

## Linking Health Risk Information Seeking and Health Behavioral Intentions

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This study investigates if people can vary in their seeking of health information depending on their health-related orientations, which are affected by perceived health-related risks. The results suggest perceived health risk has a positive impact on disease-prevention information seeking and disease prevention behaviors whereas it negatively affects health-promotion information seeking and has no impact on intentions to perform health promotion behaviors. People seeking disease prevention information showed greater likelihood to perform disease prevention behaviors without intentions to perform health promotion behaviors. However, people seeking health promotion information only had positive intentions to perform health promotion behaviors irrespective of disease prevention behaviors.

*Key words* : *Disease prevention, Health promotion, Information seeking, Regulatory focus, Risk perception, Behavior intention*

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## Introduction

Health information has become more ubiquitous in recent years (Lambert & Loiselle, 2007) as traditional mass media such as television, newspapers, and magazines have dramatically expanded their coverage of health topics (Lee, 2008). In addition, the unprecedented growth of the Internet as an information source has enabled people to have access to a wide range of health information that is accessible around the clock and offers myriad opportunities to extend their knowledge about health and medical issues (Bylund et al., 2007; Cline & Haynes, 2001). Research on this phenomenon suggests that people appear to actively seek health information from a variety of interpersonal and mass mediated sources, including traditional and new media outlets and contact with health professionals. Research also suggests that the increased availability of health information has allowed consumers to play a more active role in their consumption of health information and, as a result, become more active in making decisions related to their health (Brashers et al., 2000; Dutta-Bergman, 2004).

In recent years, the growing body of research on health communication has focused on developing integrative theoretical models that map the individual-level variables that may impact health information seeking across contexts (e.g., Afifi & Weiner, 2004; Freimuth, Stein, & Kean, 1989; Griffin, Dunwoody, & Neuwirth,

1999; Johnson & Meischke, 1993; Kahlor, 2007, 2010; Witte, 1992). A recent stream of research also has explored the influential effects of health information seeking on health behaviors (Budden et al., 2003; Farenwal & Walker, 2003; Shi, Nakamura, & Takano, 2004; Yu & Wu, 2005). For example, research suggests that when an individual (or a group) has obtained an adequate level of knowledge through health information seeking, specific health-related behaviors can be selected to maximize the probability of the best possible outcomes, or to minimize the possibility of the worst consequences (Allen, 1997; Lambert & Loiselle, 2007).

This research has placed more weight on the positive relationship between health information seeking and health behavior (e.g., Lambert & Loiselle, 2007; Rimal, 2000); however, research results also have shown an inconsistent association between health information seeking and health behavior. While some scholars found a positive correlation between health information seeking and related behavior (e.g., Budden et al., 2003; Farenwal & Walker, 2003; Gupta, Kumar, & Stewart, 2002), others found a negative correlation between health information seeking and health behavior (Loiselle & Delvigne-Jean, 1998; Meischke et al., 2005). As a result of these inconsistencies, this current effort explores the association between health information seeking behaviors and health-related behaviors, paying special attention to health risk perceptions. The novelty of this current effort is

its focus on risk perception as a starting point in influencing the health information seeking-behavior intention framework. Although Griffin, Dunwoody and Neuwirth (1999) have proposed a relationship between seeking and behavior in a risk-related framework, they have not fully explored the relationships that are explored here. The current effort focuses on two types of health information seeking behaviors and two types of health-related behaviors - all of which focus on either health promotion or disease prevention.

### **Literature Review and Theoretical Background**

#### **The Importance of Perceived Health Risks**

An extensive body of research has consistently suggested that perceived health risk which is defined as people's perceptions about their susceptibility to various threats, ailments and diseases is a reliable predictor of preventive health behavior (Becker, 1974; Drabek, 1986; Janz & Becker, 1984; Rimal, 2001). Given that perceived risk relies more on personal judgment rather than statistical evidence, individuals tend to make inferences based on what they know, experience, and observe (Slovic, Fischhoff, & Lichtenstein, 2000). It has been suggested that risk perceptions are central to many health

behavior theories. That is, individuals who become more concerned about their susceptibility to various diseases tend to take preventive actions in response to perceived health risks (Rimal, 2001). Nevertheless, with respect to the effects of perceived risks on health behaviors, the research has produced inconsistent results. Some researchers show a positive correlation between perceived health risk and protective behavior (Dolinski, Gromski, & Zawisa, 1987; Larwood, 1978; Weinstein, 1982, 1983), others show a negative correlation (Svenson, Fishhoff, & MacGregor, 1985; Weinstein, Grubb, & Vautier, 1986). Those contradictory research findings may result from researchers exploring different health domains without taking into consideration the relationship between perceived risks and individuals' different health-related orientations. Further, that relationship might vary across different health contexts.

Prior research implicitly suggests that risk perceptions play an important role in when individuals migrate toward one of the two different types of health-related orientations: health promotion and disease prevention (e.g., Bandura, 2004; Nutbeam, 1998; Winett, 1995). For instance, people sensing increased risk regarding specific ailments, such as skin cancer and Alzheimer's disease, tend to focus on efforts to reduce those specific health threats. In contrast, people sensing lower health risks tend to focus more on exercise and nutrition. Nonetheless, few research studies have looked

closely at distinguishing health promotion from disease prevention. As a result, this current research effort pays special attention to the two different types of health-related orientations, including how they are impacted by health risk perceptions and how they relate to health behavior intentions.

### The Distinction of Health Promotion and Disease Prevention

In essence, individuals arrive at desired end states by focusing on either promotion or prevention (Higgins, 1997). Individuals with a promotion focus are more oriented to maximize positive outcomes, while individuals with a prevention focus are more oriented to minimize negative outcomes (Higgins, 1997). Promotion-focused individuals tend to regulate their behaviors toward positive goals such as achievements and accomplishments for the purpose of self-enhancement (Higgins, 1998). In contrast, prevention-focused individuals regulate their behaviors away from negative outcomes with an emphasis of their safety and responsibility (Higgins, 2000).

The self-regulatory focus literature has indicated that most people gravitate toward one of the two foci when decision-making in specific contexts (Higgins, 2005). However, the same individual can apply different strategies to different contexts - these foci are considered state-bound, rather than trait-bound (Higgins,

2005). Further, the motivational orientations that drive a specific focus also appear to have an effect on the type of information that people search for and rely on in making judgments and decisions (Kim, 2006; Lee & Aaker, 2004). In health contexts, different self-regulatory systems can be activated due to differences in perceived health risks, and individuals vary with pursuing health-related end states. Therefore, health-related behaviors can be classified into health promotion and disease prevention depending on the perceived health risks (e.g., Bandura, 2004; Nutbeam, 1998). In this respect, health promotion is defined as “the process of enabling people to increase control over and to improve their health (Nutbeam, 1998, p. 351), whereas “disease prevention covers measures not only to prevent the occurrence of disease, such as risk factor reduction, but also to arrest its progress and reduce its consequences once established” (Nutbeam, 1998, p. 353). In general, individuals perceiving greater health risks may tend to focus on disease prevention, whereas those perceiving little health risk are more likely to focus on health promotion. As a result, this study suggests that perceived health risk plays a pivotal role in directing individuals’ attention to health information topics and subsequent behaviors.

### Linking Health Information Seeking to Behavioral Change

In conceptualizing health information seeking

behavior, researchers typically focus on seeking effort, the type of information sought, and channel of access (Kahlor, 2010; Lambert & Loiselle, 2007). Furthermore, efforts, channels and types of information sought can vary across topics (Clark, 2005; Echlin & Rees, 2002; Friis, Elverdam, & Schmidt, 2003; Leydon et al., 2000; Szwajcer et al., 2005). Information sources and channels include interpersonal sources (e.g., friends, family), traditional media outlets (e.g., TV, newspapers, magazines), health professionals (e.g., doctors, nurses, pharmacists), and the Internet (e.g., blog, online discussions, healthcare web sites). The use of multiple health information sources is related to expectations of acquiring as much information as possible (Brown et al., 2002) and a desire to participate more actively in the medical decision-making process (Brashers et al., 2000).

Most studies of health information seeking have exclusively focused on seeking within a specific context rather than examining individuals' seeking across multiple contexts (Johnson, 2003; Kahlor, 2010). However, this line of research suggests that people vary with health information seeking on the basis of disease prevention or health promotion (Budden et al., 2003; Fahrenwal & Walker, 2003; Shi, Nakamura, & Takano, 2004; Warner & Procaccino, 2004; Yu & Wu, 2005). Thus, failure to recognize the existence of these two different patterns of health-related orientations as they relate to information seeking may have led

to the inconsistent findings regarding the relationships between health information seeking and related behavior (e.g., Budden et al., 2003; Fahrenwal & Walker, 2003; Gupta, Kumar, & Stewart, 2002; Loiselle & Delvigne-Jean, 1998; Meischke et al., 2005). Therefore, of great importance is the role of perceived health risks underpinning individuals' decisions to perform specific health behaviors. Based on the prediction that perceived health risks result in two different types of health-related orientations, it is argued here that health information seeking (in terms of information topics and sources sought) can similarly be categorized into health promotion and disease prevention foci.

For decades, the issue of linking health information seeking to subsequent health behavior has garnered significant research attention. In general, related studies have postulated that health information seeking is a significant factor influencing the degree to which individuals determine to engage in subsequent health behaviors (e.g., Burbank et al., 2002; Fahrenwald & Walker, 2003). Nevertheless, some scholars point out a negative association between health information seeking behavior and subsequent health behavior (e.g., Loiselle & Delvigne-Jean, 1998; Meischke et al., 2005). Such inconsistent association between health information seeking and health behavior may be attributed to the lack of identifying that the two dimensions of health information seeking are differently associated with the two types of health behavior

intentions. Accordingly, it can be assumed that different types of health information seeking behaviors lead to different types of health-related behaviors. Given that health information seeking has been recognized as a significant step in the enactment of heterogeneous health promotion and disease prevention behaviors (Budden et al., 2003; Farenwal & Walker, 2003; Shi et al., 2004; Yu & Wu, 2005), the current research articulates that the risk perception-information seeking-behavior hierarchy should be investigated by the lens of these two types of health-related orientations.

In the current study, it is hypothesized not only that perceived risk is associated with health information seeking and health-related behavioral intentions, but also that the two dimensions of health information seeking are differently associated with the two types of health behavior intentions. Further, this research explores the relationships among perceived health risk, health information seeking, and health-related behavior intent simultaneously. Although some scholars have suggested the relationship between information seeking and behavioral intentions can be mediated by perceived health risk (Burbank et al., 2002; Griffin, Dunwoody, & Neuwirth, 1999), these scholars have not recognized two dimensions of health information seeking and two different types of health-related behavioral intentions (which is the thrust of this study). Specifically, this research draws attention the role of perceived risk in these two types of

health-related orientations and investigate the association of health information seeking and health behavior (using a framework of health promotion and disease prevention). Further, the current research is also looking for a positive relationship between perceived risk and preventive health behaviors (Rimal, 2001), and a negative relationship between perceived risk and health promotion behaviors.

In addition, recent research has found that individuals exposed to health information pertaining to threats and ailments have expanded their search for information to other topics (French et al., 2006). Built on this finding, individuals seeking preventive health information are more likely to refer to health promotion information. The following hypotheses, all of which are suggested by the above literature, relate to the relationships depicted in Figure 1.

**H1a:** Individuals perceiving greater health risks are more likely to seek disease prevention information.

**H1b:** Individuals perceiving lower health risks are more likely to seek health promotion information.

**H2a:** Perceived health risks increase an individual's intentions to perform disease prevention behaviors.

**H2b:** Perceived health risks decrease an individual's intentions to perform health promotion behaviors.

**H3a:** Disease prevention information seeking

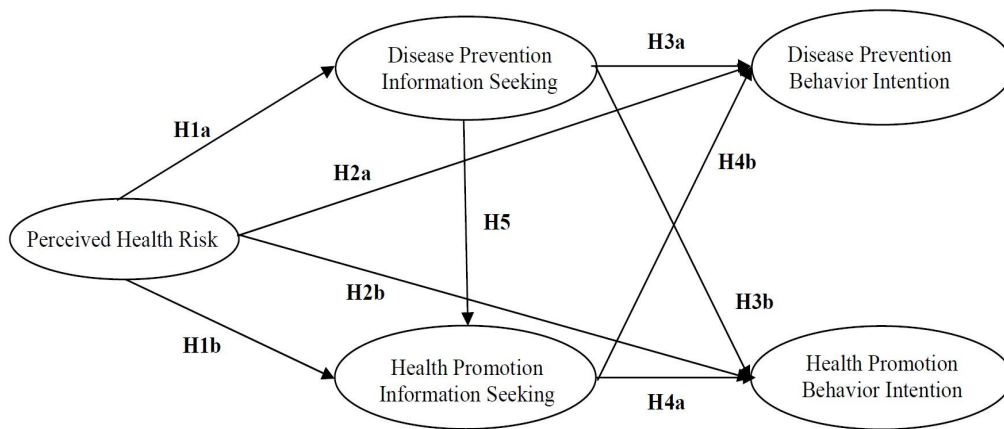


Figure 1. Proposed Model

increases disease prevention behavior intentions.

**H3b:** Disease prevention information seeking decreases health promotion behavior intentions.

**H4a:** Health promotion information seeking increases health promotion behavior intentions.

**H4b:** Health promotion information seeking decreases disease prevention behavior intentions.

**H5:** Disease prevention information seeking is positively associated with health promotion information seeking.

## Methods

### Sample and Procedure

The focus on this study was on general health, as opposed to one specific health context or disease. The data were collected using an online research panel. At the time of the study, about 20,000 members were registered with the

voluntary, privacy-protected panel. Each time members participated in a study, they were eligible for cash prize drawings. About 2800 randomly selected panel members received an email invitation to fill out an online survey of “where and how” they get information about their health. Six days after initial contact, invitees received an email reminding them that the survey was open. The initial invitation and reminder emails contained hyperlinks to the study’s URL, a secure Website where participants signed in with an ID and password assigned when they joined the panel. Participants could access the survey during a six-week window. In total, 804 people filled out the survey, which resulted in a completion rate of 28%.

Although this rate is less than desirable, especially when compared to mail surveys, it is comparable to other online efforts (c.f. Kahlor, 2007; Kaplowitz, Hadlock, & Levine, 2004). The online nature of the survey, particularly given

the response rate and the (typically) higher than average education and income levels among panel members, does not allow for adequate sample generalizability; however, the sample does allow for testing the theoretical linkage between risk information seeking intent and risk-reduction behavioral intent, which is the crux of this effort. In that way, this study is intended to lay the groundwork for future studies that test this relationship within specific populations of interest.

The following statistics describe this sample. Respondents ranged in age from 20 to 82 ( $M = 46$ ,  $SD = 13.14$ ). Education levels ranged from “some high school” to an advanced graduate degree (mean level of education was the equivalent of an undergraduate degree). Sixty percent of the sample was female. These statistics were consistent with demographic data available on the panel of participants from which this sample was drawn.

## Measures

### **Perceived Health Risk**

This concept was captured with four 10-point scale items based on measurements consistent with the work of Slovic, Fischhoff, and Lichtenstein(2001) concerning health-related risks. These items were intended to assess perceptions of one’s personal health, seriousness of threats to that health, likelihood of future illness, and perceived seriousness of future illness. The items

read: “In general, would you say your health is?” “How serious are current threats to your health?” “How likely are you to become ill in the next year?” And “If you were to become ill in the next year, how serious do you think it would be?”

### **Health Information Seeking**

This construct was captured with ten 5-point scale items intended to capture types of health information individuals sought. These items were consistent with national surveys of health information seeking (see Fox, 2006). The lead-in text read, “In the last year, how frequently have you sought information for yourself on the following health topics?” The topics were medical testing or treatment, specific disease/ condition, over-the-counter medicines, diet/ nutrition, a doctor or hospital, health insurance, prescription medicines, exercise/fitness, environmental hazards, and alternative treatment. Response options were never (0), once or twice (1), more than once or twice (2), fairly regularly (3), regularly (4), daily (5). The full range of responses was used by respondents. Item means ranged from .78 ( $SD = 1.12$ ) for depression to 2.04 ( $SD = 1.33$ ) for diet.

In order to verify the existence of two dimensions of health information seeking (health promotion vs. disease prevention), a principal component analysis (PCA) with varimax rotation was performed. The PCA analysis produced a two-component solution, which was evaluated



using the following criteria: eigenvalue (greater than 1.0) and the number of items (at least three items meeting a 60/40 loading criterion). As shown in Table 1, the first component which was labeled “disease prevention information,” accounted for 45.4% of the variance after rotation and its six items formed a reliable scale. The second component, “health promotion information,” consisted of four items and accounted for 11.3% of the variance and its four items were averaged and formed a reliable scale. Taken together, the two components explained 56.7% of the variance.

**Health Behaviors**

This was captured with an additive index of eight behaviors (see Fox, 2006). The lead-in text for the measurement items read, “In the next year, I plan to reduce risks to my health by,” which was then followed by a list of the following 5-point Likert items. Those were “making changes to my diet,” “exercising more,” “leading a healthier lifestyle,” “eliminating bad health habits,” “avoiding behaviors I know are bad for me,” “learning more about potential risks,” “visiting my doctor,” and “taking more prescription medicines.” Item means ranged from

Table 1. Principal Component Analysis of Health Information Dimension

In the last year, how frequently have you sought information for yourself on the following health topics?	Components	
	1	2
<b>Disease Prevention Information</b>		
Prescription medicines	<b>.81</b>	.22
Medical test or treatment	<b>.78</b>	.25
A doctor or hospital	<b>.77</b>	.12
Specific disease condition	<b>.70</b>	.31
Over-the-counter medicines	<b>.66</b>	.32
Health insurance	<b>.59</b>	.18
<b>Health Promotion Information</b>		
Diet, nutrition		
Exercise, fitness		<b>.84</b>
Alternative treatment	.28	<b>.82</b>
Environmental hazards	.21	<b>.65</b>
<b>Eigenvalue</b>	<b>5.0</b>	<b>1.2</b>
<b>% of Variance</b>	<b>45.4</b>	<b>11.3</b>
<b>Cumulative %</b>	<b>45.4</b>	<b>56.7</b>

2.09 (SD=.90) for taking more prescription medicines to 4.05 (SD = .75) for exercising more.

To determine the underlying dimensions of behavioral change intentions, a principal components analysis (PCA) with varimax rotation was conducted next. The PCA analysis generated a two-component solution, which was evaluated based on the following criteria: eigenvalue (greater than 1.0) and the number of items (at least three items meeting a 60/40 loading criterion). The two components explained 59.8% of the variance. As indicated in Table 1, the first component, which was labeled “health promotion behavior intention,” accounted for 43.0% of the variance after rotation and its five items formed a reliable scale. The second component, “disease prevention behavior intention,” consisted

of two items and accounted for 16.8% of the variance and its two items formed a reliable scale. Specific items and exploratory factor loadings are reported in Table 2.

## Analysis and Results

### Overview

To better understand interrelationships between the constructs of interest, a proposed equation model was tested and retested, using the measurement model before examining the hypothesized structural linkages (Anderson & Gerbing, 1988). Since perceived health risk, disease prevention information seeking, health promotion information seeking, disease prevention

Table 2. Principal Component Analysis of Future Behavior Change

In the next year, I plan to reduce risks to my health by	Components	
	1	2
<b>Health Promotion Behavior Intention</b>		
Leading a healthier lifestyle	<b>.86</b>	-0.00
Eliminating bad health habits	<b>.79</b>	.09
Making changes to my diet	<b>.75</b>	-0.10
Avoiding behaviors I know are bad for me	<b>.73</b>	.11
Exercising more	<b>.71</b>	.11
<b>Disease Prevention Behavior Intention</b>		
Taking more prescription medicines	-0.17	<b>.80</b>
Visiting my doctor	.22	<b>.75</b>
<b>Eigenvalue</b>	<b>3.4</b>	<b>1.3</b>
<b>% of Variance</b>	<b>43.0</b>	<b>16.8</b>
<b>Cumulative %</b>	<b>43.0</b>	<b>59.8</b>

behavior intention, and health promotion behavior intention are five important constructs in this study, the items of these constructs are included in one measurement model to rigorously test the validity. As the next step, the proposed model with the hypothesized relationships was tested and refined through a series of tests in an attempt to better explain the data. A final, modified model is presented as a result.

### Measurement Model

With the goal to improve the measurement properties of the scales, a confirmatory factor analysis was run on the covariance matrix of the 21 observed variables by the method of maximum likelihood. The confirmatory measurement model was evaluated on unidimensionality and internal reliability. Unidimensionality refers to the extent to which each set of observed indicators exclusively load on the corresponding latent factor (Gerbing & Anderson, 1988). As can be seen in Table 3, the factor loadings of most of items were above the critical value of 0.5 and significant at  $p < .01$  (DiStefano, Zhu, & Mindrila, 2009). This result showed that each set of indicator items cohesively measured its corresponding construct. The internal reliability of the constructs was evaluated based on Raykov's reliability rho (composite reliability) in that widely used Cronbach's alpha might over- or underestimate

the reliability of scales with the smaller numbers of items (Raykov, 1998). Table 3 also shows the reliability coefficients of the constructs in the measurement model and indicates that the constructs were found to be reliable. Descriptive analyses also were run on the above constructs. Overall, respondents reported having a relatively low level of perceived health risks ( $M = 3.33$ ;  $S.D. = 1.94$ ), and low levels of information seeking related to health promotion ( $M = 1.46$ ;  $S.D. = .93$ ) and disease prevention ( $M = 1.49$ ;  $S.D. = .96$ ). However, respondents reported relatively higher levels of behavior change intentions to promote their health ( $M = 3.94$ ;  $S.D. = .60$ ) and to prevent disease ( $M = 2.94$ ;  $S.D. = .73$ ). Table 3 also illustrates the average mean scores and standard deviation for the major factors and items. In addition, the pairwise correlations for the five constructs appear in Table 4.

The refined measurement model was assessed on the basis of the selected goodness-of-fit results, and the result indicates that the final measurement model fits the data quite well across most goodness-of-fit indexes. In particular, a value of CFI (comparative fit index) (.948) indicated a moderate fit because this value is a little lower than .95. A value of RMR (root mean squared residual) (.08) was quite acceptable because this value is lower than .09. In addition, the value of RMSEA (root mean square error of approximation) (.051) was lower than .06. Finally, the final measurement model had

Table 3. Scale/Item Measurement Properties

	CFA Item loading	Scale/ item mean	Scale/ item S.D.
<b>Perceived Health Risks (CR = .87)</b>			
In general, would you say your health is?	.68	2.46	.99
How serious are current threats to your health?	.85	3.63	2.45
How likely are you to become ill in the next year	.77	3.56	2.47
If you were to become ill in the next year, how serious do you think it would be?"	.84	3.38	2.40
<b>Disease Prevention Information Seeking (CR = .86)</b>			
Prescription medicines	.82	1.58	1.21
Medical test or treatment	.79	1.38	1.13
A doctor or hospital	.68	1.32	1.15
Specific disease condition	.73	1.77	1.23
Over-the-counter medicines	.68	1.25	1.06
Health insurance	.51	1.28	1.13
<b>Health Promotion Information Seeking (CR = .73)</b>			
Diet, nutrition	.71	2.04	1.33
Exercise, fitness	.60	2.02	1.30
Alternative treatment	.62	1.04	1.23
Environmental ha.	.61	.86	1.05
<b>Disease Prevention Behavior Intention (Composite Reliability = .64)</b>			
Taking more prescription medicines	.62	2.09	.90
Visiting my doctor	.75	3.79	.93
<b>Health Promotion Behavior Intention (Composite Reliability = .84)</b>			
Leading a healthier lifestyle	.84	4.00	.73
Eliminating bad health habits	.72	3.83	.76
Making changes to my diet	.69	3.81	.89
Avoiding behaviors I know are bad for me	.64	3.99	.71
Exercising more	.68	4.05	.75

the satisfactory values of CFI (comparative fit index) (.948) and NFI (normed fit index) (.925). Taken together, this measurement model was selected as the base model for the structural equation model.

Table 4. Constructs Correlations

Constructs	1	2	3	4	5
1 Perceived Health Risk	1.00				
2 Disease Prevention Information Seeking	.383**	1.00			
3 Health Promotion Information Seeking	.125*	.755**	1.00		
4 Disease Prevention Behavior Intention	.546**	.572**	-.010	1.00	
5 Health Promotion Behavior Intention	-.026	.211**	.417**	.069	1.00

\*  $p < .05$ , \*\*  $p < .01$

Structural Equation Model Estimation

In order to test hypotheses H1a-H5, a structural equation model was estimated, and the results indicate that the final structural equation model fit the data very well across most goodness-of-fit indexes. Specifically, a value of CFI (comparative fit index) (.946) indicated a moderate fit because this value is a little lower than .95. A value of RMR (root mean squared residual) (.081) was quite acceptable because this value is lower than .09. In addition, the value

of RMSEA (.052) was lower than .06. Finally, the final structural equation model had the satisfactory values of CFI (comparative fit index) (.946) and NFI (normed fit index) (.924).

The individual path coefficients were examined based on the causal relations in this model (see Figure 2). To evaluate the estimated causal relations, the actual size of each parameter was assessed in terms of the standardized  $\beta$  coefficients. The perceived health risk showed direct and significant effects on both disease prevention information seeking and health promotion information seeking and health

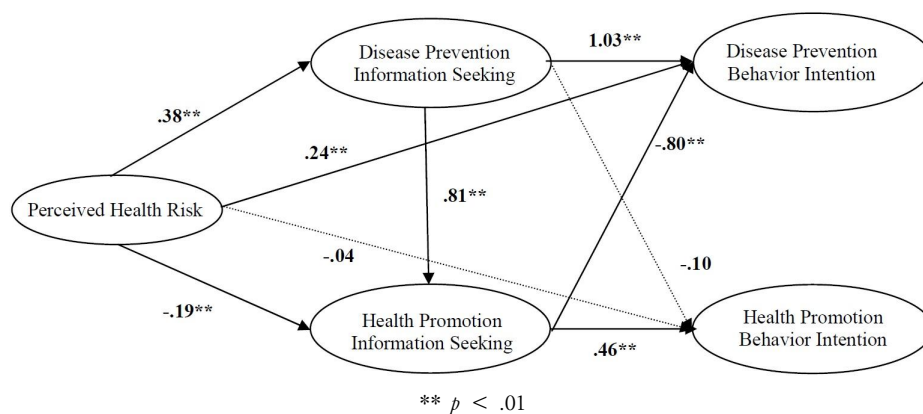


Figure 2. Structural Model Results

promotion information seeking. More specifically, as predicted, perceived health risk had a positive impact on disease prevention information seeking ( $\beta = .38, p < .01$ ) but had a negative effect on health promotion information seeking ( $\beta = -.19, p < .01$ ). Therefore, both H1a and H1b were supported. Regarding the associations between the perceived health risk and health behavior change intent, perceived health risk only had a significant effect on intentions to perform disease prevention behaviors, confirming H2a ( $\beta = .25, p < .01$ ). Hypothesis 2b was not supported; there was no relationship between perceived health risk and intentions to perform health promotion behaviors. Given that individuals perceive possible health risks which are related to ailments, they are more likely to focus on decreasing the health risks and preventing diseases

Hypothesis 3a and 3b focused on disease prevention information seeking and intention to perform disease prevention behaviors (H3a) and health promotion behaviors (H3b). Only H3a was supported ( $\beta = 1.03, p < .01$ ). Although disease prevention information seeking had a negative effect on health promotion behavior intention, it was not significant ( $\beta = -.10, p > .05$ ). Therefore, H3b was not supported.

As expected, health promotion information seeking had a positive effect on health promotion behavior intention ( $\beta = .46, p < .01$ ), while negatively affecting disease prevention behavior intention ( $\beta = -.80, p < .01$ ). These

results supported H4a and H4b. The final hypothesis, H5, examined the relationship between the two different health information seeking behaviors. This hypothesis was supported; the results significantly revealed that disease prevention information seeking is significantly related to health promotion information seeking ( $\beta = .81, p < .01$ ).

## Discussion and Conclusion

The relationship between health information seeking and intentions to perform health-related behaviors is an important area of inquiry for health communication researchers. However, research findings have been inconsistent (e.g., Budden et al., 2003; Farenwal & Walker, 2003; Gupta, Kumar, & Stewart, 2002; Loiselle & Delvigne-Jean, 1998; Meischke et al., 2005). One possible explanation for the inconsistency between health information seeking and health-related behaviors may lie with different health-related orientations; such orientations can be focused on preventing disease, promoting overall good health, etc. (Nutbeam, 1998). Accordingly, the current study tested the relationships among perceived health risks and disease prevention and health promotion information seeking and behaviors.

First, the results indicated that risk perception is indeed an impetus for seeking information about disease prevention, but it is negatively

related to seeking information about health promotion. This suggests that future research focused on the link between risk perceptions and information seeking should strive to parse out types of information sought and how seeking those information types might relate to perceived risk. To date, most of the risk information seeking research has not explored type of content sought; it has focused primarily on seeking in terms of channels and effort (c.f., Griffin, Dunwoody, & Neuwirth, 1999; Kahlor, 2007, 2010; Yang et al., 2011). This approach might also lend more insight into the phenomenon of information avoidance (Brashers, Goldsmith, & Hsieh, 2002). Regardless, it seems that people who perceive themselves as being at higher risk favor information aimed at avoiding disease, rather than information aimed at more generally improving their health.

Next, our results indicated that risk perception was positively related to intentions to perform disease prevention behaviors, but unrelated to intentions to perform health promotion behaviors. This finding complements the relationship between risk perception and disease prevention information seeking. That is, it appears that perceived risk is a consistent predictor of multiple disease prevention behaviors - including information seeking behaviors as well as preventative actions such as seeking treatment, medication, etc. The finding also suggests that perceived risk is not a key driver in people gathering information or planning to

take action to improve or promote their overall health. Taken together, these findings suggest that campaigns aimed at health promotion - which often feature messages such as “get more exercise,” “eat more whole grains,” and so on - are not going to be effective if the message is driven by a risk frame that focuses on the link between poor diet or lack of exercise and higher health risks. The research on gain versus loss frames may provide some additional insights here.

Our third key finding is that people engaging in disease prevention information seeking showed greater likelihood to perform disease prevention behaviors, but no intentions to perform health promotion behaviors. Conversely, the results illustrated that health promotion information seeking led individuals to increase their intention to perform health promotion behaviors whereas those focusing on health promotion information showed negative intentions to perform behaviors associated with disease prevention. This may be a consequence of the role of risk perception in information seeking; individuals who perceive risk are driven to seek disease prevention information so that they can reduce that threat of disease. In that instance, overall health promotion may be perceived as a luxury that they cannot engage in until they address the immediate threat of disease. As overall health is a predictor of disease and disease recovery; as a result, this link may need to be emphasized for those dealing with disease risks.

Taken together these findings have implications for health psychology as well as health communication. In terms of health psychology, this research confirms that health orientations are important factors in health-related behaviors, and that they are impacted by perceived risk. This suggests the need for more research in the area of health orientations. For example, additional research may reveal more than two health orientations and may help reveal the origins of these orientations. In terms of health communication, this research suggests that health orientations should be a part of research seeking a link between information seeking and other health behaviors, and it reveals the complex role that perceived risk plays in information seeking and other behaviors. Further, this research provides additional evidence that health information seeking is indeed linked to health behaviors, but that type of information sought is a key factor in the specific behavioral intentions people report.

As with all research studies, this study has several limitations that need to be addressed. First, this study used a convenient panel sample of individual with higher-than-average education and income levels. Thus, the findings offer limited generalizability and should serve to build further research, rather than offer a sense of finality on the state of the links explored here. In addition, with regard to the measure of participants' health information seeking and health-related behaviors, this research depended

on self-reported behaviors rather than evaluations of actual behaviors. Taken together, the use of the convenience sample and the reliance on participants' self-administered reports should be taken into consideration in interpreting the results of the study. A more representative sample and the assessment of actual health-related behaviors would help future research enhance external validity and substantiate this study's findings.

A fruitful avenue for future studies is the influence of individual factors on the formulation of perceived health risks (Vollrath & Torgersen, 2002; Winkleby et al., 1992). As suggested in the health risk literature, individuals' differences could lead to differences in the perception of health risks and, as a result, health information seeking and health-related behaviors (Kahlor, 2010). The current research did not investigate how individual differences including socioeconomic status and personality dimensions might significantly influence the perception of health risks. Further, recently, Haw, Dholakia, and Bearden (2010) developed a reliable and valid scale to measure chronic self-regulatory focus. Thus, future research also can explore if an individual's chronic self-regulatory focus may influence the perception of health risk and affect the framework of health information seeking and health behavior. In addition, future research efforts might investigate the effect of self-views on perceived health risks and health behaviors. A recent stream of literature on self-views posits that an individual's self-view plays an important



role in affecting his judgment and motivational orientations (Lee, Aaker, & Gardner, 2000). Extending this notion, future research can discover whether individual self-views have an impact on the perception of health risks in the context of health information seeking and intentions for health-related behaviors. Future research also can explore these relationships in different social or cultural environments. Finally, this study offered a snapshot of the relationship between risk perceptions, information seeking and health behaviors. A more ambitious study could test these relationships within the broader theoretical context of a risk information model such as RISP or the extended RISP, which links risk information seeking and processing to risk behaviors (Griffin, Dunwoody, & Neuwirth, 1999).

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## 인지된 건강 위험이 건강 관련 정보 탐색과 행동에 미치는 영향

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본 연구는 건강과 연관된 인지된 위험에 영향을 받는 건강 관련 동기의 방향성에 따라 개인이 탐색하는 건강 관련 정보의 유형과 향후 건강 관련 활동이 달라질 수 있는지 조사한다. 본 연구의 결과는 인지된 건강 위험은 질병 예방 정보 탐색과 질병 예방 활동에 긍정적인 영향을 미치지만, 반대로 건강 증진 정보 탐색에 부정적인 영향을 미치며 건강 증진과 관련된 활동 의도에 영향이 없음을 제시한다. 질병 예방 정보를 탐색하는 사람들은 질병 예방 활동에 대해 높은 가능성을 보여 주었으나, 건강 증진 활동에 대해 낮은 의도를 보였다. 하지만 건강 증진 정보를 탐색하는 사람들은 질병 예방 활동과 상관없이 건강 증진 활동에 대한 높은 실행 가능성을 드러냈다.

주제어 : 조절 초점, 위험 인지, 질병 예방, 건강 증진, 정보 검색, 행동 의도