

## **Media Influence on Intention for Risk-Aversive Behaviors: The Direct and Indirect Influence of Blogs Through Presumed Influence on Others**

BORAE JIN

Joongbu University, Republic of Korea

SUNGEUN CHUNG<sup>1</sup>

Sungkyunkwan University, Republic of Korea

SANGHO BYEON

Incheon National University, Republic of Korea

Media can influence people directly and indirectly through presumed influence on others. This study examined the direct and indirect pathways of media influence. The direct pathway started from the perceived effects of media on self, to anxiety of self, and to behavioral intentions of self. The indirect influence started from the presumed effects of media on others, to others' anxiety, to others' behaviors, and to behavioral intentions of self. A survey was conducted regarding the effects of blog messages about fishery contamination associated with the Fukushima nuclear accident ( $N = 306$ ). Both influence pathways were effective, but the direct influence was stronger than the indirect influence. The relationship between participants' intentions to change their behaviors and their presumptions about others' behavioral changes was reciprocal, and the effect of the former on the latter was greater than the opposite.

*Keywords: media effect, third-person effect, influence of presumed influence, social risk, anxiety, behavioral change*

Media provide news and information about what is happening around us. There are also various media channels online, constantly supplying news and information including things that might threaten us. Although it is surely good to be in the know, information about risks and threats can trigger anxiety and fear as well as preparatory actions. For instance, in February 2003 in China, increased newspaper coverage of the SARS outbreaks led people to panic buying of food and other goods (Ding, 2009). In March 2011, after the nuclear accident in Fukushima, Japan, even American people rushed to purchase potassium iodide tablets that could protect against the effects of radioactive iodine-131 (McCurry, 2011). More ordinary examples would include buying sugar after reading news articles about an

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Borae Jin: [bjin23@gmail.com](mailto:bjin23@gmail.com)

Sungeun Chung: [chseun@gmail.com](mailto:chseun@gmail.com)

Sangho Byeon: [byeonsh@hotmail.com](mailto:byeonsh@hotmail.com)

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expected shortage of it. In all of these cases, media messages could directly make audiences do something. However, there is another way that the media influence audiences. For example, in interpreting media messages about social risk, people may think that other people who also read the news reports may do something to prepare for the risk, such as buying sugar or pills, and this perceived influence of media on others could in turn influence people's thoughts and actions. This is what the influence of presumed influence model describes regarding how media indirectly affect people (Gunther & Storey, 2003).

Indeed, Tal-Or, Cohen, Tsfati, and Gunther (2010) demonstrated that the stronger the perceived influence of a news article about an expected shortage of sugar on the public, the greater the intention to purchase sugar. Earlier, Tewksbury, Moy, and Weis (2004) showed that regarding news stories about Y2K (the Year 2000 problem or the Millennium bug), the discrepancy between the presumed effects of the news on others and on the self (i.e., third-person perception) was related to behavioral intentions to prepare for the problem. Furthermore, the researchers proposed a model for the causal relationships among third-person perception, anxiety, presumed others' preparatory behaviors, and intentions for preparatory behaviors. Although some of their findings were not consistent with theoretical predictions, Tewksbury et al. presented a useful framework regarding media messages about social risk and their effects. Extending Tewksbury and colleagues' model and relevant theories, in the present study, we investigated how the presumed effects of media messages on others influence audiences' behavioral intentions (i.e., indirect effect), as well as how the audiences' perceived effects of media messages influence their own anxiety and behavioral intentions (i.e., direct effect). We also combined and compared the direct effects of media messages with the indirect effects of those messages through presumed influence on others.

Today, it is difficult to think of media without the Internet. News stories spread through both traditional and online media (Dutta-Bergman, 2004), and people regard blogs as credible sources of news and information (Johnson & Kaye, 2004). We examined the effects of an online media article (i.e., blog post) about the radioactive water leak at the Fukushima plant in 2013. No one can deny an increasingly important position of online media including blogs in the media world. Extending media effects studies into online media would help us understand the media world more accurately, as studies on media effects have already expanded their scope into various types of new media (Lin, 2009). In line with this, we examined how blog messages were, directly and indirectly, related to the behavioral intention to consume seafood from Japan that might be contaminated by radioactivity.

### **Perceived Effects of Media on Others and on the Self**

Media scholars have long debated how media messages influence audiences. For instance, a sociologist who served as a local volunteer for a candidate in a national election found a high-quality leaflet about the rival candidate in his mailbox just two days before the election; worrying that it would sway people, he instantly started making materials to counteract the effects of the opponent's leaflet and distributed the materials. This story is one of Davison's (1983) personal experiences that led him to formulate the third-person effect (TPE) hypothesis. There are more well-known stories such as the withdrawal of American troops from Iwo Jima Island in the Pacific due to the White officers' fear that their Black soldiers would be affected by Japanese propaganda fliers that contained racially provocative messages. In these examples, both Davison and the White officers took action because they believed media messages would influence the people they were concerned with (i.e., voters and soldiers, respectively). As illustrated in these examples, the TPE hypothesis posits that people tend to

overestimate the effects of mass media messages on others compared with the effects on themselves, and this perception brings about certain actions (Davison, 1983). Studies have demonstrated the TPE across a diverse range of media messages including pornography (Gunther, 1995), violent rap music (McLeod, Eveland, & Nathanson, 1997), defamatory news stories (Cohen, Mutz, Price, & Gunther, 1988), Holocaust-denial advertisements (Price, Tewksbury, & Huang, 1998), and advertising for controversial products such as cigarettes and gambling services (Shah, Faber, & Youn, 1999). These studies generally showed the association of the TPE with approval of restricting violent or harmful media content. Simply put, those who believe that the media influence others more than themselves tend to support censorship of supposedly harmful media content.

The TPE hypothesis has two propositions (Perloff, 2002). First, it assumes stronger effects of media on others than on the self; second, it posits that the difference (i.e., effect on others–effect on the self) leads to behaviors. These two propositions consist of three elements: the presumed effect of media on others (hereafter, other-effect), the perceived effect of media on the self (self-effect), and personal behavior or behavioral intentions (self-behavior). Simply, the TPE hypothesis says that the difference between other-effect and self-effect (other–self difference) determines self-behavior. Since Davison (1983) proposed the TPE hypothesis, a plethora of studies have substantiated, refined, and extended it. Among those studies, Gunther and Storey (2003) presented the influence of presumed influence (IPI) model and asserted that it is a more inclusive, general model that could embrace the TPE hypothesis. Specifically, the authors emphasized the other-effect only and ignored both self-effect and other–self difference. Thus, in the IPI model, the extent of presumed effect on others predicts changes in attitude and behavior (Gunther & Storey, 2003). For instance, parents who presumed more negative effects of video games on children were more likely to forbid their children to play video games (Shin & Huh, 2011). The IPI model also has been applied in various contexts such as adolescents' smoking attitudes (Gunther, Bolt, Borzekowski, Liebhart, & Dillard, 2006), voting behaviors (Cohen & Tsfaty, 2009), and females' magazine use (S. Y. Park, 2005).

Although Gunther and Storey (2003) viewed the TPE hypothesis as a special case of the IPI model, they did not provide a convincing rationale for not considering the effects on self. In fact, in explaining attitudinal or behavioral changes in this line of research, predictors vary from study to study. Following Davison's (1983) argument, some studies considered other–self difference (i.e., the subtraction of self-effect from other-effect) only (e.g., Hoffner et al., 1999; Tewksbury et al., 2004), whereas others attempted to control for self-effect in examining the effects of other–self difference (e.g., Gunther, 1995; Lee & Tamborini, 2005). Furthermore, both the sum of and the difference between other-effect and self-effect were considered in some other studies (i.e., the diamond model method; McLeod et al., 1997; Schmierbach, Boyle, & McLeod, 2008; Shah et al., 1999; Sun, Shen, & Pan, 2008). As such, scholars have made refinements to the conceptual and methodological frameworks of presumed media influence. Recently, using a meta-regression analysis, Chung and Moon (2016) found that other-effect was a more stable predictor of censorship attitudes than either self-effect or other–self difference. In addition, drawing on statistical reasoning and analyses, Chung and Moon showed that examining self-effect and other-effect independently rather than their sums and/or differences was a more valid method for studies on presumed media influence. In the present study, we examined the presumed media influence both on others (other-effect) and on self (self-effect) to determine which was more influential on behavioral intentions of the self (self-behavior).

### ***Perception of Others' Anxiety and Behaviors***

Because we were interested in media messages about social risk, affective responses are important for estimating media effects as well as predicting behavioral intentions. Emotions such as happiness, sadness, and anxiety cause changes in judgment and behavior (Lench, Flores, & Bench, 2011), and studies have emphasized the importance of affective components in risk perceptions (Slovic, Finucane, Peters, & MacGregor, 2004). For instance, the fear and anxiety of people who had experienced an earthquake significantly predicted their behavioral preparedness for future earthquakes (Rüstemli & Karanci, 1999).

When people and media were voluble about Y2K, Tewksbury et al. (2004) examined the relationships among other-self difference, anxiety about Y2K (self-anxiety), other-behavior, and self-behavior. They found that other-self difference increased other-behavior but decreased self-behavior. Also, other-behavior was found to decrease self-behavior, and self-anxiety increased self-behavior but decreased other-behavior in their research. These findings were generally not congruent with the TPE hypothesis, which suggests a positive effect of other-self difference on attitudes and behaviors (Gunther, 1995; McLeod et al., 1997; Rojas, Shah, & Faber, 1996; Shah et al., 1999). The observed negative effect of other-behavior on self-behavior is also inconsistent with the IPI hypothesis. Regarding the negative effect of other-self difference on self-anxiety, Tewksbury et al. (2004) explained that if people think they are greatly influenced by the news about Y2K problems, their anxiety will increase; an increase in self-effect equals a decrease in other-self difference; thus, decreased other-self difference can mean increased self-anxiety. If this had been the case, the authors should have used self-effect to predict self-anxiety instead of other-self difference. As for the effect of other-self difference on other-behavior, Tewksbury et al. (2004) argued, "people who believed others had been disproportionately affected by doom-saying news messages should have been likely to expect others to overreact to the situation" (p. 143). This argument suggests, precisely speaking, that other-effect, not other-self difference, determines other-behavior.

Taken together, it seems clearer and more logical to view that perceived effects on the self influence self-perceived anxiety (self-effect → self-anxiety) and presumed effects on others influence presumed others' anxiety (other-effect → other-anxiety).

### ***Presumed Others' Behavior and Behavioral Intentions of Self***

Davison (1983) reasoned that an overestimation of media effects on others leads to anticipation of others' behavioral change, which causes a person's behavioral change. Recalling the example of the American troops in his article, in between the exposure to the fliers and the decision to retreat, the officers must have thought that their soldiers would behave inappropriately because of the fliers. In fact, Davison explicitly stated that in cases of shortages of consumer goods, people "want to stock up before the hoarders remove all goods from the shelves" (p. 13). Applying the TPE hypothesis, Tewksbury et al. (2004) maintained that other-self difference was positively related to the perception of others' being over-prepared (other-behavior), and that the more one sees others (over-)reacting to the situation, the more likely one engages in certain behaviors.<sup>2</sup> While testing the IPI model, Gunther et al. (2006) found that

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<sup>2</sup> However, Tewksbury et al. (2004) also noted the possibility that perceptions about others' behaviors could have a negative effect on one's own intentions (see p. 144); indeed, they found a negative effect of perceptions about others' over-preparedness behaviors on personal intention. Because the

perceptions of other students' exposure to anti- or pro-smoking media messages influenced perceived peer norms, which, in turn, influenced attitudes toward and behaviors of smoking. Perceived peer norms referred to the perception of how prevalent smoking behaviors were among friends and fellow students, which can be viewed as perceived others' behaviors (i.e., other-behavior). These findings suggest that others' behavior mediates the relationship between other-effect and self-behavior (i.e., other-effect → other-behavior → self-behavior).

Although this is a plausible explanation, some scholars have questioned the causal relationships in the IPI model (Shen & Huggins, 2013; Sun, 2012). Shen and Huggins (2013) suggested the possibility that self-behavior can cause other-behavior from some theoretical and methodological perspectives; that is, people may think other people do something because they themselves do it (e.g., projection, false consensus). In a broad sense, projection implies ascribing one's own characteristics to others, and the false consensus effect refers to overestimating the similarity between one's own characteristics, attitudes, and beliefs and those of others (Holmes, 1968; Kawada, Oettingen, Gollwitzer, & Bargh, 2004; Ross, Greene, & House, 1977). For instance, experimentally frightened subjects perceived others as being more frightened than did a control group of subjects (Feshbach & Feshbach, 1963). Sherman, Presson, and Chassin (1984) found that perceptions of consensus increase when the self is threatened because people seek support for their own behaviors in such situations. Likewise, those who read media messages on social risk may project their own fear or anxiety onto others and predict that others' behavior will be similar to their own. This is the opposite causation from self-behavior to other-behavior. Whereas the TPE hypothesis and the IPI model claim that the perceptions about others affect the self's perceptions and behaviors, the projection and false consensus effects regard the self's perceptions as the cause. Thus, in the present study, we attempted to settle the question which causation explains better by examining the reciprocal relationships between other-behavior and self-behavior (i.e., other-behavior → self-behavior → other-behavior).

### **The Current Study**

In this study, we focused on blogs. Johnson and Kaye (2004) found that those who regularly read blogs tend to view blogs as reliable sources even more than traditional media. Similarly, in Korea, blogs are viewed as more popular and reliable as news sources than traditional media such as TV and newspapers (N. Park, 2008). The influences of blogs have been researched in various contexts such as politics (Gil de Zúñiga, Puig-i-Abril, & Rojas, 2009), health (Adams, 2010), crisis (Austin, Fisher Liu, & Jin, 2012), and tourism (Chen, Shang, & Li, 2014). Although there are not many studies about blogs' effects particularly in terms of the TPE or the IPI model, Banning and Sweetser (2007), as an exception, found no significant differences in the degree of the TPE and its relationships with credibility and behavioral intention across four types of news media: personal blogs, news media blogs, online news, and print newspapers. Studies have demonstrated the TPE and IPI models in the Internet environment (e.g., Lee & Tamborini, 2005; Lim & Golan, 2011; Zhang & Daugherty, 2009). Therefore, we applied our extended model of presumed media influence to blog messages about social risk. Blogs can play various constructive functions in times of crisis such as providing timely information and helping people help each other (Macias, Hilyard, & Freimuth, 2009). Examining social bookmarks regarding the H1N1 influenza virus, Freberg, Palenchar, and Veil (2013) showed that blogs were the most popular type of

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independent variable was not just how likely other people were to engage in protective behavior, but also how much other people would overreact to the situation, interpretation of the result requires caution.

documentation, followed by websites, news articles, and other social media platforms such as Twitter and YouTube.

In the present study, we investigated a blog article about the toxic water leak due to the Fukushima Daiichi nuclear accident and its effects. Because Japan is a neighbor to South Korea and the countries share sea borders, Korean people were terrified when the Fukushima disaster occurred in 2011 and are still worried about the accident's ramifications for them. In 2013, at the time this study was conducted, it was revealed to the public that highly toxic water had leaked from the Fukushima Daiichi nuclear power plant, and the Korean government banned fishery imports from Japan (McCurry, 2013). The radioactive water leak at Fukushima was a serious environmental issue globally, and Korean people were shocked that their seafood could be contaminated because of the geographical proximity. Most Korean people were exposed to the news about seafood contamination or the fishery import issue, but the news from mainstream media tended to deliver the government's announcements only (e.g., "Gov't Says S. Korean Waters," 2013). Thus, there were a lot of opinions, rumors, and conspiracies online regarding the leak and the concerns about radioactive contamination; thus, we chose this subject.

As discussed, we assumed two streams of media message influence on behavioral intention: (1) the indirect effect through others and (2) the direct effect. The former posits that the presumed effects of media on others influence others' anxiety, which in turn leads to their behaviors, and that these presumed others' behaviors influence self-behavior (i.e., other-effect → other-anxiety → other-behavior → self-behavior). The latter posits that the effects of media on oneself influence self-anxiety, which leads to the behavioral intentions of self (i.e., self-effect → self-anxiety → self-behavior). Thus, we proposed the following hypotheses:

*H1: The presumed effects of media messages on others will affect one's behavioral intentions through presumed others' anxiety and behaviors.*

*H2: The presumed effects of media messages on oneself will affect one's behavioral intention through self-anxiety.*

In addition, we examined which causal pathway (i.e., H1 vs. H2) better explains self-behavior. That is, we were able to determine whether the other-effect stream would be stronger than the self-effect stream in predicting self-behavior (RQ1). Furthermore, self-behavior could have affected other-behavior as discussed earlier, leaving the causal relationship between other-behavior and self-behavior bidirectional. The proposed causal relationships are represented in Figure 1, and this bidirectional model was tested against the unidirectional model (other-behavior → self-behavior only) so that we could determine which one is better (RQ2). If the former turned out to be better in the model comparison, we would then test which direction is stronger (RQ3). Last, in examining this research model, we assumed a correlation between self-anxiety and other-anxiety. As we hinted earlier, one's emotional responses would be connected to those of others (Feshbach & Feshbach, 1963; Kawada et al., 2004).

## **Method**

### ***Sampling and Procedure***

We collected data using an online survey that was conducted by a research company in October 2013 in Seoul, South Korea. The company randomly selected 3,861 people among their research panel

of 810,290, with quotas for sex (50 % each), age (19–29, 30–39, 40–49, 50–59, and over 60 years old; 20% each), and residence (Seoul metropolitan area and others; 50% each). Among the 3,861 people, those who answered yes to the question “Have you ever read any article or news about the Fukushima Daiichi nuclear accident in Japan?” were allowed to participate in the survey. When the number of completed responses exceeded the target number, the survey was closed; the final sample size was 306, of which 154 were men (49.7%), and the mean age was 43.08 years ( $SD = 14.14$ ).

The participants were asked to read a blog post titled “Seafood and the Tsushima Warm Current: The Truth About Radioactivity in Japan,” which argued about the radioactive contamination of Korean seas owing to the Tsushima warm current. This article included commentary, pictures, and a YouTube video about the nuclear accident, the flow of the current, and other relevant information. The post was a genuine article crafted by a blogger.<sup>3</sup> This blog was hosted by Naver (<http://www.naver.com>), the number-one portal site in Korea (“South Korea’s Internet Giant,” 2014), and its influence is notorious in Korea then or now (Kim, 2013). At the time of the study, when searching with specific keywords such as *Japan radiation*, *Fukushima leak*, and *fishery contamination* in Naver, the results of hosted blog pages were shown on top, and the study material was one of them. After reading the blog article, participants received the following instruction:

Similar to the blog post you just read, there are many online articles about the Fukushima radioactive water leak these days. The following questions ask your opinions about how much those blog posts such as you just read would affect other people’s thoughts, anxiety, and intention to fishery consumption.

Then, they responded to survey questions. The scales in the questionnaire were presented in the following order: other-effect, other-anxiety, other-behavior, self-effect, self-anxiety, self-behavior, and demographic items.

### **Measures**

#### *Other-Effect and Self-Effect*

Regarding other-effect, participants responded to the following three items: “Those types of blog posts would influence other people’s perceptions about how severely Japanese fisheries are contaminated,” “Those types of blog posts would change other people’s opinions about how severely Japanese fisheries are contaminated,” and “Those types of blog posts would make other people think that the radioactive contamination of fisheries is seriously threatening.” These items used an 11-point Likert-type scale (0 = *not at all*, 5 = *moderate*, 10 = *very much*;  $M = 8.06$ ,  $SD = 1.36$ ,  $\alpha = .92$ ). We also generated three parallel items regarding self (using the second-person pronoun *you* instead of *other people*) to measure the blog post’s effects on the participants themselves ( $M = 7.78$ ,  $SD = 1.71$ ,  $\alpha = .90$ ).

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<sup>3</sup> The post and the blog can be found at <http://blog.naver.com/besophistica/60198837248>. The post included a profile picture, menu, and advertisements, as well as the article.



8. OB2	.41	.39	.47	.41	.38	.43	.66	-								
9. SE1	.56	.64	.71	.58	.60	.59	.45	.48	-							
10. SE2	.50	.61	.52	.43	.44	.42	.38	.38	.75	-						
11. SE3	.56	.54	.61	.47	.51	.51	.48	.49	.81	.71	-					
12. SA1	.45	.52	.58	.57	.60	.58	.44	.46	.78	.72	.79	-				
13. SA2	.43	.51	.57	.57	.60	.59	.47	.49	.75	.68	.75	.94	-			
14. SA3	.44	.51	.59	.59	.61	.61	.47	.50	.78	.71	.77	.94	.96	-		
15. SB1	.43	.36	.47	.35	.36	.37	.59	.58	.51	.38	.55	.50	.49	.51	-	
16. SB2	.40	.38	.42	.31	.31	.35	.51	.63	.45	.35	.53	.47	.46	.48	.76	-
<i>M</i>	8.07	7.93	8.19	8.01	7.99	8.05	7.9	8.15	7.82	7.47	8.04	7.58	7.56	7.60	8.41	8.40
<i>SD</i>	1.42	1.50	1.49	1.56	1.59	1.58	1.86	1.84	1.78	2.08	1.74	1.94	2.05	2.06	1.83	1.88

Note. OE = other-effect; OA = other-anxiety; OB = other-behavior; SE = self-effect; SA = self-anxiety; SB = self-behavior. All correlation coefficients are significant ( $p < .001$ ),  $N = 306$ .

First, we conducted a confirmatory factor analysis to establish whether the latent constructs were distinct from one another by correlating all six constructs, and this confirmatory factor analysis model showed good fit:  $\chi^2(89) = 302.48$ ,  $p < .001$ ; CFI = .963; TLI = .950; RMSEA = .089; SRMR = .032. The standardized path coefficients (factor loadings) of the 16 indicators ranged from .78 to .98. Then, we tested our hypothesized model (see Figure 1) to examine the causal relationships between variables, and this model fit the data well:  $\chi^2(97) = 346.5$ ,  $p < .001$ ; CFI = .957; NFI = .946; RMSEA = .092; SRMR = .055. Thus, we used it as the basis for the hypothesis testing.

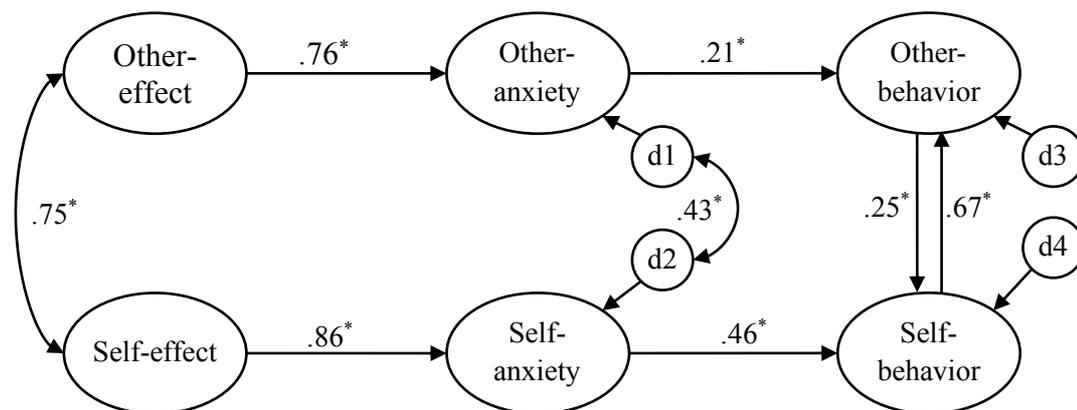


Figure 1. The results of structural equation modeling for the research model. Indicators are not presented. \* $p < .001$ .

H1 was about the causal pathway from other-effect to other-anxiety to other-behavior and then to self-behavior, and the three causal paths were all significant: Other-effect was strongly related to other-anxiety ( $\beta = .76, p < .001$ ), which was positively related to other-behavior ( $\beta = .21, p < .001$ ), and other-behavior also positively predicted self-behavior ( $\beta = .25, p < .001$ ). Therefore, H1 was supported. Similarly, in H2, we expected that self-effect would cause self-anxiety, which would in turn cause self-behavior, and this causal pathway was also supported. Self-effect was strongly related to self-anxiety ( $\beta = .86, p < .001$ ), which was in turn significantly related to self-behavior ( $\beta = .46, p < .001$ ).

RQ1 concerned which pathway would have a stronger effect on self-behavior among the causal pathways from other-effect and from self-effect. To examine the extent to which other-effect would influence self-behavior via other-anxiety and other-behavior, we used a bias-corrected bootstrap method, and the standardized indirect effect was .30. Two thousand bootstrap samples yielded 95% confidence intervals of .22 and .38 with an exact  $p$  value of .001, indicating a significant indirect effect. In addition, the standardized indirect effect of self-effect on self-behavior via self-anxiety was .54 (95% bootstrap CI [.42, .63],  $p = .001$ ). These results indicate that self-effect, as compared with other-effect, had a relatively stronger influence on self-behavior. According to Cumming (2009), two standardized coefficients can be considered statistically significantly different from each other when their confidence intervals overlap by less than 50%. As reported, the confidence intervals of the two standardized indirect effect sizes did not overlap (i.e., the upper bound of the lower point estimate was .38, whereas the lower bound of the higher point estimate was .42). Therefore, the influence of self-effect on self-behavior can be regarded as statistically significantly stronger than that of other-effect.

RQ2 was about the reciprocal relationship between other-behavior and self-behavior. To address this research question, we fit the unidirectional model (other-behavior  $\rightarrow$  self-behavior only) with the data and found the following results:  $\chi^2(98) = 384.63, p < .001$ ; CFI = .950; NFI = .939; RMSEA = .098; SRMR = .099. This model fit was worse than the bidirectional one, and the  $\Delta\chi^2$  test indicated that removing the self-behavior to other-behavior path significantly worsened the fit:  $\Delta\chi^2(1) = 38.13, p = .001$ . Thus, the reciprocal relationships between self-behavior and other-behavior better fit the observed data than the unidirectional relationship from other-behavior to self-behavior. For nonrecursive (i.e., bidirectional) models, an additional index regarding functional equilibrium can be obtained (Bentler & Freeman, 1983). The stability index should be below 1.00 for the nonrecursive system to be stable, and the obtained stability index in our model was 0.17, thereby satisfying the stability condition.

The SEM results indicate that other-behavior had a significant effect on self-behavior ( $\beta = .25, p < .001$ ) and that self-behavior was also significantly related to other-behavior ( $\beta = .67, p < .001$ ). To compare the two path coefficients (RQ3), we restricted them to having the same value, resulting in the following model fit statistics:  $\chi^2(98) = 352.03, p < .001$ ; CFI = .956; NFI = .946; RMSEA = .092; SRMR = .063. This model was again compared with the unrestricted model, and the equality restriction significantly worsened the model fit:  $\Delta\chi^2(1) = 5.53, p = .019$ . This result implies that the magnitudes of the two relationships (i.e., self-behavior  $\rightarrow$  other-behavior, other-behavior  $\rightarrow$  self-behavior) were statistically different; thus, the effect of self-behavior on other-behavior was stronger than that of other-behavior on self-behavior.

### Discussion

This study examined the effects of blog media from the perspective of the IPI model. Synthesizing previous studies and modifying the IPI model, we proposed an extended model of media influence in which perceived effects of media on oneself influenced self-anxiety, which led to the behavioral intentions of the self. At the same time, the presumed effects of media on others influenced others' anxiety, which caused changes in their behavioral intentions, and, ultimately, these presumed others' behaviors affected the self's behavioral intentions. We applied this model in the context of blog messages about social risk, specifically regarding the radioactive leak at the Fukushima plant. We found that, as the IPI model suggests, other-effect significantly influenced self-behavior by way of presumed other-anxiety and other-behavior (H1). Self-effect also significantly influenced self-behavior via self-anxiety (H2). Although these two sources of influence were significant, the influence stream of self-effect was stronger than that of other-effect in predicting self-behavior (RQ1). Finally, self-behavior and other-behavior were reciprocally related to each other (RQ2), and self-behavior had a greater effect on other-behavior than vice versa (RQ3).

Our findings indicate partial support for the IPI model in that blog audiences' presumed effects on others showed a significant influence on their behavioral intentions. The IPI model presumes that the perception that media influence other people is the essence of the media effect (Gunther & Storey, 2003). In this study, however, the audiences' perceived effects on themselves were a better predictor of their behavioral intentions than were their presumed effects on others. Because the IPI model did not offer any evidence or reason for not considering the effects of media on self (Gunther & Storey, 2003), the model should be elaborated on based on our findings. In fact, some studies that have examined the IPI model have already assessed a type of self-effect (e.g., Gunther et al., 2006). It is more conceptually logical and empirically valid to take into account both direct (i.e., self) and indirect (i.e., others) pathways of influence in examining the effects of media messages on audiences (Chung & Moon, 2016).

However, it is still questionable whether the relative strengths of direct and indirect effects that we found are consistent in other contexts. Chung and Moon (2016) found in their meta-analyses that other-effect (i.e., indirect effects) was a relatively strong and stable predictor of censorship attitudes. Considering the differences between censorship attitudes and seafood consumption, it is possible that the relative magnitudes of self-effect and other-effect vary by contexts. Certain media content may appear to be highly influential or harmful to other people but not as much to oneself, perhaps because psychological mechanisms such as positive bias in favor of the self and/or over-attribution of internal qualities (e.g., gullibility) to others' behavior (Perloff, 2002) work very well for such media content. In contrast, when media inform people about possible threats to their health, they may perceive the effects of media seriously for both themselves and others. In addition, for situations such as buying sugar or necessities, the effects on others may better predict buying intentions because people can easily justify their behavior (i.e., buying sugar) against expected consequences (i.e., shortage of sugar due to others' buying). Therefore, it seems important to consider, in future research, the types of media messages in examining perceived media influence. Relatedly, it would be interesting to apply our model to media messages about risks that are framed as socially desirable. Some studies have shown the reversed perceptions compared with the third-person perception when it comes to socially desirable messages (David, Liu, & Myser, 2004; Duck, Terry, & Hogg, 1995). That is, the first-person perception (i.e., greater effect for self than others) might occur for different formats of messages.

Regarding the effects of blogs about social risk, this study examined affective responses, specifically anxiety, in addition to behavioral ones. As Tewksbury et al. (2004) reported in their study on media coverage about Y2K, anxiety was most strongly related to behavioral intention among predictors that included other-self difference and other-behavior. In the present study, we also viewed anxiety as a key element of media effects because the blog message warned the audience of the possibility of radioactive contamination of seafood due to the nuclear plant accident in Japan. We examined both self- and other-anxiety, whereas Tewksbury et al. assessed self-anxiety only. It is more comprehensive to view that others' behavior (e.g., not buying Japanese seafood) is caused directly by their anxiety and that self-behavior is caused by self-anxiety. The results of this study showed that self-effect and other-effect rather strongly influenced self-anxiety and other-anxiety, respectively. Self-anxiety and other-anxiety then had significant effects on self-behavior and other-behavior, again, respectively, whereas the effect of self-anxiety on self-behavior was relatively weaker than that of other-anxiety on other-behavior. In addition, self-anxiety and other-anxiety were significantly associated with each other. This is understandable because, as projection theory (Feshbach & Feshbach, 1963) suggests, presumed emotions of others would inevitably be similar to perceived emotion of self in the same situation.

Regarding the relationship between self-behavior and other-behavior, it was found to be reciprocal rather than one-directional. People tend to follow others' behaviors (e.g., the bandwagon effect), which was one of the theoretical bases for the TPE and IPI models (Perloff, 2002; Shen & Huggins, 2013). That is, people are more likely to do something when they believe that many other people are doing it or would do it as well. Studies have found that a person's expectation of others' behavior leads to the person's own behavior (Gunther et al., 2006; Tewksbury et al., 2004), and we found in the present study the same relationship from other-behavior to self-behavior. We also found the reverse relationship, from self-behavior to other-behavior, as well, and the reverse relationship was even stronger. Participants' behavioral intentions to avoid Japanese seafood were relatively strongly linked to their presumptions of others' behavioral intentions rather than the other way around.

These results suggest that we should reconsider the underlying premise of the TPE and IPI models that the presumed behavior of others affected by media causes an individual's own behavior; this may not always be the case in the indirect model of media effects. Anticipating media's effects on others, such as subordinate soldiers' refusal to obey orders, can exert a profound influence on leaders' decision to retreat (Davison, 1983), and this situation seemed special in that the media message (i.e., a leaflet made by Japan) was explicitly targeted at soldiers of color. In other cases, such as media reporting an expected supply shortage of sugar, people would buy sugar because they believe many other people would buy it because of the media coverage. This reasoning appears plausible because if people do not buy sugar quickly, its price will jump and it might even be out of stock. However, even in situations such as the leaflet and the sugar examples, we might be overestimating the effects of presumed others' behaviors; the officers and the sugar buyers could justify their behaviors through the eyes of others, thinking that other people would be affected by the media content just as they were. The attribution tendency that other people would be similar to themselves (Ross et al., 1977) could explain the association between self-behavior and other-behavior.

It is likely that the reciprocal effects between self-behavior and other-behavior depend on the context. For instance, media messages such as a shortage of necessities or food contamination report real events that are relevant to specific behaviors; in these cases, the audiences may have a stronger tendency to project their own thoughts and behaviors onto others. In contrast, media contents such as

rap music or pornography appear to be less relevant to behavior but more relevant to perceptions and attitudes. People in these situations may view others as more vulnerable to media influence than themselves, perhaps because of a self-serving bias as discussed above.

There are some limitations in this study to note. Studies on the TPE or the IPI model generally use surveys and correlational data (cf. Tal-Or et al., 2010, for an experimental test), as we did in this study. Correlations among variables are not sufficient to secure causal relationships, which require temporal order and nonspuriousness as well as covariations between variables (Campbell & Stanley, 1963). Experimental control and longitudinal observations are preferred for the test of causal relationships. However, to test interrelationships among perception about media effect, anxiety, and behavioral intention relevant to actual social risk, we had no choice but to analyze correlational data using SEM as Tewksbury et al. (2004) did.

This study did not directly measure the reliability of the study material in terms of information source. Although the blog used for the material was not the most popular one, it was ranked relatively high in Naver search results at the time of the study. Also, because we provided the study material as exemplar of blog messages, we did not consider its reliability. However, incorporating it would have made the results of this study more reliable and valid. It is also notable that the order of the scale items was fixed in this study. Considering the order effect of questions in this line of research (Shen & Huggins, 2013), we might have had different results if we had shuffled the order of the self and other scales.

Despite these limitations, the current study contributes to the literature by extending the context of the IPI model to mediated risk communication and also by showing the interplay between the presumed effects of media on self and on others. Media scholars should further develop and elaborate the IPI framework to explain various communication contexts considering the types of media and messages.

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