having similar political expressions to those of the endorsers on a specific issue, when they acknowledge that the endorsers are related to that issue and they themselves do not have enough information on the political topics and have low motivation to process further political information from other sources (Chaiken and Ledgerwood 2012, 261; Forehand, Gastil, and Smith 2004, 2226).

Another example of using heuristic skills for processing political information is how individuals utilize the partisanship of candidates as a cue to make their political decision, such as voting. Voters use partisanship to determine the degree of affinity of their political values with specific candidates. Partisanship is regarded as low-cost information with a huge impact on their choice and prompts individuals to vote for their supporting party with a sense of belonging in a political group and bolstering the interest of this group through voting (Schaffner and Streb 2002, 560; Krishna and Sokolova 2017, 538). Individuals belonging to homogenous social networks will adhere to partisanship to access the political information due to the less occasion of encountering diverse information within this network (Krishna and Sokolova 2017, 541). Voters who place

heavy value on their political ideology for making a political decision depend less on partisanship cues because reliance on political ideology requires considerable effort into making political decisions (Krishna and Sokolova 2017, 542). It implies that the effectiveness of utilizing partisanship as a heuristic skill varies with individuals. Despite individuals having solid partisanship, one's political values nullify the significant effect of partisanship, leading to an increased likelihood of consuming discrepant political information from the contemporary environment where individuals became exposed to more political information from social media (Messing and Westwood 2012).

As there are numerous impeding factors to accomplishing rational decisions, bounded rationality provides an alternate route for acquiring optimized decision-making by using heuristic skills. Heuristic skills can be used as an efficient tool without expending more effort collecting additional information. Even so, it is related to an additional question together with the growing concern of the influence of social media on information processing, namely whether this skill can be used for appropriate political judgments inasmuch as the use of heuristic skills to process information is based on limited cognitive ability.

### ***Impact of Emotion on Processing Political Information***

The affective intelligence theory which emphasizes the role of emotion in decision-making discloses that emotional reaction precedes consciousness and so is leading decision-making process itself (Marcus, Neuman, and Mackuen 2000, 44). It illustrates that emotion is another important aspect of heuristics to achieve an optimized decision. Affective heuristics suggest that individuals make decisions not only by focusing on reasoning, but also by considering how it feels to reach a decision (Slovic et al. 2007, 1343). It indicates that if individuals like an activity the risk of reaching a decision would be considered low and the benefits high; if they do not like the activity, the risk would be considered high and the benefits low (Slovic et al. 2007, 1343). For this reason, emotion has a significant influence on processing information, and emotions such as anger, fear, and enthusiasm have been studied exclusively (Mutz 2009, 83). This article focuses on two emotions, namely fear and anger, for the sake of developing a theoretical framework.

The influence of fear on an individual is mostly treated as interchangeable with the emotion of anxiety (Brader and Marcus, 2013). For the sake of simplicity, this article also uses both emotions interchangeably in terms of processing political information. Fear is provoked when individuals are confronted by a situation of uncertainty and threat which they are not used to resolving (Rico, Guinjoan, and Anduiza 2017, 446). This emotion causes the demeanor and cognitive processes of individuals to be altered, to focus on tackling the issue which induced the fear (Brader and Marcus 2013, 178). Anger, on the other hand, is caused by threats from the



external environment when individuals deem that their benefits are in danger and that they know the target that is responsible for this (Rico, Guinjoan, and Anduiza 2017, 446).

These two emotions in particular have distinct effects on individuals in terms of information processing. The more anxious individuals are, the more likely they are to search for more information, whereas positively driven emotions tend to make individuals participate more in politics (Marcus, Neuman, and Mackuen 2000, 61). When individuals are influenced by feelings of anxiety, they become less inclined to use heuristic information processing and are more susceptible to accepting perspectives that they could not consider before with the increased degree of compromise (MacKuen et al. 2010, 441, 452). Fear also influences them to reevaluate their choices in the current situation by putting less importance on their prior beliefs (Brader 2005, 391). Connecting with this finding, Parker and Isbell (2010, 2) found that fear stimulates individuals to rely on more detailed information for their judgment in voting and thus to reach a cautious decision (2). Avoidance is another emotional reaction to alleviate feelings of fear in the environment where individuals experience frightening situations (Lemerise and Arsenio 2000, 114). The use of avoidance depends on the level of anxiety individuals may have, meaning that intense fearful emotion is most likely to stimulate avoidance behavior in individuals (Lee 2019, 151).

Compared to anxiety, anger has a different impact on an individual's cognition and information processing. In relation to cognition, angered individuals have a decreased understanding of the situation, meaning that risk is recognized to a lesser degree, and they are prone to be less deliberate in their actions, resulting in a strong possibility of taking risky actions (Huddy, Feldman, and Cassese 2007, 206). The stimuli of anger provoke anger-related cognitive conditions, followed by information processing in this condition (Isbell, Ottani, and Burns 2006, 66). The unique point of this information processing is that this processing leads to manipulation of mentality, resulting in additional anger towards the target situation or person (Isbell, Ottani, and Burns 2006, 66). Furthermore, anger causes individuals to use more heuristic hints for processing information (Tiedens and Linton 2001, 977). These heuristic hints guide individuals to make judgments about targets based on their social stereotypes, because decision processing is accelerated when an individual experiences physical or mental harm (Bodenhausen, Sheppard, and Kramer 1994, 58-59).

Fear is most likely to lead individuals to make less biased decisions by stimulating them to search for more information and perform organized information processing as seeking further information regulates this process. Anger causes individuals, who have a biased belief about the anger-inducing situation, to easily accept a message framed by the content stimulating the anger

(DeSteno et al. 2000, 412). These findings on the effect of anger in information processing suggest that this emotion leads to a high possibility of distorting political judgments.

## **Development of Theoretical Framework**

This article presents theoretical explanations of people's inability to make rational political decisions by presenting the negative aspects of heuristic skills in terms of bounded rationality. Negative emotions, such as fear and anger, have been found to exert various impacts on processing political information. Attribute agenda-setting signifies not only the salience of an issue created by the media, but an individual's behavior can also be notably swayed to be negative on issues when information on those issues is negatively presented by the media. Although social media has weakened traditional media for its dominant position on agenda-setting, the findings of the agenda-setting effect through traditional media can reasonably apply to social media.

Therefore, this article provides a theoretical framework that synthesizes the theories presented in the article namely that:

*The political information shared on social media has a great possibility to shape the political behavior of social media users, who have a passive involvement NFO when this information is written in a negative tone.*

This article regards passive involvement NFO as the main principle in this framework. Social media users who are at the beginning stage of shaping specific political beliefs and have this type of NFO would unconsciously not expend much effort in searching for information on political issues due to less interest in politics. Yet, they have frequent exposure to political information in social media with its uniquely arranged environment for users, which makes users to have selective exposure to political information.

The political information gained from social media does not assure that social media users become knowledgeable in issues through that information. Unintended encounters with political information through social media may induce individuals who are less interested in politics to obtain a feeling of knowing the political issues without verifying the authenticity of that information (Feezell and Ortiz 2019). The theoretical framework suggests the possibility of shaping the political behavior of social media users. Feezell (2016) found that repeated selective exposure to online political information having similar agendas may induce users to engage in more online political activity than users who encounter political information having different perspectives. This finding suggests that reinforcement of that feeling by increased selective exposure in social media can develop into a perceived political point of view.

## Empirical Analysis

### *Hypotheses*

In order to partially confirm the theoretical framework, the empirical analysis demonstrates that different emotions in politically related tweet texts indicate distinct degrees of interaction with Twitter users. Hence, this article proposes the following primary hypothesis and secondary hypothesis:

- Tweets that are written in negative contexts receive, on average, more likes than tweets that are written in positive contexts.
  - Tweets that contain the emotion of anger receive, on average, more likes than tweets that contain the emotion of fear.

In the above hypotheses, the average number of likes for tweet texts represents the degree of interaction with users. Although this interaction cannot imply the behavior of each user who clicks the “like” button for a tweet text, it could suggest that Twitter users interact more with negatively stated tweets than with positively stated ones – this behavior could be anticipated by the theoretical explanation of this article. The secondary hypothesis is based on the inference that fearful tweets elicit less interaction from individuals who are exposed to these tweets; individuals would try to find additional information, which could increase the possibility of encountering factual information or may avoid fearful tweets instead of further information searching. By contrast, angry tweets would mainly cause distortion rather than further information processing to examine the genuineness of the information and would result in a stronger tendency to “like” those tweets than fearful tweets.

### *Methodology*

In this article, Twitter data from the IRA were used for the analysis. Since 2018, Twitter has allowed access to its data archive, which has been opened to the public to reveal interference in the societies of various nations by foreign nations utilizing massive Twitter accounts to manipulate Twitter users. Twitter has updated this archive since then and this article analyzed the first dataset released in October 2018. The IRA is an institution in St. Petersburg, Russia, which was established to propagate misinformation to various social classes in targeted nations by infiltrating social media services (The Guardian 2018). This agency implemented the various tactics not only to blindly support the Trump campaign in the presidential candidate race and the presidential election of 2016 but also to divide societies in the US by exploiting conflicts which are deeply inherent within those societies (Shane and Frenkel, 2018; Shane 2018).

The dataset for this research study included 3,613 accounts created by the IRA and the tweet texts for each account. The evidence of interaction with Twitter users is presented as quotes,

replies, likes, and retweet counts. For the analysis in this article, Twitter texts written in English were chosen. In its operation on Twitter, the IRA generated two types of accounts, main accounts and auxiliary accounts (Cleary 2019). Main accounts, which had more than 1,000 followers each, were the main factory creating tweets, and auxiliary accounts delivered those tweets through the function of retweeting (Cleary 2019). Therefore, the author decided to utilize the “like” count rather than the retweet count as evidence of interaction with real Twitter users. The selection of the tweets in the dataset was based on the combination of the following conditions: the Twitter accounts had to have more than 100 followers and the tweets had to have more than 100 likes. Thus, of the 344,475 tweets in English, which had 3,298,121 “like” counts in total, 3,536 tweets were selected for analysis, which had 2,954,285 “like” counts, equivalent to 89.6% of the “likes” for the total number of tweets in English.

### *Data Analysis*

The author analyzed the text of 3,536 tweets to determine emotion and decided to categorize 1,239 tweets as “unidentified tweets,” as the author could not detect the emotion, due to uncertainty regarding the contexts of these tweets. In this dataset, there is a considerable number of tweets that include shortened YouTube links. Although most of the YouTube links were not available, the author identified the emotion of tweets with YouTube links by focusing on the texts, so it was not necessarily required to watch the YouTube video to detect the emotion. However, there were also numerous tweet texts in which emotion could not be detected without the context of the YouTube video and, as a result, they were categorized as unidentified tweets. Most of the tweets in the dataset were disseminated not only as text but as text with images. Twitter also provides the images in the dataset but the author decided to focus on the text for the analysis, due to the difficulty of determining the corresponding images for each tweet in the dataset. In this regard, the author categorized tweet texts which have an uncertain meaning in the text which is clearly expressed through the image of the tweet as unidentified tweets. In addition, the author classified 228 tweets as “tweets for description,” as those tweets mainly described a specific situation or person. Each tweet in this category has a clear context to understand what it means, but specific emotions are not indicated in the tweet.

Table 1: Number of Tweets and its likes for each category

<b>Emotion</b>	<b>Tweet counts</b>	<b>Number of likes</b>
Anger	936	915,664
Fear	137	73,268
Negativity other than anger and fear	465	361,553
positive	531	404,529

Source: Author.

Except for the tweets categorized as “unidentified tweets” and “tweets for the description,” 1,538 tweets were classified as tweets indicating negative emotion, and 531 tweets as indicating positive emotion. Tweets categorized as indicating negative emotion were further classified as indicating “anger,” “fear,” and “negativity expressed other than anger and fear.” To decide which emotion was mainly displayed in the tweet texts, the author contemplated not only specific words which can easily identify specific emotions, but also the contexts of the tweets, considering the various social situations in the US and other countries.

Table 2 provides examples of Twitter texts indicating the emotion of anger. The author identified the contexts of being unfair, illegitimate, or undeserved, which are essential characteristics of the emotion of anger (Brader and Marcus 2013, 180). As presented in Table 2, the IRA exploited the sensitive political issues in the US, such as the illegal immigrant issue, to derive anger by emphasizing the unfairness within the context of the text. Along with these characteristics, contexts designed to assign blame or responsibility for mostly fabricated situations and incidents were also classed as manifestations of anger, as this emotion can be aroused and escalated by the implication of being harmed or having one’s rights violated (Russell and Giner-Sorolla 2011). Indeed, during the analysis of tweet texts, the author observed numerous of them designed to provoke users to have the emotion of anger. Those tweet texts condemn various targets or situations with misinformation. The impact of anger on the political behavior of individuals increases their likelihood of political participation (Weber 2012, 10). This aspect of anger suggests that provoking messages in the text is another crucial indicator to decide which tweet texts indicate anger.

Table 2: Examples of Twitter text indicating emotion of Anger

Don't ever tell me kneeling for the flag is disrespectful to our troops when Trump calls a sitting Senator “Pocahontas” in front of Native American war heroes.
#MAGA hats should be placed right next to Nazi flags as symbols of fascism and white supremacy!
Hiring 10k refugees makes liberals feel warm BUT we have homeless vets that need those jobs. #BoycottStarbucks #ReasonsToProtest #MuslimBan
#FakeVotingFacts: Obama is now openly on live TV telling illegals that nobody will stop them from voting! I can't believe I heard that.
Liberals can identify 50 shades of gender but can't tell the difference between legal and illegal immigration. #MarchForScience
Another black girl is being asked to straighten her hair or face disciplinary action by a school by way of expulsion

Source: Author.

Table 3: Examples of Twitter text indicating emotion of fear

BREAKING NEWS: Protests run out of hand in central Paris. Pure madness.
FOX NEWS ALERT: Jihadis using religious visa to enter US, experts warn
A reminder that ISIS terrorists said they would infiltrate the "refugee" program and attack the West. #WorldRefugeeDay
Hungarian PM Viktor Orban: "European Union leaders and George Soros are seeking a new, mixed, Muslimized Europe"
Dr. Seb Gorka: 'Americans understand the danger of choosing Hillary'
BREAKING: Violence and chaos breaks out as Antifa attacks pro-Trump rally in #Berkeley. #TaxMarch

Source: Author.

In order to systematically detect the fear in the tweet texts, this article adopts the suggestion that a message which prompts fearful emotion has two elements: severity and susceptibility (de Hoog, Stroebe and de Wit 2007, 261). Severity is the outcome for individuals not taking measures for prevention, whereas susceptibility is the risk for negative circumstances (Tannenbaum et al. 2015, 1181). The IRA mainly used misinformation about illegal immigration to the US, the issue of refugees, terrorism, and social-democratic activity, spreading false information about violent demonstrations. As presented in Table 3, fearful tweet texts devised fabricated susceptibility in that misinformation to deliver the possibility of false peril to society. Together with this susceptibility, severity in tweet texts attempted to delude individuals by describing the negative consequences of this possibility. Individuals appear to have the strongest fear reaction when interpreting the subjects in the information as forthcoming threats to their welfare (Myrick and Nabi 2017, 6). The author identified that the IRA tried to use misinformation about immediate threats as a tactic to magnify the emotion of fear among users.

Table 4: Examples of Twitter text indicating positive emotion

Happy 4th of July! May the United States stay united and independent forever! #IndependenceDay
RETWEET if you support our troops!
On this day in 1975, Arthur Ashe becomes the first and only Black man to win the men's singles title at Wimbledon.
Donald Trump is a candidate that speaks directly to the people! #TrumpInDetroit #Trump
"My husband will NEVER give up! You can ALWAYS count on him!" @FLOTUS introducing the president. #MAGA #TrumpScoutBadges
In Greek mythology, Memnon was an Ethiopian king and a warrior who was considered to be Achilles' equal in skill.

Source: Author.

Tweets categorized as indicating positive emotion mostly propagated information to support a specific person, situation, or political ideology. IRA notably created numerous tweets in a positive context by providing examples of various successes of mainly African-Americans. The purpose of those tweets is likely to disturb the inspection by Twitter and attract more users to their accounts, resulting in exposure of their negatively stated other tweets to the audience (Howard et al. 2018, 9).

### **Results**

The primary and secondary hypotheses examined the relationship between the degree of the emotion of a tweet text and the degree of interaction with that tweet text by comparing the mean values calculated from the total number of “likes” for each category of emotion. As the number of tweets and the difference in the total number of “likes” varies greatly, the simple comparison of the mean value for each category without further statistical analysis is insufficient to prove each hypothesis. For this reason, the author performed Welch’s *t*-test using the programming language R because there were significant differences of variance detected between the category of positive and negative emotion and between the category of anger and fear. The use of this statistical method was to determine whether there was a statistical significance in the difference between the mean of the total number of “likes” in the category of negative emotion and that in the category of positive emotion, and between the mean of the total number of “likes” in the anger category and that in the fear category. During the analysis, the author noted that several tweet texts received huge amounts of “likes.” The author decided to winsorize those outliers rather than trimming for the following reason: the author assumes that those outliers were displayed on the social feed of an ample number of Twitter users because IRA Twitter accounts that created those outliers might have more social media influence than other accounts and effectively exploited the topics to grasp the attention of the other users.

Table 5: T-test results of relationship between the categories of Negative and Positive emotion

<b>Emotion</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>df</b>	<b>t</b>	<b>p</b>
Negative	1538	721	1179	1785	4.89	0.000*
Positive	531	526	602			

\*Significant at  $p < 0.05$  level.

Source: Author.

The results of the analysis conducted using Welch’s *t*-test to test the primary hypothesis are presented in Table 5. The test result reveals that the mean of the total number of “likes” in the category of negative emotion is higher than the mean in the category of positive emotion ( $t_{(1785)} = 4.89, p < 0.05$ ). This outcome satisfies the condition of the primary hypothesis and demonstrates that negativity in information certainly has a significant impact on individuals, as indicated by the

greater interaction with the negatively stated information than with the positively stated information. From this impact, it could be inferred that the negative information has more appeal to the information receivers than the positive information.

The results of the analysis conducted using Welch's *t*-test to test the secondary hypothesis are presented in Table 6. The test result reveals that the mean of the total number of "likes" in the anger category is higher than the mean in the fear category ( $t_{(648)} = 7.47, p < 0.05$ ). This significant difference in the average number of "likes" between fear and anger is because fear was more likely to induce detailed information seeking regarding the contents of the tweets, resulting in less interaction with the Twitter users. By comparison, the emotion of anger was more likely to distort this information-seeking pattern by provoking manipulation of further information processing and therefore increased the likelihood of responding to the tweets in the anger category.

Table 6: T-test results of relationship between the categories of Anger and Fear

Emotion	N	Mean	SD	df	t	p
Anger	936	653	884	648	7.47	0.000*
Fear	137	375	274			

\*Significant at  $p < 0.05$  level.

Source: Author.

## Discussion and Conclusion

This article has attempted to explain the various obstacles to rational political information processing. It explores the bounded rationality that clearly states individuals are highly unable to make completely rational decisions, and how the influence of social media will narrow the range of information acquisition and will aggravate the information processing. The theoretical framework developed by the author suggests that the negativity of information is the vital aspect influencing information receivers. When processing political information, this negativity will predispose the receivers to be more susceptible to have distorted opinions on the political topics in that information. This article addressed that the severity of this susceptibility will be robust to the social media users who have a passive involvement NFO and have no particular interest in a specific political topic.

The findings from reports by the Computational Propaganda Research Project (CPRP) (Howard et al. 2018) and New Knowledge (DiResta et al. 2019) suggest that African Americans, conservatives, lesbian, gay, bisexual, and transgender (LGBT) supporters, liberals, Mexican Americans, and Muslims in the US were mainly targeted on Facebook and Instagram. Through the analysis of Twitter data, the author found that, very similarly, these groups were targeted on Twitter as well. The IRA targeted various attributes of these groups by exploiting divisions in US society. The author assumes that these attributes, presented in a negative tone, had magnified the



manipulation of social media users to have distorted views on the topics discussed in the tweets and consequently to reduce the reliability of targeted persons or groups based on the theoretical framework in this article.

The author presumes that the sudden exposure of those tweets to other users could be another factor to magnify the influence of those tweets. It has been discussed that information sharing on Twitter could circumvent a user's avoidance of political issues. The degree of exposure of such tweets depends on how many routes of receiving information Twitter users have. Stieglitz and Dang-Xuan (2013) have found that hashtags and URLs can be used effectively for displaying tweets to the various Twitter users. Likewise, enormous number of tweets analyzed for this article also included the hashtag function and URLs to disseminate content. The author assumes that this sudden exposure would have an emotional contagion effect on the users who received the emotional tweets in the dataset for the following reason: emotions in the shared information through social media enable users to experience similar emotions, and this emotional contagion effect does not depend on the level of relationship social media users form (Kramer, Guillory, and Hancock 2014, 8789). The theoretical framework of this article expects that this effect will be potent to the users who have passive involvement NFO, meaning that those users might sympathize with this content in the tweet text more than non-emotional tweet texts.

Empirical analysis of this article presents the notable difference of the mean value between tweets in the category of anger and fear. This result suggests that anger in tweets in this dataset attracted more attention from social media users, especially those who had similar opinions toward those tweets. One of the reasons for this attraction is that angry social media users exhibit the echo chamber effect because they consume more corroborating information to strengthen their political beliefs. In addition, they exhibit apparent hostility and tend toward arguing with other users whose political belief is different from them (Wollebaek et al. 2019, 8).

Individuals' relationships in social media also determine the agility of spreading information written in an angry context. The social media relationship formed in weak ties provides opportunities to receive new information in contrast to information sharing within strong ties represented as having relationships with close friends or family members (Gilbert and Karahalios 2009, 212). Together with the impact of negative information, emotional tweets will be more likely to be dispersed among users, and relationships based on weak ties cause the dissemination of information with an angry context to be faster than the information written in a positive context (Stieglitz and Dang-Xuan 2013; Fan, Xu, and Zhao 2020, 11). Therefore, whether it is an intended tactic or not, the author suggests that negatively stated information elicited more interaction from social media users, and emotionally phrased tweets, especially ones indicating

anger, were successfully delivered to the Twitter audience to magnify the impact of the manipulation.

The limitation of this article is that this analysis cannot prove to what extent those tweets manipulated the behavior of American individuals who were exposed to those tweets. However, the author cautiously presumes that those tweets could manipulate Twitter users, especially those who have passive involvement NFO, because the salience of specific issues of candidates or society could be unconsciously established and heightened by the negativity of the tweets.

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