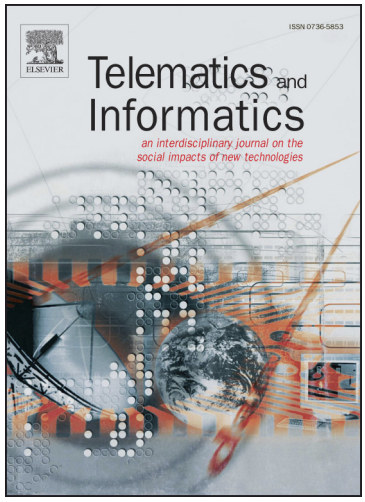

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Keonyoung Park, Hyejoon Rim

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Social Media Hoaxes, Political Ideology, and The Role of Issue Confidence

Keonyoung Park

(Corresponding author, M.A. in University of Minnesota)

Ph.D. Student

S.I. Newhouse School of Public Communication

Syracuse University

kepark@sry.edu

Hyejoon Rim

(Ph.D. in University of Florida)

Assistant Professor

Hubbard School of Journalism & Mass Communication

University of Minnesota

hrim@umn.edu

Keonyoung Park (M.A. in Mass Communication, University of Minnesota) is a doctoral student in the S. I. Newhouse School of Public Communication at Syracuse University. Her research areas include social media activism, public segmentation, ethics, and politicized science issues.

Hyejoon Rim (Ph.D. in Mass Communication, University of Florida) is an assistant professor in the Hubbard School of Journalism and Mass Communication at the University of Minnesota. Her research focuses on corporate social responsibility, consumer skepticism, and political socialization and media use. She has published her research in *Journal of Communication, Journalism & Mass Communication Quarterly*, *Journal of Business Research*, *Public Relations Review and Journal of Public Relations Research*.

Social Media Hoaxes, Political Ideology, and The Role of Issue Confidence

Abstract

Applying motivated reasoning theory, this study explores how people pay attention to politicized science issues and engage in supportive actions in social media. In doing so, the role of issue confidence was closely investigated. The current study adopts a non-profit organization's use of political ideology and hoaxes in promoting labeling issues for GMO (genetically modified organisms) products. Results from an online survey with an embedded experiment showed that issue confidence is related to an individual's motivation to engage in the GMO labeling issue, unlike factual knowledge or literacy. Findings suggested that social media hoaxes can activate individuals' issue confidence. The present study discussed not only the effects of issue confidence and social media hoaxes but also ethical considerations of hoax-spreading by activists.

Keywords: issue confidence, politicized science issue, hoaxes, GMO labeling, motivated reasoning theory

Social Media Hoaxes, Political Ideology, and The Role of Issue Confidence

1. Introduction

Why do some people have no interest in social issues? How do people get motivated to think about and support a social issue? Answering these questions, this study pays attention to how an individual's lack of ability to understand the complexity of a social problem might hinder them from creating a constructive social discourse. In science communication in particular, scholars have found that people tend to have difficulties processing science-related information (Taber and Lodge, 2006). This deficiency of knowledge can lead people to either ignore important social problems (e.g., climate change; Weber and Stern, 2011) or to engage in an irrational social movement (Krishna, 2017).

Some scholars believe that we can prevent the public from misunderstandings about science issues by providing factual knowledge and developing their literacy (e.g., Sunstein, 2007). However, people tend to process science issues with their heuristics rather than utilizing scientific reasoning (Kahan, 2012; Taber and Lodge, 2006). A recent study suggests that accepting scientific reasoning is not necessarily associated with scientific knowledge or numerical literacy (Kahan et al., 2012). For example, even though 88% of members of the American Association for the Advancement of Science showed a scientific consensus that genetically modified organisms (GMOs) are safe to eat, about 63% of the public believed GMOs are unsafe (Pew, 2017).

Drawing upon motivated reasoning theory (MRT), this study proposes a path towards an individual's politicized science issue processing, which is assisted by that individual's subject perception. In processing politicized science issues, individual knowledge is not only associated with factual science knowledge but also with subjective interpretation (Krishna, 2017; Kunda, 1990;1999). In this regard, the study claims that external stimuli can manipulate the subjective issue confidence, which triggers motivated reasoning.

The purpose of this study is two-fold. First, the current study broadly investigates the role of issue confidence in activating an individual's issue engagement based on the insights of MRT. Next, using the issue of GMO labeling in the U.S., this study demonstrates how the issue confidence-triggering can be used as a public mobilization strategy in social media. In doing so, the study examines possible issue confidence activators (i.e., political ideology and hoaxes) that activists may use in social media activism. Past research suggests that interests in politics and political identity increase involvement recognition and lower constraint recognition. This, in turn, causes people to engage in communicative actions about social issues (Kim, Ni, Kim, and Kim, 2012). Similarly, an individual's political partisanship has been considered as a cue for goal-oriented motivated reasoning, which reinforces their political ideology (Kunda, 1990).

In addition, this study explores how people process social media hoaxes and engage in communicative action for politicized science issues. While there has been growing attention concerning fake news and native advertising (e.g., Wu et al., 2016), the risks of spreading hoaxes on social media have been under-investigated. Hoax spreading, which refers to "deceptive alerts designed to undermine the public's confidence in an organization, product, service, or person," (Veil et al., 2012, p.328) is one of the popular social media strategies adopted by advocacy groups to bring public attention to issues for which they advocate. Social media allows people to

engage in activism by clicking, which does not require serious consideration or costs (Men and Tsai, 2013). This study examines the effects of hoaxes in encouraging people who might not be considered highly knowledgeable to participate in low-effort issue supporting actions (e.g., sharing, liking, and commenting on), which can legitimize the issue and activists who advocate.

Although the current study discusses the effects of seemingly deceptive tactics to demonstrate real-world examples of the activating issue confidence strategy, we do not claim that all activists use the unethical public mobilization strategies, such as spreading hoaxes. This study also notes that some activists use these strategies accidently because of a lac of factual knowledge without the intention for public deception (e.g., Kata, 2010; Krishna, 2017).

2. Literature Review

2.1. Motivated Reasoning and Intellectual Ability

People prefer to make a decision that minimizes their cognitive effort and maximizes confidence (Chen et al., 1999). Dismissing an issue without serious consideration can be a result of reasoning to avoid wasting cognitive effort and minimizing cognitive dissonance. Past research argues that individuals process new information when they have a minimal level of resources to be interested in, such as knowledge (Petty and Cacioppo, 1986), attitude (Krishna, 2017), and ability (Chaiken, 1980). In particular, with regard to a socio-political problem, the intellectual abilities used by the information processor to read the context of the issue are essential. This will determine how s/he will spend cognitive efforts to learn more about the issue and engage in supportive actions to solve the problem (e.g., Hallahan, 1999; Kim and Grunig,

2011). However, researchers have also observed that the complexity of the issue hinders people when they attempt to calculate all probabilities and consider related risks and benefits rationally (Tversky and Kahneman, 1974). For example, when people face a complex issue, such as scientific issues that they are not familiar with, they are more likely to depend on motivated reasoning with accessible heuristics rather than logical processing based on their intellectual ability.

Motivated reasoning theory states that people have a desired conclusion with a directional goal. When they cannot make a conclusion rationally, people construct "seemingly reasonable justifications" assisted by heuristic cues to accept the outcome (Kunda, 1990; 1999). The reasoning of individuals involves a process for deciding whether they will cognitively engage in an issue or dismiss it. They are motivated to process information to form their own opinion about an issue only when they have interests in the issue and understand the context; otherwise they overlook the issue without having any opinion (i.e., "I don't care whatever it is," "It's not my business").

In science communication, scholars agree that laypeople tend to have difficulties processing science-related issues because they lack the issue processing ability and as a result avoid it (Taber and Lodge, 2006). In the absence of science literacy, people cannot process science issues rationally. For example, Ahern, Connolly-Ahern, and Hoewe (2016) indicate that concerns about climate change and science literacy are positively correlated; the public tends to process the climate change issue with a reliance on heuristic rather than analytic modes of reasoning, which leads them to underestimate climate change risk. Another study also found that ordinary people tend to ignore the seriousness of climate change as a result of failures to understand the complexity of the scientific evidence (Weber and Stern, 2011).

This study attempts to explore how people activate information processing which focuses on labeling issues with genetically modified organisms (GMO). Issue attention is a focal point of public engagement among non-active publics. Previous public segmentation research distinguished an active, public-based, on issue involvement to predict public engagement (e.g., Hallahan, 1999). However, some studies argue that people are more likely to be triggered to express their own opinion by problem recognition rather than by issue involvement (e.g., Grunig, 1997), even if their cognitions are less organized, and their attitudes are unfixed (Adoory and Grunig, 2012). Hallahan (2001) asserts that an issue can be activated when an individual recognizes an inequity and tries to correct the problem. Arousal is crucial for motivated reasoning by providing individuals motivational factors to be involved in the process (Kunda, 1990). The cognitive adjustment process occurs even when the issue is not familiar or when desired processing is experienced (Cooper and Fazio, 1984). In consideration of a radical perspective, aversive dissonance motivation for issue processing comes from individuals' recognition of the possibility that they can be socially victimized because of a lack of knowledge about the issues (e.g., "If I don't know about it, someone tries to deceive me") (Kunda, 1990). Thus, the arousal from aversive dissonance serves as a cue to become motivated to become aware of and learn more about the issue through serious consideration.

2.1.1. Issue Confidence as an Activator of Issue Processing Motivation

An individual's knowledge is not only associated with factual knowledge but also subjective perception (Kim and Krishna, 2014; Kahan et al., 2003). This study focuses on the concept of issue confidence, which denotes the individual's perceived or *subjective* level of intellectual

ability as a degree of self-evaluation regarding how knowledgeable and literate the individual is about an issue. For example, people think they know a lot regarding a particular issue after being exposed to a rumor or hoax (Veil et al., 2012).

This study considers that in an individual's science issue processing, the issue confidence may play a substitute role toward the factual knowledge. As previous studies claim, knowledge about issues can increase issue involvement and motivation to participate in problem-solving behaviors (e.g., Petty and Cacioppo, 1979; Hallahan, 1999). However, the level of issue knowledge can be made up by individuals' self-evaluation regardless of what extent they know the material correctly. One study suggests that a firm, negative attitude due to knowledge deficiencies can lead individuals to participate in social activism as a result of the acceptance (or positive evaluation) of non-factual (scientifically non-legitimate) data or the absence of scientifically legitimized knowledge (Krishna, 2017). In the same vein, issue confidence can be an activator of issue processing motivation, which is inspired by issue involvement, prompting deliberative thinking or, more broadly, an active public in traditional information processing models (e.g., ELM) and public segmentation research (e.g., Hallahan, 1999). In the context of the GMO labeling issue, GMO labeling literacy and knowledge are positively associated with a perceived level of issue processing confidence.

[Insert Figure 1 about here]

The following questions related to GMO labelling issues were explored in this study:

H1. GMO issue literacy (H1a) and GMO labeling issue knowledge (H1b) will increase GMO labeling issue confidence.

H2. GMO labeling issue confidence will increase GMO labeling issue involvement (H2a) and GMO labeling issue processing motivation (H2b).

H3. The greater an individual perceives his or her involvement in GMO labeling issues to be, the higher the individual's motivation to process information related to GMO labeling issues will be.

H4. When mediated by GMO labeling issue confidence, individuals with high levels of general knowledge about GMOs will a have high GMO labeling issue involvement (H4a) and high motivation to process GMO labeling issues (H4b).

H5. When mediated by GMO labeling issue confidence, individuals with high levels of GMO labeling issue-specific knowledge will have high GMO labeling issue involvement (H5a) and high motivation to process GMO labeling issues (H5b).

2.2. Political Ideology and Spreading Hoax in Mobilizing Publics

2.2.1. Activating Issue Confidence as A Trigger for Motivated Reasoning

An individual's inability to understand an issue can lead to cursory processing, which results in a refusal to accept scientific consensus (e.g., Krishna, 2017) or failure to process scientific consensus such that the individual ignores the topic entirely (Kahan et al., 2013). Even if the opinions of experts or other scientific information is accessible, individuals do not actively seek out this information to correct their distortions because they lack the time or ability to engage in more effortful knowledge acquisition (Kahan et al., 2013). Hence, motivated reasoning assisted by available cues commonly occurs, leading people to avoid thinking seriously or critically (Ahern et al., 2016).

For example, adoption of GMO and related technology for food production has long been debated among diverse social actors—such as scientists, politicians, and social activists—concerning safety matters of GMOs even though most scientists agree that GMO-treated foods are not detrimental (Kim et al., 2013; McInerney et al., 2004). Nyhan and Reifler (2010) suggest

that exposure to factual information failed to correct misperceptions among ideological partisans, and in some cases resulted in a boomerang effect on beliefs and attitudes and greater ideological polarization. Moreover, the current online communication environment allows people to selectively access information which conforms to their preferred way of thinking (Kim and Krishna, 2014) rather than openly accept any information. That is, people can be easily swayed to make an intended decision through a motivated reasoning process when they are triggered by certain familiar and tempting cues.

Recent scholarly works shed light on several obstacles that hinder the public from doing accurate and rational reasoning, such as worldview (Ahern et al., 2016; Kahan et al., 2013), emotion (Slovic, 1999), cultural cognition (Kahan et al., 2011), and motivation (Kim and Paek, 2009). This study particularly focuses on examining how political ideology and hoax-spreading influence an individual's issue confidence, which can be used as a public mobilization strategy on social media.

2.2.2. Political Ideology: An Accessible Motivation.

Political ideology has been discussed as a motivation to lead general populations to recognize and take a position on unfamiliar science issues, including climate change (Ahern et al., 2016), natural disease (Wright and Nerlich, 2006), risks related to food consumption (Hansen et al., 2003), and stem cell research (Nisbet, 2005). Interests in politics and political identity play a part in increasing involvement recognition and lowering constraint recognition, which makes people engage in communicative actions about a politicized science issue (Kim et al., 2012). Some scholars stress that the information processing of a science issue in relation to political

disposition is a part of heuristic motivated reasoning (e.g., Westen et al., 2006). For instance, controversial issues are likely to activate political predispositions and increase issue polarization due to motivated reasoning among general populations (Mutz, 2008). Moreover, people with strong partisanship ideas tend to interpret messages about a controversial scientific issue in a way that reinforces their pre-existing beliefs and thus increases political polarization (Han and Federico, 2017; Hart and Nisbet,2012). That is, an individual's political partisanship is a cue for a biased motivated reasoning, which reinforces their political ideology (Kunda, 1990).

GMO labeling law can refer to "science-relevant policy." Thus, when people recognize that GMO labeling is not only a science issue but a political issue, they could change their attitude toward the issue and issue-relevant information processing. If the political aspect of GMO labeling issues becomes salient among lay individuals, their way of issue processing might be changed and their issue involvement would be increased in relation to their political identity. For example, in the case of climate change, opinions about climate change have become a fundamental identity marker for how Republicans and Democrats politically define themselves and others (Nisbet, 2005). Previous research suggested that strong political partisan opinions have an impact on employing motivated reasoning when exposed to messages about climate change with ideological predispositions moderating information effects on policy attitudes (Hart and Nisbet, 2012). Thus, regarding GMO labeling issues, making a negative attribution toward certain political identities (e.g., Republicans) can work to arouse the opposite side, as well as engage the political actor's supporters.

2.2.3. Spreading Hoax in Social Media

Hoax spreading is one of the popular social media strategies adopted by various advocacy groups. Hoaxes refer to "deceptive alerts designed to undermine the public's confidence in an organization, product, service, or person" (Veil et al., 2012, p.328). Hoaxes are generally associated with powerful individuals or groups who are suspected of secretly plotting to accomplish some unjust goal. Activists create hoaxes, which often capitalize on existing conspiracy theories, by tailoring a message to justify their activities or to bring attention to issues they advocate. Past research found hoax spreading was useful in stimulating the non-public because it legitimizes the activists' claims (Veil et al., 2015).

The hoax strategy can maximize public attention (van der Linden, 2015). Furthermore, exposure to hoaxes manipulates the nonpublic, causing them to employ heuristic decision-making as they oversimplify an issue and the related problems in an effort to complete a cursory processing of the issue (van der Linden, 2015). In this regard, activists' hoax spreading strategy closely aligns with issue politicization as a communicative tactic to influence public opinion formation or attitude change. Interest groups, individual activists, and other actors execute both hoax spreading and issue politicization (e.g., Bolsen and Druckman, 2015; Veil et al., 2015).

Message framing by manipulating main players in regards to an issue is a common pattern of conspiracy theories made salient in messages (van der Linden, 2013). In this regard, the current study asserts that a hoax can motivate individuals to process an unfamiliar science issue in a biased manner. When individuals are incited by a hoax, they can recognize that there is something they don't know, and thus, they may start an information process to overcome the cognitive dissonance. Furthermore, the effect of the hoax can be amplified when it is associated with political ideology. In relation to science issues, non-scientists selectively borrow scientific evidence as it aligns with their own well-informed or misinformed positions and beliefs to

support their political agenda. Because one politicization method includes offering false information (Nyhan and Reifler, 2010), hoax spreading is a sub-method of issue politicization as well as an amplifier of the politicization. Thus, the following hypotheses are proposed to test the main effect of hoaxes and the interaction effect between exposure to a hoax and political ideology.

H6. Exposure to political ideology associated with GMO labeling issues will increase GMO labeling issue confidence.

H7. Exposure to hoaxes related to GMO labeling issues will increase GMO labeling issue confidence.

H8. Exposure to hoaxes related to GMO labeling issues will increase GMO labeling issue confidence in interaction with exposure to political ideology.

2.3. Effects of Activating Issue Confidence Strategy in Social Media Public Mobilization

This study examines the effects of activating issue confidence, presenting real world situations for public mobilization through social media. This strategy might be effective in generating vociferous outcomes in an issue advocacy campaign, especially in social media. The capability of social media in spreading and propagating information amplifies public attention and allows it to be rapidly increased. Social media activism is public mobilization that targets networked general populations who communicate continually (Shirky, 2008). Issue related political ideology and hoaxes can be rapidly dispersed throughout networked publics. An individual acts not only as a heuristic cue receiver but also as a spreader through simple behaviors such as clicking, liking, sharing, or commenting (Skoric, 2012). These low-cost and low-effort behaviors further disseminate the message and become issue advocacy actions themselves. Moreover, these simple behaviors in social media issue mobilization do not demand

considerable costs for the participant, which are more common when engaging in traditional social movements (e.g., Hon, 2015). For these reasons, providing accessible cues for activating issue confidence may encourage lay publics to engage in behaviors through simple actions on social media. These simple actions are visible indicators of support and do not require lay publics to embed principles related to the issue.

As Earl and Kimport (2011) argue, the digital mobilization strategy gives participants more opportunities to lower costs because digital activist techniques usually require minimal time and effort. Individuals can participate in actions without experiencing the limitations of time, place, and the dangers of social stigma that can plague protesters. In this regard, when an individual is instantly motivated to process an issue because of exposure to familiar cues (i.e., political ideology, hoax), he or she can participate in social media action to support their decision without carefully considering their position and without engaging in high-effort activism. Previous research suggests that people enjoy participating in these activities, and as a result increase their perceived efficacy without the effort of deep consideration (Breuer and Groshek, 2014). Therefore, in relation to GMO labeling issues, these hypotheses are proposed:

H9. Exposure to political ideology associated with GMO labeling issues will increase GMO labeling issue supportive actions on Facebook.

H10. Exposure to hoaxes regarding GMO labeling issues will increase GMO labeling issue supportive actions on Facebook.

H11. Exposure to hoaxes regarding GMO labeling issues will increase GMO labeling issue supportive actions in interaction with exposure to political ideology on Facebook.

3. Method

3.1. Research Design and Procedures

To test the proposed hypotheses, this study conducted an experiment with an embedded online survey via Qualtrics. The survey link for Qualtrics was distributed through Amazon Mechanical Turk (MTurk). Survey participants were recruited through an online panel company, MTurk, with a cash incentive ($0.8). Current research indicated that MTurk data not only outperforms panel data from professional marketing research companies but also may be considered as a viable alternative to student samples when testing theory-driven outcomes (Kees, Berry, Burton, and Sheehan, 2017).

The main questionnaire included two parts. The first part consisted of questions to test the applicability of the motivated reasoning theory to current GMO labeling issues in the US and the role of issue confidence as a motivation to process the issue. Thus, in the first part, participants were asked to answer the questions based on their knowledge, perception, and attitude regarding the GMO labeling issues. To measure participants' general perception, any information about GMO labeling was not provided during the first part.

The second part of the survey was designed to test the triggering effect of political ideology and hoax in increasing issue confidence with sudden priming. In doing so, a 2 x 2 between-subjects experiment (Political ideology: presence vs. absence and Hoax: presence vs. absence) between-subjects factorial design experiment was embedded in the survey. Embedding an experiment in a survey is a widely applied methodology in social science research (e.g., van Berkel, 2002). When subjects completed the first part of the questionnaire, one of four stimuli was randomly shown to each participant. The subjects were asked to complete the second part of the questionnaire based on their perception after viewing the stimuli.

3.2. Stimuli Development

Political ideology in this study was primed as a Republican agenda. Indications of a specific political party were adopted from manipulation in previous research that tested the effect of political ideology in science communication (e.g., Nisbet, 2005). Specifically, for the political ideology presence condition, the symbol of the Republican Party was combined with an image of GMO letters and Republicans were described as the main players for legislation concerning the GMO labeling law in the message. Alternatively, the political ideology absence condition presented an image of GMO letters without the Republican symbol or the suggestion of a main player for the legislation.

The hoax strategy was manipulated to distinguish between a presence condition and an absence condition. Based on the definition of hoax (i.e., a deceptive message to allude to conspiracy theory, which is associated with a group or an individual who are suspected of being available to take advantage of; van der Linden, 2015; Veil et al., 2012; Veil et al., 2015), this study manipulated the hoax presence condition using a message that disclosed a conspiracy, that "GMO labeling is a hoax." Further explanation was suggested regarding how the new GMO labeling law deceived people. The explanation was revised from a non-profit organization's (i.e., JustLabelIt) Facebook post and adopted for this experiment. In the hoax absence condition, a neutralized explanation regarding the law was suggested with a notion that the law should be changed.

3.3. Manipulation Check

Prior to the main test, a pretest was conducted to ensure that the stimuli developed for each experimental condition had the intended effects and generated significant differences between different stimuli. A total of 53 volunteer participants were recruited by MTurk with $ 0.2 cash incentive. Manipulations of political ideology context were checked by asking each subject's level of agreement with the statement on a 7-point scale: "It seems like the Republicans are in favor of the GMO labeling with QR codes." ($M_{Ideology\ Presence}$ = 5.56, SD = 1.39; $M_{Ideology\ Absence}$ = 3.89, SD = 1.34, $t(49.91)$ = 4.44, $p < .001$). The manipulation of a hoax was measured with the following sentence: "There is a group of people behind GMO labeling issues who are trying to purposely mislead the public." ($M_{Hoax\ Presence}$ = 5.41, SD = 1.31; $M_{Hoax\ Absence}$ = = 4.57, SD = 1.50), $t\ (49.49)$ = 2.14, $p < .05$). In the main test, all subjects were asked to answer two questions using the same manipulation check items and scales. The results of independent T-tests confirmed the success of manipulations: Political Ideology: $M_{Ideology\ Presence}$ = 5.09, SD = 1.63; $M_{Ideology\ Absence}$ = 3.89, SD = 1.37, t = 6.37, $p < .001$; Hoax: $M_{Hoax\ Presence}$ = 5.09, SD = 1.49; $M_{Hoax\ Absence}$ = 4.51, SD = 1.15, t = 2.77, $p < .01$).

3.4. Sample

A total of 246 Facebook users who were U.S. residents participated in this survey. Of the participants, the six incomplete responses were removed from the final dataset. The average age of the participants was 34.9 years old, and they ranged in age from 18 to 69 years (SD =11.75). Of the participants, 55.3% were females and 44.7% were males. Among them, whites or Caucasians were 75.2%, and most participants (26.4%) had an annual household income of

$50,000 - $74,999. A total of 39.8% of the participants were college graduates, while 35.0% completed some college but had no degree; 1.2% had less than a high school education; 2.0% were high school graduates or the equivalent; 8.9% completed some high school; 2.8% completed a graduate degree; and 10.2% completed some graduate school, but did not have a degree.

3.5. Measurement

GMO issue literacy was measured by asking the participants general knowledge questions regarding GMO technology and usage. After asking six true/false questions of the participants, the numbers of correct answers were used as their GMO issue literacy level. The six questions included items such as: "When you purchase products labeled 100% organic or all natural, ingredients in these products are not allowed to be produced from GMOs," "Canned and processed foods do not contain GMOs," and "Produce cannot contain GMOs." (M=3.76, SD=1.64).

GMO labeling issue knowledge was measured by asking whether the participants knew specific details about the new GMO labeling that went into effect in July 2016. This study created five items based on current issues regarding GMO labeling issues in the US. Participants were asked to answer "Yes," "Maybe," or "No" in response to five questions, including "I know that the federal government has adopted the indirect way of GMO labeling, such as QR codes or ARS," and "I know how the new federal law is different from a Vermont law on GMO labeling." True/false questions, which might suggest background knowledge, were not adopted for

measuring GMO labeling issue knowledge to eschew a compounding effect for answering the questions (Cronbach's α= .81, *M*=2.64, *SD*=2.67).

GMO labeling issue confidence was measured with the participants' self-evaluation about how knowledgeable they are on GMO labeling issues. Four items were adopted after revising the previous perceived knowledge scale (Ran et al., 2015) for this research context. The participants were asked to indicate their degree of agreement to four statements along a 7-point Likert scale, including, "Compared to most people, I know more about GMO labeling issues," and "I classify myself as an expert in GMO labeling issues." The four items were averaged to form an index in which higher scores indicated greater subjective knowledge about GMO labeling issues (Cronbach's α= .92, *M*=2.64, *SD*=1.43).

GMO labeling issue involvement was measured by asking to what extent and to which GMO labeling issues under consideration were of personal importance. Six bipolar items were adopted from the Personal Involvement Inventory (PII) of Zaichkowsky (1985), such as "1: Insignificant – 7: Significant," and "1: Irrelevant – 7: Relevant" (Cronbach's α=.95 , M=4.33, SD=1.71).

GMO labeling issue processing motivation was measured by adapting the situational motivation scale of Kim and Grunig (2011). The items were created to measure an individual's motivation for problem solving with information handling (e.g., information acquisition, selection, and sharing; Kim and Grunig, 2011). This study adopts the items because the problem solving actions include information processing processes (Kim and Grunig, 2011). Subjects were asked to indicate their degree of agreement to the following three statements along a 7-point Likert scale: "I am curious about GMO labeling issues," "I will often think about GMO labeling

issues," and "I want to better understand GMO labeling issues" (Cronbach's α=.*82*, *M*=4.45, *SD*=1.45). Table 1 shows completed measurement items of main variables.

[Insert Table 1 about here]

For control variables, internet use, demographic variables (i.e., age, gender, income, ethnicity and education levels), distrust towards politicians, and political consumerism were measured. Of them, political consumerism was measured by asking each subject's life-style politics as a consumer (Cronbach's α =.83, M=3.73, SD=1.32) with items modified from Stolle et al. (2005). This treatment is expected to reduce the confounding effect of irrelevant variables that are not intended to be studied (Baron and Kenny, 1986).

4. Result

Path analyses were used to examine the direct and indirect paths from: *GMO issue literacy* and *GMO labeling issue knowledge* to G*MO labeling issue processing motivation through GMO labeling issue confidence* and *GMO labeling issue involvement* to shed light on the tenability of this study's causal models and to test the first set of hypotheses (H1-H5). Path analysis is a pragmatic tool to demonstrate individuals' motivated reasoning process (e.g., Han and Federico, 2017)

[Insert Figure 2 about here]

To obtain the path coefficients, three regression analyses were conducted. The first regression analysis employed GMO issue literacy and GMO labeling issue knowledge to GMO labeling issue confidence as the first dependent variable. GMO labeling issue involvement was the dependent variable for the second regression analysis. The third regression analysis had

GMO labeling issue processing motivation as the final dependent variable. The path coefficients are shown in Figure2 and Table 2.

Hypothesis 1 expected: a) GMO issue literacy, and b) GMO labeling issue knowledge to have an impact on increasing GMO labeling issue confidence. Results suggested that there were statistically significant direct effects between GMO issue literacy and GMO labeling issue confidence (β = .72, p < .001), and GMO labeling issue knowledge and GMO labeling issue confidence (β = .09, p < .05). Thus, H2a and H2b were supported (see Figure 2 and Table 2).

Hypothesis 2 predicted GMO labeling issue's positive impact on GMO labeling issue involvement (H2a), and GMO labeling issue processing motivation (H2b). According to the results (see Table 2 and Figure 2), GMO labeling issue confidence was not directly related to GMO labeling issue involvement. However, GMO labeling issue confidence had a direct effect on increasing GMO labeling issue processing motivation (β = .14, p < .05). Thus, Hypothesis 2a was not supported, but Hypothesis 2b was supported.

Hypothesis 3 stated that the more one perceives their involvement with GMO labeling issues, the more individuals will have higher motivation to process information related to GMO labeling issues. As indicated in Table 2 and Figure 2, GMO labeling issue involvement had a statistically significant direct effect on GMO labeling issue processing motivation (β = .64, p <.001). Therefore, H3 was supported.

Hypothesis 4 expected that individuals with a high level of general issue knowledge on GMOs will have a) high GMO labeling issue involvement, and b) high motivation to process GMO labeling issues, when mediated by GMO labeling issue confidence. As seen in Figure 2 and Table 2, there was no statistically significant effect of GMO issue literacy to change GMO labeling issue involvement, even when participants were mediated by GMO labeling issue

confidence. However, the results suggested the statistically significant indirect effect of GMO issue literacy would increase GMO labeling issue processing motivation mediated by GMO labeling issue confidence (β = .02, p <. 05). However, this direct effect was not statistically significant. Thus, Hypothesis 4a was not supported, but Hypothesis 4b was supported.

Hypothesis 5 posited the mediating effect of GMO labeling issue confidence between GMO labeling issue specific knowledge and GMO labeling issue involvement (H5a), as well as motivation to process GMO labeling issues (H5b). Based on the results, Figure 2 and Table 2 showed that the relationship between GMO labeling issue specific knowledge and GMO labeling issue involvement were not statistically significant, even when they were mediated by GMO labeling issue confidence. However, the result indicated that the indirect effect of GMO labeling issue-specific knowledge to promote GMO labeling issue processing motivation mediated by GMO labeling issue confidence was also statistically significant (β = .18, p < .05), while their direct effect was not statistically significant. Thus, Hypothesis 5a was not supported, but Hypothesis 5b was supported.

To test Hypotheses 6-8, which examined the influence of activating issue confidence strategies, a series of mixed ANOVA were conducted to assess whether there were differences among 4 different experimental conditions in changing willingness for issue processing. Before analyzing the data, independence of observations, normality, and sphericity were tested. The assumption of sphericity was violated, while independence of observations and normality were fit. Thus, the Greenhouse-Geisser epsilon was used to correct degrees of freedom (Leech, Barrett, and Morgan, 2014). Results indicate statistically significant effects of the experiments in increasing GMO labeling issue confidence ($F(1, 236) = 113.68$, $p < .001$, $\eta^2_p = .33$).

[Insert Table 3 about here]

Hypothesis 6 expected the interaction effect between political ideology associated with GMO labeling issues and GMO labeling issue confidence. Results showed that there were no statistically significant interaction effects between exposures to political ideology associated with GMO labeling issues to change GMO labeling issue confidence. Therefore, Hypothesis 6 is not supported.

Hypothesis 7 claimed that exposure to a hoax regarding the GMO labeling issue has positive associations with GMO labeling issue confidence. As seen in Table 3, exposure to a hoax regarding GMO labeling issues had a statistically significant effect to change GMO labeling issue confidence. Specifically, results indicated a statistically significant effect from the experiment. Moreover, the experiment's effect was qualified by a statistically significant interaction between repeated measures and exposure to the hoax ($F(1, 236) = 6.38$, $p<.05$, $\eta^2_p = .03$). Table 3 provides the means and standard deviations for issue confidence depending on whether participants were exposed to a hoax; Figure 2 graphically represents the interaction between the main experiment's effects and hoax strategy. Inspection of the table and the figure suggests that the groups who were exposed to the hoax strategy (i.e., Group 1 and Group 3) seem to rate after the experiment more highly than before; whereas the difference between ratings from the before and after experiment of non-hoax exposure groups (i.e., Group 2 and 4) was less than the groups viewing the hoax strategy. Thus, Hypothesis 7 is supported.

Hypothesis 8 stated that exposure to a hoax regarding GMO labeling issues increases GMO labeling issue confidence in interaction with exposure to political ideology. However, according to the results, there were no statistically significant interaction effects of exposure to political ideology and the GMO labeling issues hoaxes which demonstrated a change in GMO labeling issue confidence. Therefore, Hypothesis 8 is not supported.

To test Hypotheses 9 – 11, which examined the influence of issue confidence in activating strategies to change an individual's willingness to participate in Facebook activism to support GMO labeling issues, hierarchical linear regression models were designed and examined. The regression analysis employed the following three blocks of independent variables, entered in this order: block 1: demographics (age, gender, race, income, education); block 2: internet use (i.e., social media active use), political attitude (i.e., political conservatism, and consumer politicism), and previous issue knowledge (i.e., GMO labeling issue knowledge); block 3: exposure to stimuli (political ideology, hoax, and interaction effect (i.e., political ideology x Hoax)). The coefficients of Block 3 are outlined in Table 4.

[Insert Table 4 about here]

Hypotheses 9, 10, and 11 expected the effects of exposure to political ideology (H9), hoax (H10), and the interaction between political ideology and hoax (H11) to create a behavioral change in supporting actions regarding GMO labeling issues on Facebook. As seen in Table 3, exposure to the hoax had marginally statistically significant effects (p =.89) in predicting Facebook activism participation in support of GMO labeling issues. However, there were no significant effects of exposure to political ideology, nor the interaction effects between political ideology and hoax in association with Facebook actions regarding GMO labeling issues. Thus, Hypothesis 10 is marginally supported but Hypotheses 9 and 11 are not supported.

5. Discussion

Using an online survey with an embedded experiment, this study examined the role of issue confidence as an activator. We proposed this as an activator that led people to get cognitively involved in and to process an unfamiliar science issue. In addition, the present study

examined the effects of issue politicization and hoax on the activation of issue confidence in the individual's issue supportive behavior on social media.

Regarding the role of issue confidence, we found that issue confidence was directly related to an individual's motivation concerning whether or not they processed information about GMO labeling issues. Moreover, there were indirect effects when the relationship between confidence and motivation was mediated by issue involvement. Even though issue literacy and factual issue knowledge have an impact on issue confidence, they are neither directly nor indirectly related to issue involvement and issue processing motivation regarding GMO labeling issues. Results indicated that factual intellectual abilities regarding an issue (i.e., factual knowledge, issue literacy) have no direct impact on motivating people to process an issue. However, when people perceive themselves as being knowledgeable subjectively, they are willing to think more about the issue. Thus, results supported the assumption that information of a politicized science issue would be processed subjectively, despite the objective characteristics of the science. Our findings empirically support motivated reasoning theory in the context of science issue and knowledge deficiency.

The study also examined the impact of social media hoaxes in activating issue confidence. Results suggested that when people are exposed to an issue-related hoax, they are instantly motivated to be engaged in issue processing. That is, the hoax strategy accelerates people to be motivated to process an issue by jumping into the deliberative process, which assesses issue knowledge and issue involvement. As a result of exposure to hoaxes, people can evaluate themselves as knowledgeable persons able to engage with the issue, even though they could not get factual knowledge from the hoaxes. Past research has focused on factual intellectual abilities such as issue literacy or knowledge, which assumed that the factual abilities

could be associated with engaging in issue processing and social movement. The result of this study suggested a unique approach, apart from previous research, which focused on factual intellectual abilities—issue literacy or knowledge— and assumed that factual abilities could be associated with engaging in issue processing and social movement. In this vein, the hoax spreading strategy can be regarded as a powerful tool for issue mobilization among lay individuals.

However, political ideology had no impact on changing individuals' issue confidence, even when it interacted with a hoax. Although the results did not support the original hypotheses, it is more plausible to understand the differences between political ideology and a hoax as an extra trigger to promote issue processing by increasing issue confidence. Since the political ideologies of individuals are constructed by a socially shared belief system, activating the ideologies may require more complicated conditions to generate cognitive or behavioral responses than a single strategy (Jost and Amodio, 2012; Jost et al., 2009). Moreover, this study employed Republican related cues, manipulating the political ideology condition in the experiment. However, the impact of the Republican signals might be different depending on what the political ideologies of the individuals are.

With the advent of social media use, misinformation phenomena have received scholarly attention investigating their negative impacts on society (e.g., Krishna, 2017; Marchi, 2012). The present study found only marginally significant effects of a hoax-spreading strategy in promoting people to engage in issue-supporting actions on Facebook. Moreover, the study showed that triggering with the use of political ideology did not affect supportive actions on Facebook. These outcomes should be discussed in the context of limitations of pseudo-activism. Although activists adopt one-shot strategies (i.e., linking political ideology, hoax spreading) to social

media to mobilize publics, results indicated that they have only limited impact to change individuals' behavior.

Moreover, despite the ease of employing the hoax-strategy on social media, nonprofits inevitably face criticism for such strategies because of their social expectations. These expectations view the nonprofit as having a commitment to better society and use ethical tools to achieve goals. The hoax, however, is a public deception that unethically sways public opinion to achieve a goal. Public relations scholars and practitioners agree that "the more successful the campaign is at influencing others, and hence the greater its reach or impact, the more significant the ethical questions become" (Botan, 1997, p.189). As a result, hoaxes might impede democracy, manipulating the public's perception of engaging in civic activities (van der Linden, 2015a). Thus, even though the hoax has an enormous impact on mobilizing online activism, the hoax strategy creates a "legitimacy gap" between nonprofits' missions and their practice (Veil et al., 2015; Heath and Waymer, 2009).

5.1. Theoretical and Practical Implications

Although further research is needed about this topic, this study contributes to expanding information processing and activism literature in the context of politicized scientific issues. In particular, this study suggested a possible application of the motivated reasoning theory (Kunda, 1999) in relation to social media environments and misinformation processing. Highlighting the role of issue confidence in civic engagements with supportive empirical data, the current study casts new light on a theoretical approach that has been excluded from previous communication research.

The current study suggests practical insights for both social movement organizers and publics. This study demonstrated the limitations of pseudo-activism adapting unethical strategies for public relations practitioners. For general populations, this study calls attention to the problems of engaging social movements without deliberative considerations. Moreover, as an early attempt to examine social media hoaxes and GMO labeling issues empirically, this study suggests comprehensive explanations needed to understand current social issues.

5.2. Limitations and Future Research

As a preliminary step for applying the concept of issue confidence in activism research, the study carefully assessed the characteristics of the concepts. However, this study relied on limited data from one experiment with an issue (i.e., GMO labeling). In addition, the current study tends to under-evaluate an individual's rational literacy and oversimplify their personalities. In this regard, to establish the generalizability of the findings, further work with different issues should be continued.

In analyzing data to test our hypothetical model, this study controlled for participants' general attitudes on politics, which may affect GMO labeling issues (i.e., distrust towards politicians, political consumerism). However, the unpredictable effects of individuals' political ideology might remain in the results of this study. Despite scientific consensus on the safety and utility of GMOs, there is a solid ideological frame around GMOs that indicates we must limit the diffusion of this technology, which strengthens global capitalism (Pellegrini, 2009). Scholars noted that opposition to accept the new technology based on the ideological frame has to be considered as the most potent constraint (Herring, 2008). Therefore, researchers need to have a particular caution for the considerable power of the pre-existing ideological frame around GMOs in studying GMO-related issues.

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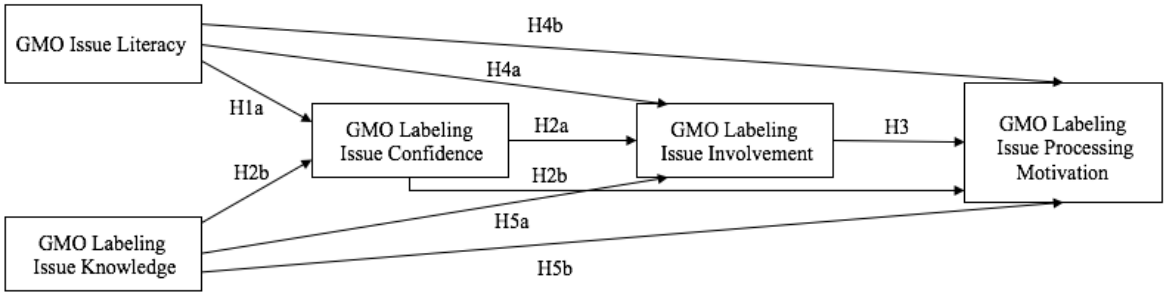

Figure 1. Conceptual Model to Test H1 through H5

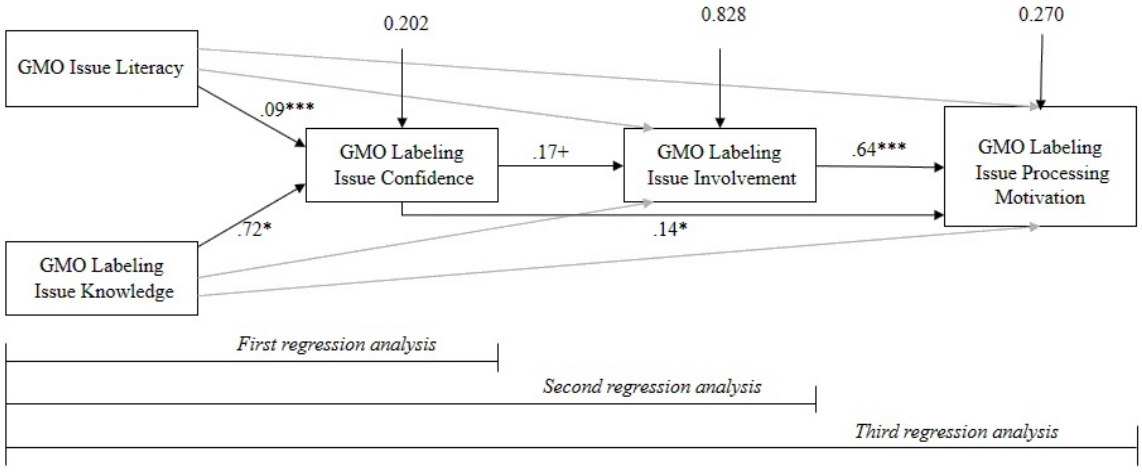

Figure 2. Results of Path Analyses for H1 through H5
Note. †*p*<.10, *p<.05, **p<.01, ***p<.001

Table 1 Main Variables and Measurement Items

Variables	Items	Cronbach's α	*M (SD)*
GMO issue literacy	1. GMO stands for "genetically modified organism 2. Genetic modification of food involves the laboratory process of artificially inserting genes into the DNA of food crops or animals 3. When you purchase products labeled 100% organic or all natural, ingredients in these products are not allowed to be produced from GMOs 4. Canned and processed foods do not contain GMOs 5. Produce cannot contain GMOs 6. Some plants are made resistant to pests by using a gene from bacteria	n.a.	3.76 (1.64)
GMO labeling issue knowledge	1. I can explain what the new GMO labeling law is. 2. I have heard about the arguments around the new GMO labeling law 3. I know that the federal government has adopted the indirect way of GMO labeling, such as QR codes or ARS. 4. I know the difference between the direct ways and the indirect ways for GMO ingredients labeling. 5. I know how the new federal law is different from a Vermont law on GMO labeling.	.81	2.64 (2.67)
GMO labeling issue confidence	1. Compared to most people, I know more about GMO labeling issues. 2. I am knowledgeable about GMO labeling issues. 3. I know a lot about GMO labeling issues. 4. I classify myself as an expert in GMO labeling issues.	.92	2.64 (1.43)
GMO labeling issue involvement	1. 1: Insignificant – 7: Significant 2. 1: Do not matter to me – 7: Do matter to me 3. 1: Unimportant – 7: Important 4. 1: Of no concern – 7: Of much concern 5. 7: Serious – 1: Not serious 6. 1: Irrelevant -7: Relevant	.95	4.33 (1.17)
GMO labeling issue processing motivation	1. I am curious about GMO labeling issues 2. I often think about GMO labeling issues 3. I want to better understand GMO labeling issues	.82	4.45 (1.45)

Table 2 Results of Path Analyses for H1 through H5

	Direct Effects	Indirect Effects	Total Effects
First regression analysis	R^2=.55 *F*=145.51		
(DV: GMO labeling issue confidence)	*p* < .001		
GMO Issue Literacy	.72***	0	.72***
GMO Labeling Issue Knowledge	.09*	0	.09*
Second regression analysis			
(DV: GMO labeling issue involvement	R^2=.09 *F*=8.16 *p* < .001		
GMO Issue Literacy	0.12	0.02†	0.02†
GMO Labeling Issue Knowledge	0.09	0.12†	0.12†
GMO Labeling Issue Confidence	.17†	0	.17†
Third regression analysis	R^2=.48 *F*=.56.57		
(DV: GMO labeling issue processing motivation)	*p* <.001		
GMO Issue Literacy	-0.05	.02*	.02*
GMO Labeling Issue Knowledge	0.03	.18*	.18*
GMO Labeling Issue Confidence	.14*	0.11†	.25†
GMO Labeling Issue Involvement	.64***	0	.64***

Note. †*p*<.10, *p<.05, **p<.01, ***p<.001

Table 3 Means and Standard Deviations of the GMO labeling issue confidence before and after the experiment

	Group1 (N = 54)	Group2 (N = 58)	Group3 (N = 70)	Group4 (N = 58)
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
Pre-testing	2.54	2.81	2.57	2.81

	(1.25)	(1.44)	(1.25)	(1.60)
Post-testing	3.43	3.44	3.61	3.38
	(1.58)	(1.37)	(1.39)	(1.52)

Note. Group1 = Hoax presence* Political Ideology Presence, Group2 = Hoax Absence* Political Ideology Presence, Group3 = Hoax presence *Political Ideology Presence Absence, , Group4 = Hoax absence* Political Ideology Absence.

Table 4 Regression of the Effect of Hoax Strategy on Issue Confidence, Issue Involvement, and Issue Processing

	Willingness to support GMO labeling issues in Facebook
	β (*t* statistic)
Demographic variables	
Age	.05(.82)
Gender (Male = high)	-.06(-1.07)
Race (White = high)	-.06(-1.12)
Income	-.03(-.55)
Education	-.06(-1.03)
Internet use	
Social media active use	.27(4.81)***
Political attitude	
Political conservatism	.09(1.53)

Political consumerism	-.29(-5.21)***
Previous issue knowledge	
GMO labeling issue knowledge	.33(5.69)***
Exposure to stimuli	
Political ideology	.12(.68)
Hoax	.29(1.71)†
Political ideology * Hoax	-.28(-1.20)
Adj. R^2	.02
F(12, 227)	9.38***

Note. †*p*<.10, *p<.05, **p<.01, ***p<.001

Highlights

- When people have issue confidence, which are different from factual knowledge or literacy, they are more likely to be motivated to engage in the GMO labeling issue.
- Social media hoax can activate individuals' issue confidence, while political ideology cannot change the issue confidence.
- Social media hoax has a marginally significant impact on promoting people to engage in Facebook activism.
- This study demonstrated limitations of pseudo-activism adapting unethical strategies for public relations practitioners.