Computers in Human Behavior 72 (2017) 422–431

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Full length article

The impact of social media on risk perceptions during the MERS outbreak in South Korea

Doo-Hun Choi [a, b], Woohyun Yoo [c], Ghee-Young Noh [d], Keeho Park [e, *]

[a] Graduate Program of Interaction Design, Hallym University, Chuncheon, South Korea
[b] College University, Sungkyunkwan University, Seoul, South Korea
[c] Department of Mass Communication, Incheon National University, Incheon, South Korea
[d] School of Communication, Hallym University, Chuncheon, South Korea
[e] Graduate School of Cancer Science and Policy, National Cancer Center, South Korea

ARTICLE INFO

Article history:
Received 7 December 2016
Received in revised form
27 February 2017
Accepted 1 March 2017
Available online 3 March 2017

Keywords:
MERS
Social media
Heuristic-systematic processing
Self-efficacy
Risk perceptions

ABSTRACT

Analyzing nationally representative online panel survey data during the MERS outbreak in South Korea, this study examined the role of social media exposure in shaping public's risk perceptions of MERS. The present study also investigated the moderating role of heuristic-systematic processing and self-efficacy in the relationship between social media exposure and risk perceptions. The findings of this study showed that social media exposure was positively related to forming risk perceptions. Moreover, heuristic-systematic processing and self-efficacy were found to moderate the impact of social media on risk perceptions. The interaction effects suggested that the role of social media in increasing risk perceptions of MERS was heighted by heuristic-systematic processing and self-efficacy. The results and implications of this study are discussed in greater details.

1. Introduction

Since the first patient of Middle East respiratory syndrome coronavirus (MERS-CoV; hereafter MERS) was identified on May of 2015 in South Korea, nearly 40 people had died, almost 190 people had been infected, and more than 16,500 people had been quarantined until the outbreak ended on December 23, 2015 (Korea Centers for Disease Control and Prevention, 2015). Because MERS was regarded as an emerging infectious disease outbreak in South Korea (Kim, 2015; WHO, 2016), South Koreans were largely uninformed about it. Since they were unfamiliar with MERS, they became increasingly uncertain and concerned about the outbreak.

When a public health issue emerges, such as MERS, it is necessary to communicate health-related information to individuals so that they can understand the issue and respond effectively (Reynolds & Seeger, 2005; Vos & Buckner, 2016). Especially, for government and risk communicators, the public's risk perceptions of the public health issues can help individuals understand the situation and manage it better. Media outlets, including television and newspapers, have played a large role in informing the public of health issues as well as shaping the public perception of those issues (Lin & Lagoe, 2013; Morton & Duck, 2001; Shim & You, 2015). In recent years, the numbers of people using social media, such as Facebook or Twitter, has increased, and the use of social media as an informational source for health can influence people's cognition or behavior related to health issues, including risk perceptions and preventive behaviors (Barman-Adhikari et al., 2016; Young & Rice, 2011).

As people tend to interpret information depending on their information processing mode (Eveland, 2005; Kosicki & McLeod, 1990), the way they process information is likely to influence their cognition, such as risk perceptions, of particular issues (Lee & Oh, 2013). For example, the heuristic and systematic processing model suggests that people's systematic or heuristic information processing can play a role in shaping risk perceptions (Trumbo, 1999; 2002). Moreover, information processing mode can interact with social media to influence people's perception formation. Social media users encounter various sources of information, including elites news information, users' unfiltered or uncensored information, and tailored information that shows their personal backgrounds or interests according to their online networks (Austin, Liu,

* Corresponding author. 323 Ilsan-ro, Ilsandong-gu, Goyang-si, Gyeonggi-do, 10408, South Korea.
E-mail address: park.keeho@gmail.com (K. Park).

http://dx.doi.org/10.1016/j.chb.2017.03.004
0747-5632/

& Jin, 2012; Lee & Oh, 2013). Thus, social media use could interact with information processing mode in order to interpret the differential information. As a result, it is likely that the interaction between social media and information processing mode plays a role in shaping ones' perceptions.

In the case of public health issue, it is important for individuals to believe that they can confidently deal with health issues (e.g., Bandura, 1990; Strecher, DeVellis, Becker, & Rosenstock, 1986). This belief (i.e., self-efficacy) can influence how people shape risk perceptions on a public health issue (Coleman, 1993; Han, Zhang, Chu, & Shen, 2014). Moreover, since an individual's belief influences the impact that media has on forming their perceptions (e.g., Cacciatore, Binder, Scheufele, & Shaw, 2013), it is also likely that the self-efficacy can moderate the impact of social media use on the formation of risk perceptions.

Within this context, this study examines how social media could influence people's risk perceptions during the MERS outbreak in South Korea. We also investigate the moderating role that individuals' information processing mode and self-efficacy have on the association between social media and risk perception. To examine these relationships, the study relies on the original survey data from a national online panel sample of South Korean adults. The results of this study may improve our understanding of the impact of social media on the formation of risk perceptions during an infectious disease outbreak.

2. Theoretical background

2.1. Risk perception

Risk perception is a major conceptual component of the health and risk communication areas. In general, risk perception refers to people's subjective estimation of the possibility that negative health-related outcomes or incidents (e.g., diseases) can occur (El-Toukhy, 2015; Menon, Raghubir, & Agrawal, 2008; Slovic, 1987). It is specifically constructed by two dimensions: susceptibility and severity (Pask & Rawlins, 2016). Susceptibility reflects one's perception of the likelihood of contracting a disease, whereas severity refers to one's perception of the seriousness or harmfulness of a disease (El-Toukhy, 2015; Rimal & Real, 2003). In particular, when people perceive health-related risks, they not only rely on the cognitive aspects of the likelihood and severity of a health-related disease, but also use affective aspects of the worry, concern, or dread that a person feels about a health-related disease (e.g., Freimuth & Hovick, 2012; Oh, Paek, & Hove, 2015).

When a public health issue occurs, people tend to perceive risks (e.g., Bish & Michie, 2010; Pask & Rawlins, 2016). The occurrence of emerging infectious diseases, which is not anticipated in a specific time or area, such as MERS or H1N1 flu, can lead to the public's immediate risk perception (Oh et al., 2015; Reynolds & Seeger, 2005). Thus, understanding the public's risk perception can help manage public health issues and help them escape from it during an outbreak. Moreover, because MERS is a disease that was previously unknown to South Koreans, few studies have examined how people form their risk perceptions during the MERS outbreak. It is important to explore the factors that influence the formation of risk perceptions during the emerging infectious disease outbreak.

2.2. Social media and risk perception

There are some key factors that can influence people's risk perception. In a situation where people have not directly experienced an infectious disease, traditional media, such as television and newspapers, have played a considerable role as major sources of information to the public (Coleman, 1993; Dudo, Dahlstrom, & Brossard, 2007; Paek, Oh, & Hove, 2016). The media produce and deliver news and information to citizens regarding public health issues (Lin & Lagoe, 2013; You & Ju, 2015). Since people rely on media as a source of information, the media can help people understand the risks and can shape their perception of the issue. For example, Chang (2012) has shown that exposure to H1N1 flu news in television is associated with the formation of people's risk perception of the pandemic disease.

Given the rapid change in communication technology, people have recently exhibited an increase in their use of social media, such as Facebook or Twitter, as health information source (Lin, Zhang, Song, & Omori, 2016; Mano, 2014). Social media use has transformed the way in which people obtain and use information. Unlike traditional media that allow people to engage in limited media activities, social media users can obtain, create, and share health information by receiving health information from other users, posting their health-related comments, and joining health-related groups (Fox, 2011). For example, during the H1N1 flu virus outbreak, people used social media as a public discussion forum to exchange information and opinions regarding H1N1 (e.g., Davies, 2009).

Moreover, social media use can influence people's risks perceptions of the public health issues (Chung, 2016). Social media users often express their emotional responses, such as fear, worry, or anxiety, on infectious diseases, such as H1N1 influenza (Chew & Eysenbach, 2010; Signorini, Segre, & Polgreen, 2011). Particularly in social media, negative experiences or messages spread largely through online social networks (Pfeffer, Zorbach, & Carley, 2014; Stieglitz & Dang-Xuan, 2013). Moreover, because social media users tend to construct their online social networks to include their acquaintances, such as colleagues, friends, and family members, they are more likely to respond seriously to their online contacts' information or opinions on the health or disease-related issues.

More specifically, during the MERS outbreak, social media played a role in providing factual information, including medical information, and subjective information, including users' comments. Recent studies have used big data analytics to demonstrate that people mentioned and/or shared factual information related to MERS, such as symptoms and prevention methods, in online media platforms, including social media (Song, 2015). Moreover, negative emotions concerning the disease, such as anxiety or fear, were more prevalent than positive emotions in social media during the infectious outbreak (Song, Song, Seo, Jin, & Kim, 2017).

Since risk perception encompasses the severity of and susceptibility to a health issue (El-Toukhy, 2015), social media exposure to MERS information is likely to be associated with both of those components of risk perception. In media presentation, it was suggested that perceived susceptibility is related to information that would increase achieving a given health condition, such as numerical risk information, while perceived severity is related to information that would include specific outcomes of a health condition, such as death or negative emotions (McWhirter & Hoffman-Goetz, 2016). In this regard, it is likely that exposure to users' negative emotions, symptoms, or pain concerning MERS could be positively associated with the perceived severity of the infectious disease while exposure to factual information on MERS, such as an increase in number of MERS patients or mortality and fatality rates of the infectious disease, could also be associated with the perceived susceptibility to the infectious disease. As previous studies have examined the risk perceptions embracing both perceived severity and perceived susceptibility as one concept (Hovick, Kahlor, & Liang, 2014; Pask & Rawlins, 2016; Shim & You, 2015), this study also integrates the two components into one dimension to examine the impact of social media on risk perception. Thus, during the MERS outbreak, social media exposure for