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Self-efficacy, information-processing strategies, and acquisition of health knowledge

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ORIGINAL ARTICLE

Self-efficacy, information-processing strategies, and acquisition of health knowledge

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Informed by the Cognitive Mediation Model of media learning, this study explores how self-efficacy and information-processing strategies jointly impact the learning of health knowledge. Using survey data ($N = 1409$), the study examines the roles that self-efficacy, motivation of media use, news attention, and elaboration play in acquiring knowledge about swine flu during the 2009 global pandemic crisis. Results support the hypothesized relationships among self-efficacy, motivation, attention to and elaboration of swine flu news, and knowledge about the flu. Implications of the findings to advance the research in mediated cognitive learning are discussed.

Keywords: knowledge; self-efficacy; information-processing strategies; motivation; attention; elaboration

Introduction

Information-processing strategies play a key role in gaining knowledge about public affairs and politics (Eveland, 2001, 2002; Eveland, Shah, & Kwak, 2003). For instance, the growing research of the Cognitive Mediation Model of news learning (Eveland, 2001, 2005) focuses on how the public learns about elections and the Gulf Wars from the news media (Eveland, 2001, 2002; Eveland et al., 2003; Lo & Chang, 2006; Wei & Lo, 2008). The role of information-processing strategies in acquiring other types of knowledge, however, is rarely explored (Jensen, 2011). Using the 2009 global swine flu pandemic crisis as the context, this study aims to investigate how self-efficacy and information-processing strategies jointly affect the acquisition of health knowledge. Specifically, the study seeks to expand the Cognitive Mediation Model in examining the complex inter-relationships among self-efficacy, motivations of news media use, news attention, elaboration, and knowledge gain in the domain of health knowledge.

In April 2009, a new strain of H1N1 influenza, popularly known as swine flu, first broke out in Mexico and then spread to the rest of the world within weeks. The World Health Organization (WHO) declared the outbreak a global pandemic on 11 June. By June, 30,000 people were infected in 74 countries and hundreds died (WHO, 2009). According to Taiwan's Centers for Disease Control and Prevention, more than 30,000 Taiwanese caught swine flu; among them, 22 died by 9 October 2009. The human swine flu posed a serious health risk to the public. The pandemic crisis was

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covered intensively in Taiwan's news media. Thus, the swine flu provides a rare opportunity to test and expand the Cognitive Mediation Model as it concerns the acquisition of knowledge about the flu.

Because past research on Cognitive Mediation Model to news learning has primarily focused on learning public affairs knowledge as the outcome variable, this study will expand it to learning about health risk in the context of public health communication, filling a gap in the literature. Furthermore, in a highly saturated and media-rich environment, audiences increasingly engage in self-selection of the information channels to which they are exposed (Bennett & Iyengar, 2010). The Cognitive Mediation Model underscores motivations of news seeking as antecedents of attention and learning effects, thus findings of this study will shed light on selective use of news media and the effects of such use on gaining health knowledge. Finally, learning about public health or science from the news appears to have a higher threshold than learning about public affairs in the media. Therefore, unfamiliarity with the complex public health or science information such as swine flu requires an individual to be self-efficacious in overcoming the learning curve to become knowledgeable about the threat to public health or a scientific issue. By incorporating self-efficacy in the Cognitive Mediation Model of news learning, the study will contribute to the research that takes an information-processing approach to learning from news media.

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The information-processing approach to learning

The information-processing paradigm assumes active involvement of individuals with the news media. To learn, make sense of, and understand events covered in the media, individuals rely on information-processing strategy, which refers to 'a set of tactics individuals use to try to cope with the amount and kind of mass media information that they encounter in their everyday lives' (Kosicki & McLeod, 1990, p. 73). Previous studies show that the extent to which an individual learns from the news is subject to a number of antecedents, such as motivations, as well as mediating variables, such as cognitive mechanisms (Eveland, 2001; Eveland et al., 2003). The theorization of this information-processing approach to news learning is known as the Cognitive Mediation Model.

In a nutshell, the Cognitive Mediation Model views news learning as an active and multistage process that involves motivations of media use, attention to news, and post-exposure elaboration of news. That is, learning from news requires a motivated individual to be watchful of events, which leads to attention to news about the events, which further leads to elaboration of the news, which in turn results in understanding and acquiring knowledge. To enhance the rigor of the model, Eveland (2005) suggests that self-efficacy to be incorporated in the model as an antecedent influencing an individual's information-processing strategies.

Self-efficacy

Self-efficacy refers to an individual's belief in his or her ability 'to organize and execute the courses of action required to produce given attainments' (Bandura, 1997, p. 3). In the context of prevention of health risk, the construct refers to how confident an individual is in his or her behavior to reduce the likelihood of being affected by the

threat. According to social cognitive theory (Bandura, 1986, 1997, 2001), individuals with higher self-efficacy tend to believe they are capable of completing a challenging task and are likely to engage in the challenge (Torkzadeh & van Dyke, 2001).

Self-efficacy has been extensively tested as a major predictor of motivation and behaviors of seeking health information (Floyd, Prentice-Dunn, & Rogers, 2000; Lippke, Ziegelmann, & Schwarzer, 2009). Past research examined how self-efficacious beliefs influence health information seeking behavior (Rimal, 2001), health literacy (Torres & Marks, 2009), health planning (Gutierrez-Dona, Lippke, Renner, Kwon, & Schwarzer, 2009; Reuter et al., 2010), and health behavior (Nothwehr, 2008; Reuter et al., 2010; Schwarzer, 1994; Strachan & Brawley, 2009). In general, individuals with low self-efficacy regarding their control of a health condition tend to feel powerless and fatalistic (Solomon, 2003). Consequently, they will not do anything to change the outcomes of the disease (Crowell & Emmers-Sommer, 2001; Green, Lewis, Wang, Person, & Rivers, 2004; Witte, 1992). However, when facing a health threat, people of high level of self-efficacy will likely do early detection and seek control over the disease (Aiken, Fenaughty, West, Johnson, & Luckett, 1995).

Past research has found self-efficacy as a determinant of health information seeking-the higher the level of self-efficacy, the greater the information seeking behavior, including thoughts about heart diseases, discussion about health and use of health information (Rimal, 2001). Nevertheless, little is known about the relationship between self-efficacy and information-processing strategies. We anticipate that self-efficacy will be positively related to information-processing strategies. Our expectation is based on past research, which indicates that self-efficacy is an influence on behavioral choice, as well as on the amount of effort taken in support of that choice (Salovey, Rothman, & Rodin, 1998). Furthermore, past research indicates that information seeking and processing are affected by perceived information gathering capacity, an individual's assessment of his or her ability to learn more about a risk (Griffin, Dunwoody, & Neuwirth, 1999). If individuals increase their level of self-efficacious beliefs, they will likely invest more cognitive efforts in processing information. Therefore, the effect of self-efficacy on learning health news will be mediated by information-processing mechanisms such as news attention and cognitive elaboration. A high level of self-efficacy will result in more attention and more elaboration, which in turn will lead to a greater learning effect.

Moreover, we propose that self-efficacy will also directly affect learning. Recent research on health promotion found that self-efficacy mediates the relationship between diet knowledge and dieting behavior. The relationship between knowledge and behavior was greater among those with high self-efficacy (Rimal, 2000). Thus, it is reasonable to expect that self-efficacy will be a significant predictor of knowledge about swine flu.

To illustrate the interrelationships among self-efficacy, motivation of media use, news attention, elaboration, and knowledge about swine flu, we develop a theoretical model (see Figure 1) to guide our analysis. As Figure 1 illustrates, controlling for demographics, motivation and, self-efficacy predict attention and elaboration, which in turn predict knowledge. The figure also shows the following hypotheses:

H1: Self-efficacy will be positively related to attention to news about swine flu.
H2: Self-efficacy will be positively related to elaboration of news about swine flu.
H3: Self-efficacy will be positively related to knowledge about swine flu.

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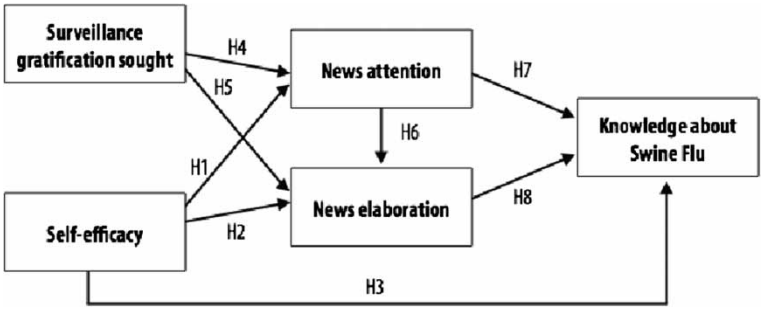

Figure 1. The expanded cognitive model of learning from the news.

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Motivation and information-processing mediating variables

The Cognitive Mediation Model has generated a growing amount of support in the context of political communication (Beaudoin & Thorson, 2004; Eveland, 2001, 2002; Wei & Lo, 2008). In the context of learning about a risk to public health like swine flu, we anticipate that individuals who are motivated to be informed about the swine flu pandemic will devote considerable attention to news about the flu, engage in an elaborative processing of the information from the news, and become knowledgeable about the flu.

Specifically, as an antecedent of information-processing, motivations of media use were found to have a positive impact on attention to and elaboration of news (David, 2009; Eveland, 2001; Eveland et al., 2003). To seek gratification of immediate and personal needs from media use, individuals motivate themselves to learn something in the news prior to mentally engaging in the processing of information. When the motivation to news learning is high, it is more likely that they pay attention to and elaborate the news, two necessary cognitive mechanisms of knowledge gain. However, when the motivation to stay abreast of a news event is low, it is less likely that individuals attend to and elaborate on media messages, resulting in acquiring less knowledge from the news. As Eveland (2002) argued, motivations are 'what drive the processing of information' (p. 27). This argument is particularly true in seeking and acquiring political knowledge (Bennett & Bennett, 1993).

Past research found that motivations, operationalized as the surveillance gratification sought from news media, are significantly related to news attention and news elaboration (Eveland, 2001; Eveland et al., 2003; Lo & Chang, 2006; Wei & Lo, 2008). Vincent and Basil (1997) found that the gratification to be 'in the know' drove news media use among college students. An increase in surveillance needs resulted in increased use of all news media. More importantly, motivations were found to have independent effects on exposure and attention to news when following general public affairs in the news (David, 2009). In a survey of 1050 respondents in Wisconsin, Yows, Salmon, Hawkins, and Love (1991) reported that motivation was a significant predictor of focused exposure to health information, which, in turn, predicted two of three types of cancer knowledge.

In the context of the 2009 swine flu pandemic, audience motivation for surveillance of the global pandemic was heightened. Therefore, motivated individuals

will pay attention to swine flu news and think about the personal ramifications of the news. Thus, it is hypothesized that:

H4: Surveillance gratification will be positively related to attention to news about swine flu.
H5: Surveillance gratification will be positively related to elaboration of news about swine flu.

Furthermore, as a mental and cognitive process critical to information-processing, attention plays a key role in news learning. Through allocating his or her mental energy to incoming stimuli from messages (Perse, 2001), an individual's attention mediates the relationship between news gratifications and elaboration as well as the relationship between news gratifications and knowledge acquisition. Thus, by enabling an individual to focus on a particular news story, attention enhances the effect of exposure to media messages (Chaffee & Schleuder, 1986). The Cognitive Mediation Model explicitly suggests that news attention is 'a necessary but not sufficient condition for elaboration' (Eveland, 2002, p. 29), which means individuals engaging in an elaborative process of news content must first pay attention to the content.

Numerous studies have shown that media use is positively related to knowledge about health issues (Ho, 2010; Kwak, 1999; Lee, 2009; Slater, Hayes, Reineke, Long, & Bettinghaus, 2009). In a survey of 1055 adult respondents in Singapore, Ho (2010) found that attention to newspapers and television news was positively associated with H1N1-related knowledge. Empirical research has also reported that individuals who had paid more attention to a news topic devoted more effort to elaborate on the topic and accordingly learned more about it and comprehended more. The general pattern is that attention to news has a positive impact on elaboration (Eveland, 2001, 2002) and has a greater learning effect than mere news exposure (Chaffee & Schleuder, 1986; Wei & Lo, 2008).

In addition, elaboration has been studied as another major mental process involved in news learning. Elaboration refers to one's inclination to think about a message (Petty & Cacioppo, 1986). By relating incoming information to an individual's existing knowledge and past experiences, elaboration results in a greater impact of media messages on the individual (Eveland, 2005; Perse, 2001). That is, those who engage in an elaborative process will be more likely to incorporate the new information into their existing cognitive framework for understanding the subject. Thus, the Cognitive Mediation Model specifies that the elaborative process leads to a higher level of learning by linking new information with previously stored knowledge (Eveland, 2001, 2002). Empirical support for the link was reported in the literature (Wei & Lo, 2008).

In the context of learning from the news about swine flu, the coverage in Taiwan's news media was intensive and lasted for several months in the spring and summer of 2009. The coverage served as stimuli to audience. Those who paid more attention to such news would likely elaborate on the ramifications of the global pandemic. The more they engaged in the elaboration of swine flu news, the more likely they would gain more knowledge about the pandemic. Accordingly, it is hypothesized that:

H6: Attention to swine flu news will be positively related to elaboration of news about the epidemic.

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H7: Attention to swine flu news will be positively related to knowledge about the flu.
H8: Elaboration of swine flu news will be positively related to knowledge about the flu.

Method and data

Schools were considered a high-risk venue during the 2009 swine flu pandemic crisis because of their high-density student populations. Therefore, high school students were chosen as the population of study, from which a sample was drawn to collect data for testing the hypotheses. Using multistage cluster sampling procedures, a probability sample of high school students in Taiwan was drawn. First, 14 high schools were selected at random from a pool of 63 high schools in Taipei. Three classes were then selected randomly from each of the 14 schools. Finally, the questionnaire was administered to students enrolled in the 42 classes between mid-May and mid-June 2009 at the height of the swine flu pandemic crisis.

Participation in the study was voluntary; respondents were assured of anonymity. Trained college students from a research university supervised the distribution and collection of the self-administered questionnaires. Among the 1500 students in the sample, 1409 (93.9%) completed the questionnaires. Half of the respondents (49.5%) were males and half were (50.5%) females.

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Operationalizaton

Self-efficacy

Self-efficacy was measured with three questions adopted from previous research (Wei, Lo, & Lu, 2007). Respondents were asked to indicate their agreement with the following statements reflecting their efficacy to cope with the threat of swine flu: (1) I believe I can prevent myself from getting swine flu; (2) I believe that there are ways of reducing my likelihood of being inflected with swine flu; (3) I believe that I will actively take action to reduce the chances of being infected with swine flu. The 5-point Likert scale ranged from '1' (strongly disagree) to '5' (strongly agree). Results of an exploratory factor analysis showed that the three items grouped in a single factor (Eigenvalue = 2.20, accounting for 73.27% of the variance). The three items were averaged to create a composite measure of self-efficacy ($M = 3.48$, SD = 0.71, $\alpha = 0.82$).

Surveillance gratification seeking from news

Surveillance gratification sought from use of news was measured with four questions adopted from previous research (Beaudoin, & Thorson, 2004; Eveland, 2001; Palmgreen, Wenner, & Rayburn, 1980). Respondents were asked to rate the helpfulness of news media for them (1) to understand what is going on in the world, (2) to keep up with the major events of the day; (3) to see how other people stand on issues, and (4) to give them more facts to back up their opinions. The scale ranged from 1 (strongly disagree) to 5 (strongly agree). Results of exploratory factor analysis showed that the four items loaded in a single factor. With an Eigenvalue of 2.65, the one factor solution explained 66.46% of the variance. Using the average, a composite measure of surveillance gratifications seeking was constructed ($M = 3.11$, SD = 0.59, $\alpha = 0.83$).

Attention to swine flu news

Respondents were then asked about the attention they paid to news about swine flu when reading or watching newspapers, television or the Internet. A 5-point scale was used, ranging from 5 (meaning 'a great deal of attention') to 1 (meaning 'no attention paid'). Results of an exploratory factor analysis showed a single-factor solution, indicating the three items measured the same underlying concept (Eigenvalue = 2.13, explaining 70.86% of the variance). A composite scale of attention to swine flu news was built using the average ($M = 3.45$, SD = 0.85, $\alpha = 0.79$).

Elaboration of swine flu news

Respondents were asked to indicate their agreement with five statements on a 5-point Likert scale where 5 meant 'strongly agree' and 1 meant 'strongly disagree': (1) 'I often try to relate what I see in the swine flu news to my own experiences'; (2) 'I often think about how what I see in the swine flu news relates to other things I know'; (3) 'After seeing news reports about swine flu, I have thought about the epidemic'; (4) 'After seeing news reports about swine flu, I have thought about the consequences of the epidemic'; and (5) 'After seeing news reports about swine flu, I have tried to relate them to other health crises'. An exploratory factor analysis showed that the five items grouped in a single factor (Eigenvalue = 3.46, accounting for 69.15% of the variance). The five items were averaged to create a composite measure of elaboration of swine flu news ($M = 3.40$, SD = 0.78, $\alpha = 0.89$).

Knowledge of swine flu

A total of 15 items were used as the knowledge scale, which asked respondents to identify events, public health officials, and origin of the pandemic. They include questions on symptoms of swine flu, country of original outbreaks, the scientific name of swine flu, medicine that is used to cure H1N1 virus, and who was the General Secretary of the World Health Organization. One point was given to each correct answer, based on which a knowledge index was created by summing the 15 items. The index ranged from 0 to 15 ($M = 6.87$, SD = 2.61, $\alpha = 0.69$).

Control variables

Respondents were asked about their gender and age ($M = 16.66$, SD = 0.96). These two variables were used as controls in the statistical analyses, because previous studies indicated that they affect knowledge acquisition (Lo, 1994; Lo & Chang, 2006; Robinson & Levy, 1986).

Results

Hypothesis testing

To test the eight hypotheses that concern the bivariate relationships between self-efficacy, surveillance gratification of news seeking, attention, elaboration, and knowledge about swine flu, Pearson and partial correlation tests (controlling for gender and age) were conducted. The first hypothesis predicted that self-efficacy

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would be positively related to attention to news about swine flu. As shown in Table 1, this hypothesis was supported. Self-efficacy was significantly related to news attention ($pr = 0.28$, $p < 0.001$) after controlling for gender and age. The second hypothesis predicted a positive relationship between self-efficacy and elaboration of swine flu news. This hypothesis was supported. As Table 1 shows, self-efficacy was significantly related to news elaboration ($pr = 0.33$, $p < 0.001$) after controlling for gender and age. The third hypothesis predicted a positive relationship between self-efficacy and knowledge about swine flu. This hypothesis was also supported. The relationship between self-efficacy and knowledge about swine flu was significant ($pr = 0.21$, $p < 0.001$) after controlling for gender and age (see Table 1).

The fourth hypothesis predicted that surveillance gratification would be positively related to attention to news about swine flu. As shown in Table 1, this hypothesis was supported. Surveillance gratification was significantly related to news attention ($pr = 0.34$, $p < 0.001$) after controlling for gender and age. The fifth hypothesis predicted a positive relationship between surveillance gratification and elaboration of swine flu news. This hypothesis was supported as well. As Table 1 further shows, the gratification sought from news media for surveillance was significantly related to news elaboration ($pr = 0.35$, $p < 0.001$) after controlling for gender and age. The sixth hypothesis predicted a positive relationship between attention to and elaboration of swine flu news. This hypothesis was supported. News attention was strongly related to elaboration ($pr = 0.53$, $p < 0.001$) after controlling for gender and age (see Table 1).

The seventh hypothesis predicted that attention to swine flu news would be a positive correlate of knowledge about the flu. Results of partial correlation show that news attention was significantly related to knowledge ($pr = 0.19$, $p < 0.001$) after controlling for gender and age. The results supported Hypothesis 7. The eighth hypothesis predicted that elaboration of swine flu news would be related to knowledge about the flu. As expected, this hypothesis was supported. Elaboration was found to be positively related to knowledge about swine flu ($pr = 0.21$, $p < 0.001$) after controlling for gender and age.

Table 1. Bivariate and partial correlation between self-efficacy, surveillance gratifications, attention, elaboration, and knowledge about swine flu.

	1	2	3	4
1. Self-efficacy	1.00***			
	(1.00***)			
2. Surveillance gratification	0.28***			
	(0.28***)			
3. Attention to swine flu news	0.33***	0.35***		
	(0.33***)	(0.34***)		
4. Elaboration of swine flu news	0.38**	0.35**	0.54***	
	(0.37**)	(0.35**)	(0.53**)	
5. Knowledge of swine flu	0.22**	0.19***	0.19***	0.21***
	(0.21**)	(0.19***)	(0.20***)	(0.21***)

Note: $N = 1319$; Figures in parentheses are partial correlations controlling for gender and age.
*P < .05, **P < .01, ***P < .001

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Path analysis

To further test the proposed model (see Figure 2), a path analysis was performed. The path analysis included three regression analyses. In the first regression analysis, news attention was regressed on surveillance gratification, self-efficacy, and the two control variables (e.g., gender and age). In the second regression analysis, news elaboration was regressed on news attention, surveillance gratification, self-efficacy, and the control variables. The third regression analysis regressed the variable of swine flu knowledge on surveillance gratification, self-efficacy, news attention, news elaboration, and the control variables.

Results of the first regression analysis showed that surveillance gratification ($\beta = 0.27$, $p < 0.001$) and self-efficacy ($\beta = 0.26$, $p < 0.001$) were significant predictors of attention to swine flu after the influences of gender and age were taken into account. In the second regression analysis, results show that surveillance gratification ($\beta = 0.15$, $p < 0.001$) and self-efficacy ($\beta = 0.19$, $p < 0.001$) held predictive power over elaboration of swine flu news after the influences of news attention and the two control variables were taken into consideration.

Also as expected, news attention was a strong predictor of elaboration ($\beta = 0.41$, $p < 0.001$) after the influences of surveillance gratification, self-efficacy and the two control variables were accounted for. In the third regression analysis, self-efficacy ($\beta = 0.12$, $p < 0.001$), news attention ($\beta = 0.09$, $p < 0.01$), and elaboration ($\beta = 0.09$, $p < 0.01$) were found to be significant predictors of swine flu knowledge after the influences of other predictors were considered simultaneously. It is noted that surveillance gratification ($\beta = 0.10$, $p < 0.01$) was also a significant predictor of swine flu knowledge. Results of the first path analysis provided additional evidence in support for the expended cognitive model of news learning about swine flu.

Test of mediation

To assess the mediating effects, we adopted a procedure developed by Sobel (1982) that provides a direct test of an indirect effect. The Sobel test was employed because it performs well for moderate to large effect size with a large sample (Holbert & Stephenson, 2003; Preacher & Hayes, 2004). The two mediators in our theoretical model are news attention and news elaboration. Thus, there are two potential mediating effects between surveillance gratification sought and knowledge about

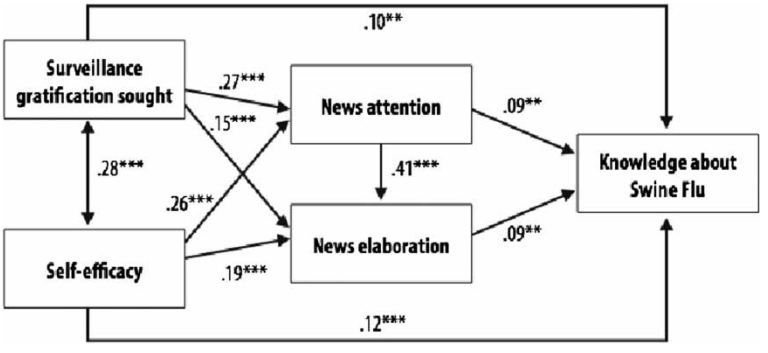

Figure 2. Results of path analysis.

swine flu in the model in which two moderators, namely news attention and news elaboration, mediates between the gratification and knowledge. The results of the Sobel test show that the z score for mediation path through news attention is 5.14 ($p < 0.01$), and the path through news elaboration has a z score of 5.23 ($p < 0.01$). Therefore, we generated evidence in support of the proposed model that news attention and elaboration are statistically significant mediators in the relationship between surveillance gratification sought and knowledge about swine flu.

Similarly, news attention and news elaboration are also two potential mediators in the relationship between self-efficacy and knowledge about swine flu. The results of the Sobel test indicate that the mediation path through news attention has a z score of 5.13 ($p < 0.01$), and the z score for the path through news elaboration is 10.07 ($p < 0.01$). Accordingly, news attention and news elaboration are significant mediators in the relationship between self-efficacy and knowledge about swine flu.

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Discussion

To understand how people acquire knowledge from the news in a media-rich environment, the present study examines the roles that self-efficacy, motivation, attention, and elaboration play in acquiring health knowledge. The Cognitive Mediation Model was found to be applicable in the context of gaining knowledge about the 2009 swine flu pandemic. As expected, findings indicate that news attention and news elaboration were significantly related to knowledge about swine flu.

More importantly, findings suggest that self-efficacy is an important factor that influences the relationships between information-processing variables and cognitive outcomes. The path coefficients show that the paths between self-efficacy and news attention, news attention, elaboration, and knowledge about swine flu were all significant. The results also show that the effect of self-efficacy on learning about swine flu was mediated by information-processing strategies. These findings validate the incorporation of self-efficacy in the Cognitive Mediation Model, thus a contribution to the literature.

Findings emerging from the results of path analyses indicate a direct link between surveillance gratification and knowledge about swine flu. Past research indicates that surveillance gratification is only indirectly related to political learning (David, 2009; Eveland, 2001, 2002). The context of our study may offer an explanation for this result. Compared to news about politics, which is considered to be of tertiary importance to most people (Converse, 1975), news about swine flu as a global pandemic concerned a risk that could seriously threaten the health of an individual. Our findings on the role of motivation on knowledge acquisition are consistent with risk communication research, which indicates that motivation was positively related to knowledge complexity (Kahlor, Dunwoody, & Griffin, 2004). Previous studies indicate that the personal relevance of the message topic affects the intensity of information seeking and processing (Eagly & Chaiken, 1993; Griffin, Neuwirth, & Dunwoody, 1995; Griffin, Dunwoody, & Neuwirth, 1999). It is likely that personal relevance of the swine flu news motivates people to seek, process, and acquire a great deal of information about the pandemic that threatened them. However, personal relevance was not measured in this study. Future efforts should be devoted to examining the relationships among personal relevance, motivation, self-efficacy, information-processing strategies, and health learning.

In conclusion, results of this study suggest that respondents with higher motivation and greater self-efficacy are more likely to pay attention to swine flu news and to elaborate on the pandemic and consequently learned more about it. In comparison, respondents whose level of motivation and sense of self-efficacy were low were less likely to engage in information-processing strategies and thus learned less about swine flu. Theoretically, these results mean that the acquisition of health knowledge depends not only on motivation and information-processing strategies but also on the belief in one's efficacy to take preventive measures. The more people are motivated to process information about a health risk, and the more they believe they have control over it, the more likely they will be attentive to the risk information that they encounter in the media and more likely to engage in elaborative processing. Consequently, they acquire more knowledge about the risk.

The results are consistent with systematic and heuristic model of processing (Chaiken, 1980; Chaiken, Liberman, & Eagly, 1989). When people's motivation and self-efficacy fail to lead them to process information about a health risk, they may choose to rely on heuristic processing, which involves little cognitive effort (Chaiken, 1980; Kahlor, Dunwoody, Griffin, Neuwirth, & Giese, 2003). However, when people are motivated to process information about a health risk that they believe, they are efficacious to deal with it, they are more likely to process the risk information systematically (Chaiken, 1980; Kahlor et al., 2003). Practically, health information campaigns should be designed to focus on motivation as well as self-efficacy of target audience because both variables affect information-processing behavior that enhance or undermine health learning.

It should be noted that the relationships reported are not causal. It is highly possible that knowledge affects consumption of news. That is, knowing something about swine flu drives an individual to read or view more news about it. Another limitation came from use of a sample of high-school students. This sample enabled us to test the hypotheses, but it limits the generalizability of the findings to the public at large. In addition, the measurement of surveillance gratification sought included items that were generally used in political communication context. Using public-health-related questions could improve the validity of the cognitive mediation model concerning learning from the news about the H1N1 epidemic. Hence, this is a limitation of the study. We suggest that future research include items that are directly related to health information settings and further explore its effects on the outcome variables.

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