Article

What, Me Worry? The Role of Affect in Information Seeking and Avoidance

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Z. Janet Yang[1] and LeeAnn Kahlor[2]

Abstract

Guided by the risk information-seeking and processing model, this study examines positive and negative affect separately in their influence on information-seeking intentions and avoidance through structural equation analyses. The highlight is that information avoidance seems to be driven by positive affect, while information seeking seems to be more heavily influenced by negative affect. Another interesting finding is that informational subjective norms are positively related to both seeking and avoidance, which suggests that one's social environment has the potential to strongly influence the way he or she handles climate change information. Implications for theory and practice are discussed.

Keywords

information seeking, information avoidance, negative affect, positive affect, climate change

Introduction

Climate change has become a ubiquitous topic in the U.S. mass media. In the past two decades, television news and newspaper coverage of climate change

[1]University at Buffalo, The State University of New York, USA
[2]The University of Texas at Austin, USA

Corresponding Author:
Z. Janet Yang, Department of Communication, University at Buffalo, The State University of New York, North Campus, 359 Baldy Hall, Buffalo, NY 14260, USA.
Email: zyang5@buffalo.edu

has increased fivefold (Boykoff & Boykoff, 2007). Google search in August 2011 using the search terms *climate change* yielded 107 million results. A 24-hour news cycle in the *Wall Street Journal* (searched using the Google News search engine in August 2011) yielded 21 stories with the words *climate change*. Interestingly, this omnipresence does not appear to translate to increased public knowledge. A recent study of public knowledge indicated that despite the availability of information, most Americans still do not understand why climate change is occurring (Leiserowitz, Smith, & Marlon, 2010). That is, the mere availability of information about climate change does not necessarily lead to more or better knowledge; although information may be available, people may not be paying attention or they may be actively avoiding contact with that information.

In the past decade or so, researchers have gained a better understanding of what drives people to information about science, the environment, and climate change (Griffin, Dunwoody, & Neuwirth, 1999; Kahlor, 2007). This research suggests that the mass media are the most frequent source for information about science topics (Miller, Augenbraun, Schulhof, & Kimmel, 2006) and that the more sources one relies on, the better his or her climate change knowledge is (Kahlor & Rosenthal, 2009). However, we still know very little about what drives people *away* from climate change news and, consequently, climate change knowledge. This is one focus of this current research effort: to explore the drivers of information avoidance as well as information seeking when it comes to the topic of climate change. The following literature provides a theoretical framework for this study.

Risk Information-Seeking and Processing Model

Communication research on information seeking traditionally adopts a uses-and-gratifications approach, which emphasizes the distinction between active and passive seeking, determined by the intensity of effort involved in seeking activities (Chaffee, 1986; McGuire, 1974). However, the sheer amount of information currently available to people through mass media and other channels has led to recent research that also takes into account people's information-avoidance behaviors (Brashers, Goldsmith, & Hsieh, 2002; Gantz, Fitzmaurice, & Fink, 1991). For example, research on communication and uncertainty management suggests that under certain conditions, people may avoid information in order to maintain their state of uncertainty rather than being exposed to information about a potentially negative outcome. That is, under some circumstances, uncertainty is the desired state, and information avoidance is the means through which that state can be maintained

(Brashers, 2001). This current research effort, therefore, is interested in isolating the predictors of both seeking and avoidance as those are behaviors that relate to information about climate change. To this end, the risk information seeking and processing (RISP) model (Griffin et al., 1999) offers a theoretically rich map of potential predictors of information seeking and avoidance and provides a useful framework to examine the sociopsychological factors that might lead individuals to seek or avoid risk information.

The RISP model (Griffin et al., 1999) was designed to explain variance in risk information seeking, avoiding, and processing. In developing their model, the researchers initially drew from the model of heuristic-systematic processing (Chaiken, 1980) and then integrated concepts from the literature on risk (i.e., the concepts of perceived hazard characteristics and affective response to risk), mass communication (i.e., the concepts of relevant channel beliefs and information-seeking behaviors), and behavioral prediction (i.e., subjective norms and information-gathering capacity or perceived behavioral control; Griffin, Dunwoody, & Yang, 2012). One of the more notable concepts of the RISP model is information sufficiency.

The RISP model adopts the sufficiency principle from the heuristic-systematic model (HSM; Eagly & Chaiken, 1993), which suggests that people will make every effort to process information until they feel confident about the validity of their judgment. Specifically related to risk communication, the RISP model proposes that this motive to seek judgmental confidence, represented by a need to achieve information sufficiency, drives information seeking (Griffin et al., 2008; ter Huurne, Griffin, & Gutteling, 2009). Past research has also provided preliminary evidence that when this judgmental confidence is satiated by one's existing knowledge, people might ignore or even purposely avoid new information (Griffin et al., 2005).

Information insufficiency. Based on the HSM's account of people's need to process information to make accurate judgments, this concept describes how the need to reduce the gap between one's current knowledge and information sufficiency threshold (information insufficiency) could lead to more seeking. The RISP model depicts this cognitive need for information sufficiency as the key motive for information seeking. Past research has also found that perceived information sufficiency could lead to information-avoidance (Kahlor, Dunwoody, Griffin, & Neuwirth, 2006). That is, when people are satisfied with the amount of information they already have about a specific risk, they are likely to avoid further information on this topic.

Perceived hazard characteristics—risk perceptions. According to the RISP model, cognitive and affective evaluations of a risk can increase people's sense of information insufficiency, which subsequently leads to more active

information seeking. Representing the "analytic system" of risk perception (Slovic, Finucane, Peters, & MacGregor, 2004), perceived hazard characteristics describe people's cognitive evaluations of a potential risk. The RISP model suggests that perceived hazard characteristics such as risk judgment, based on susceptibility and severity estimates, institutional trust, personal control, and even causal attribution, could contribute to one's sense of information insufficiency and indirectly influence information seeking.

Affective responses. Positioned between perceived hazard characteristics and information insufficiency, affective responses induced by perceptions of risk and uncertainty could highlight a need for information sufficiency and prompt more active information seeking. Many emotions accompanying a risky situation are likely negative in nature; however, positive emotions such as hope or optimism might also emerge (Aspinwall & Brunhart, 1996; Trope & Neter, 1994). Previous research has found that above and beyond information insufficiency, negative affect could at times directly drive information seeking (Griffin et al., 2008; Kahlor, 2010; ter Huurne et al., 2009). On the other hand, when people sense threat or danger and feel there is not much they can do (low efficacy), they might resort to *fear control* and avoid further information in order to reduce the amount of negative emotions they feel (Witte, 1994). In research settings where knowing all there is to know about a specific risk might not be the major concern for people, positive affect could also directly drive risk information seeking (Yang et al., 2011).

Social psychology research has shown that both negative and positive emotions have the potential to stimulate information seeking. First and foremost, emotion is motivational and involves action tendency and action readiness (Frijda, 2004). People experiencing anger might attempt to reassert control over a situation by collecting more information about it (Griffin et al., 2008). People experiencing fear might be receptive to information to engage in a *danger control* mechanism, when their efficacy appraisal and threat appraisal are both high (Witte, 1994). People experiencing positive emotions such as hope and excitement might explore alternative strategies by getting more information due to the action tendency to broaden and build their *thought-action repertoires* (Fredrickson, 2005). Positive affect can also facilitate cognitive processes such as seeking creative solutions for problem solving (Isen, 1999). On the other hand, positive affect might suggest general serenity in one's environment and thus reduce his or her motivation to expend cognitive effort to seek information (Schwarz & Clore, 1983). Taking these into consideration, it is important to extend RISP research to explore how negative affect and positive affect influence information seeking and

information avoidance, by increasing information insufficiency or serving as independent motivators.

Informational subjective norms. Initially inspired by the theory of planned behavior's (TPB) normative beliefs concept (Ajzen, 1988), informational subjective norms (ISN) deal with people's inclination to act according to social norms. Specifically related to risk information seeking, this concept emphasizes that when people believe that other people expect them to have some knowledge about a risk issue, they are likely to act on it and seek information more actively. Recent research has found both direct and indirect relationship between ISN and information seeking (Griffin et al., 2008; Kahlor, 2007; ter Huurne et al., 2009). The direct path from information subjective norms to information seeking also reflects the HSM's notion that people generally have the desire to form socially acceptable attitudes (Chaiken, Liberman, & Eagly, 1989). Thus, people's willingness to fulfill others' expectations about their own information level could motivate more active information seeking. That is, people might engage in communication behaviors to maintain a socially desirable image, such as being able to converse adequately about a particular risk topic.

Perceived information-gathering capacity—perceived behavioral control. Originally informed by the perceived behavioral control concept of the TPB (Ajzen, 1988), the RISP model argues that perceived information-gathering capacity moderates the relationship between information insufficiency and information seeking. Specifically, when people are motivated to seek information, either due to the need to achieve information sufficiency or the desire to fulfill social expectations, they still need the capacity to acquire information and the confidence that they can perform the task successfully (efficacy). In the RISP model, perceived information-gathering capacity mainly deals with one's ability to access and understand risk information. Several RISP studies have found a positive relationship between this concept and current knowledge about a risk issue (Griffin et al., 2008; Kahlor et al., 2006; ter Huurne et al., 2009).

More consistent with Ajzen's (1988) conceptualization of perceived behavioral control, recent RISP studies (Kahlor, 2007, 2010) typically conceptualize perceived control as consisting of two dimensions: the more internally focused perceived self-efficacy and the more externally focused perceived control. This is a more explicit articulation of the "ability to understand," which is self-efficacy, and the "ability to access," which is control.

Relevant channel beliefs—attitude toward seeking. This component of the RISP model has gone through several rounds of reconceptualization. It originally emphasizes people's perception of how trustworthy, accessible, and

useful a particular information channel is. However, recent trends in information-seeking research emphasize shifting away from specific information channels to studying information seeking in a more holistic and general manner (Case, 2002). In response to this, Kahlor (2007, 2010) has explored and illustrated that incorporating one's general attitude toward information seeking could enhance the explanatory power of the model.

Affect and Information Seeking About Impersonal Risk

The development of the RISP model has been a continuous and open process that invites researchers to "propose, test, explore, and improve its various measures, concepts, and relationships" (Griffin et al., 2008, p. 307). Kahlor et al. (2006) examined the applicability of the model to environmental risks that do not pose direct harm to one's health and well-being (impersonal risks). In this context, both ISN and information insufficiency emerged as powerful predictors of information seeking and information avoidance. Later, Kahlor (2007) presented similar results in a study that was focused on risk information seeking related to climate change, with the addition of one specific affective response—worry. Through information insufficiency, worry was positively related to the intent for information seeking. Recently, Kahlor (2010) offered another iteration of the RISP model when it was applied to general health information seeking. In this study, negative affect and ISN both had direct and indirect relationships with information-seeking intentions.

When synthesizing existing research on this subject, it becomes clear that the role of affect, especially positive affect, on information seeking and avoidance has not been fully explored. In one attempt, however, Brashers (2001) drew on appraisal theory to describe how uncertainty-induced affective responses can influence information seeking and avoidance. That is, when the appraisal of uncertainty causes anxiety, fear, and other negative emotions, people might seek information to enhance knowledge they lack or make interpretations about unfamiliar events. Conversely, when the appraisal of uncertainty leads to an optimistic outlook toward the future and related positive emotions, people might avoid contact with additional information—especially if that information is perceived as potentially overwhelming or distressing. Related to the current research effort, appraisal of the risk and uncertainty related to climate change might lead to emotional responses that could subsequently influence information seeking and avoidance differently. In an effort to build on this nascent research and continue to refine the RISP model, therefore, this study is focused on how negative affect and positive

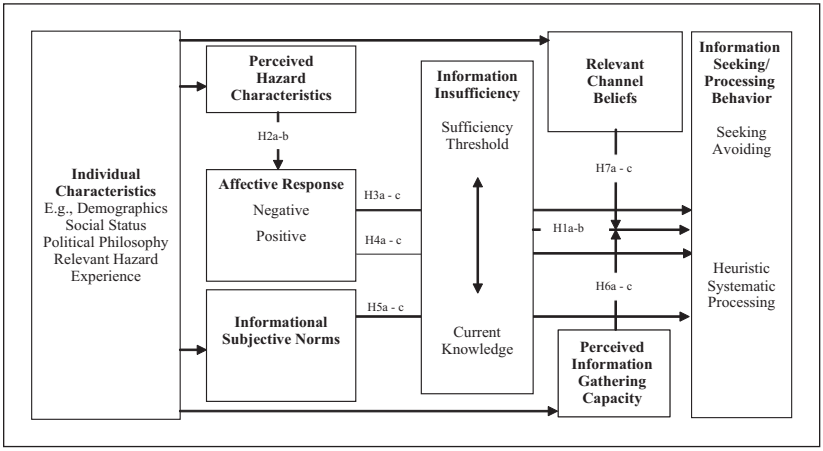

Figure 1. Model of risk information seeking and processing.
Note: The figure is adapted from Griffin, Dunwoody, and Neuwirth (1999). Hypotheses examined in this study are displayed.

affect influence risk information seeking and avoidance related to climate change. By testing the RISP model in its entirety, this research also will evaluate the relative impact of the other model components in predicting information seeking and avoidance related to environmental risks caused by climate change.

Hypotheses

Based on the literature reviewed above, we propose the following hypotheses, which are shown in Figure 1:

Hypothesis 1: Information insufficiency will be positively related to information seeking (Hypothesis 1a) and negatively related to information avoidance (Hypothesis 1b).

Hypothesis 2: Risk perceptions will be positively related to negative affect (Hypothesis 2a) and negatively related to positive affect (Hypothesis 2b).

Hypothesis 3: Negative affect will be positively related to perceived knowledge insufficiency (Hypothesis 3a) and information seeking (Hypothesis 3b), but negatively related to information avoidance (Hypothesis 3c).

Hypothesis 4: Positive affect will be negatively related to perceived knowledge insufficiency (Hypothesis 4a) and information seeking (Hypothesis 4b) but positively related to information avoidance (Hypothesis 4c).

Hypothesis 5: ISN will be positively related to knowledge insufficiency (Hypothesis 5a) and information seeking (Hypothesis 5b) but negatively related to information avoidance (Hypothesis 5c).

Hypothesis 6: Perceived behavioral control will be positively related to perceived knowledge (Hypothesis 6a) and information seeking (Hypothesis 6b) but negatively related to information avoidance (Hypothesis 6c).

Hypothesis 7: Attitude toward information seeking will be positively related to knowledge insufficiency (Hypothesis 7a) and information seeking (Hypothesis 7b) but negatively related to information avoidance (Hypothesis 7c).

Method

From March 21 to April 11, 2011, data were collected through an online survey of 736 undergraduates from two large research universities in the United States.[1] The survey was developed and executed using Qualtrics software and was hosted on a server at one of the host universities. The survey took about 20 minutes to complete in one sitting. Respondents were recruited from large entry-level classes with students from different majors. Respondents were offered course credit or extra credit for participating. The sample was predominantly female (61.3%) and White (62.5%), and the average age was 21 years old (SD = 2.86). The median annual family income was $90,000 ($M$ = $87,300, SD = $48,210).[2]

Measures: Exogenous Variables

Table 1 shows descriptive statistics for all the measures in their original wording.[3]

Information insufficiency. Consistent with past research based on the RISP model, information insufficiency was assessed based on respondents' current knowledge and information sufficiency threshold (Griffin et al., 2002). On scales of 0 to 100, respondents were asked to estimate their current knowledge of climate change and how much they need to know about this topic. Over 75% of the respondents reported their information need as higher than their current information level. Instead of using difference scores to calculate information

Table 1. Descriptive Data for Key Variables.

Concept	Measure	*M*	*SD*
Information (in) sufficiency (0-100 scales)	Current knowledge: Estimate your knowledge of climate change with 0 = *knowing nothing* and 100 = *knowing everything you could possibly know about the topic*.	44.08	23.16
	Sufficiency threshold: This time, using that same scale, estimate how much knowledge you think you NEED on this same topic (0-100).	64.89	24.68
Perceived hazard characteristics (1-6 scale)	Perceived severity: How serious of a threat to nature (not including humans) is climate change?	4.48	1.11
	How serious are the impacts around the world from climate change?	4.61	1.10
	How serious is the threat to you posed by climate change?	3.93	1.29
	Reliability score (α)	.80	
Negative affective responses (1-6 scale)	How much of the following do you feel about climate change?		
	Not concerned.....Very concerned	4.07	1.20
	Not worried.....Very worried	3.88	1.21
	Not anxious.....Very anxious	3.50	1.28
	I have negative feelings about climate change.	4.03	1.07
	Reliability score (α)	.79	
Positive affective responses (1-6 scale)	How much of the following do you feel about climate change?		
	Not excited.....Very excited	2.61	1.19
	Not hopeful.....Very hopeful	3.49	1.13
	Not happy.....Very happy	2.90	1.12
	I have positive feelings about climate change.	2.86	1.09
	Reliability score (α)	.72	
Informational subjective norms (1-6 scale)	*Injunctive norm*:		
	It is expected of me that I seek information about climate change.	2.99	1.31
	Most people who are important to me think that I should seek information about climate change.	2.75	1.25
	Others expect me to seek information about climate change.	2.69	1.24
	My family expects me to seek information about climate change.	2.62	1.25
	Descriptive norm:		
	People in my life whose opinions I value seek information about climate change.	2.93	1.33
	Reliability score (α)	.93	

(continued)

Table 1. (continued)

Concept	Measure	*M*	*SD*
Perceived behavioral control (1-6 scale)	It is difficult to find information about climate change (reversed).	4.25	1.11
	I don't know where to find information about climate change (reversed).	4.18	1.20
	I have a hard time understanding information about climate change (reversed).	3.94	1.22
	Reliability score (α)	.83	
Attitude toward seeking (1-6 scale)	Indicate the degree to which you feel that seeking information about climate change is …		
	Worthless……Valuable	4.37	1.22
	Bad……Good	4.49	1.09
	Harmful……Beneficial	4.58	1.14
	Not helpful……Helpful	4.50	1.19
	Unproductive……Productive	4.32	1.21
	Foolish……Wise	4.44	1.19
	Not useful……Useful	4.41	1.23
	Reliability score (α)	.94	
Information seeking (1-6 scale)	I plan to seek information about climate change in the near future.	3.70	1.25
	I will try to seek information about climate change in the near future.	3.78	1.21
	I intend to find more information about climate change soon.	3.67	1.23
	I intend to look for information about climate change in the near future.	3.72	1.22
	I will look for information related to climate change in the near future.	3.73	1.22
	Reliability score (α)	.97	
Information avoidance (1-6 scale)	I avoid information about climate change.	2.67	1.12
	When it comes to climate change, I don't want to know more.	2.73	1.17
	I refuse to listen to information about climate change.	2.26	1.03
	I tune out information about climate change.	2.54	1.18
	I ignore information about climate change.	2.51	1.17
	Reliability score (α)	.91	
Age (years)		21.00	2.86
Gender		61.3% Female	
Ethnicity		62.5% White	
Income	What is your family's income?	Median = $90,000	

Note: All the reliability scores were calculated through Cronbach's α in SPSS.

insufficiency, current knowledge was entered as an exogenous variable and information sufficiency threshold as an adjacent endogenous variable (Griffin et al., 2004; Kahlor, 2010). This measurement strategy was consistent with the RISP mode's original operationalization of information insufficiency, assessing the impact of information sufficiency threshold on information seeking and avoidance while controlling for the impact of current knowledge.

Risk perceptions. Respondents were asked to indicate how serious the threat from climate change is to nature, to themselves, and around the world. These items represent the *catastrophic potential* dimension of the "dread risk" in the psychometric paradigm (Slovic, 1987). They also represent a subset of the variables used to measure risk perception specifically related to climate change (Leiserowitz, 2006). Risk perceptions were measured as a latent construct based on these three items.

Affective responses. Respondents were asked whether they felt concerned, worried, and anxious about climate change, along with a general measure of whether they had negative feelings about climate change. Negative affect was measured as a latent construct based on these four 6-point Likert-type scales. Positive affect was measured in a similar manner, based on whether they felt excited, hopeful, and happy about climate change and whether they had positive feelings about climate change. This measurement strategy takes into account both specific emotions and a general feeling, which is the perception of any emotional state (Damasio, 2004).

Informational subjective norms. To evaluate both injunctive norms and descriptive norms (Ajzen & Fishbein, 2005), five 6-point Likert-type scales were used to assess subjective norms related to information seeking about climate change. Specifically, four items assessed respondents' normative beliefs that others expected them to seek information about climate change; one item was used to assess descriptive norms—"people in my life whose opinions I value seek information about climate change." Subjective norms were measured as a latent variable based on these five items.

Perceived behavioral control. Respondents were asked to assess the confidence they had in their ability to find information about climate change, both with regard to their capacity to conquer difficulties and understand relevant information and with regard to their ability to identify sources of information about climate change. This measurement strategy taps into both the notion of self-efficacy and the sense of control over the behavior (Ajzen & Fishbein, 2005). Perceived behavioral control was measured as a latent variable based on three items.

Attitude toward seeking. Ajzen and Fishbein (2005) suggest that attitude measures should contain items representing both instrumental and experiential

attitude toward a behavior. Thus, seven 6-point semantic differential scales were used to gauge these two aspects. Specifically, the instrumental aspect contained items such as worthless/valuable, harmful/beneficial, not helpful/helpful, unproductive/productive, and not useful/useful; the experiential aspect contained items such as bad/good and foolish/wise. Respondents' attitude toward information seeking was measured as a latent construct based on these seven items.

Measures: Endogenous Variables

Information seeking. Consistent with other cross-sectional studies of information seeking, we measured information seeking as the intent to seek. Respondents' intent to seek information about climate change was measured as a latent construct based on five 6-point Likert-type scales. These measures were adopted from past research (Griffin et al., 2008)

Information avoidance. Respondents' general tendency to avoid information about climate change was assessed as a latent construct based on five 6-point Likert-type scales. These measures were also adopted from past research (Kahlor et al., 2006).

Analysis

Data were analyzed using hierarchical linear regression in SPSS 18.0 with demographic variables and structural equation modeling (SEM) with only the key variables in LISREL 8.80.[4] To test the overall model, we followed a two-step procedure by first specifying and refining the measurement models through confirmatory factor analysis and then completing the estimation of the structural models (Kline, 2005). Two models were specified, with information-seeking intentions and information avoidance as the endogenous variable respectively. Fit indices for the final models are reported in Table 2. A probability level of $p < .05$ was used as the base level of statistical significance. Both unstandardized estimates and standardized solutions are reported to enable comparison between the two models. Except for demographic variables, missing data for all the other variables (less than 5%) were replaced with series means.

Results

Path coefficients from the SEM analysis are reported along with their significance level for the two models with information-seeking intentions

Table 2. Summary of Fit Indices.

Models	χ^2	*df*	*p*	χ^2/df	RMSEA	GFI	AGFI	CFI
Information seeking	1252.33	463	<.05	2.48	.048	.91	.89	.98
Information avoidance	1353.69	463	<.05	2.56	.051	.90	.88	.98

Note: RMSEA = root mean squared error of approximation; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; CFI = comparative fit index. χ^2 is sensitive to sample size (Bollen, 1989), so the χ^2/df ratio is reported, where a value less than 5 indicates a good fit (Kline, 2005). RMSEA values less than .05 typically indicate good fit. For GFI, AGFI, and CFI (values ranging from .00 to 1.00), .90 and greater is generally considered to represent good fit. Even though AGFI was slightly less than .90 in both models, overall the model fit was acceptable based on the other indices.

(Figure 2) and information avoidance (Figure 3) as the endogenous variables. All of our hypotheses were at least partially supported.[5]

The first hypothesis examines information insufficiency as the key exogenous variable. Information insufficiency was positively related to information seeking ($\beta = .19$, $p < .05$), but the relationship between information insufficiency and information avoidance was not significant ($\beta = -.07$, n.s). Thus, Hypothesis 1 was partially supported.

The second hypothesis examines the relationship between risk perceptions and affective responses. In both models, risk perceptions were positively related to negative affect and negatively related to positive affect. Thus, Hypothesis 2 was supported.

The third hypothesis centers on negative affect. Controlling for perceived knowledge, negative affect was positively related to knowledge insufficiency ($\beta = .34$, $p < .01$) and information-seeking intentions ($\beta = .19$, $p < .01$) but negatively related to information avoidance ($\beta = -.22$, $p < .01$). Thus, Hypothesis 3 was supported.

The fourth hypothesis is focused on positive affect. Positive affect was positively related to perceived knowledge in both models. The relationship of positive affect and information-seeking intentions was not statistically significant ($\beta = -.03$, n.s.). However, positive affect was positively related to information avoidance ($\beta = .21$, $p < .01$). Thus, Hypothesis 4 was partially supported.

The fifth hypothesis examines the role of ISN. In both models, ISN positively related to perceived knowledge. ISN also positively related to both information seeking ($\beta = .36$, $p < .01$) and information avoidance ($\beta = .13$, $p < .01$). Thus, Hypothesis 5 was partially supported.

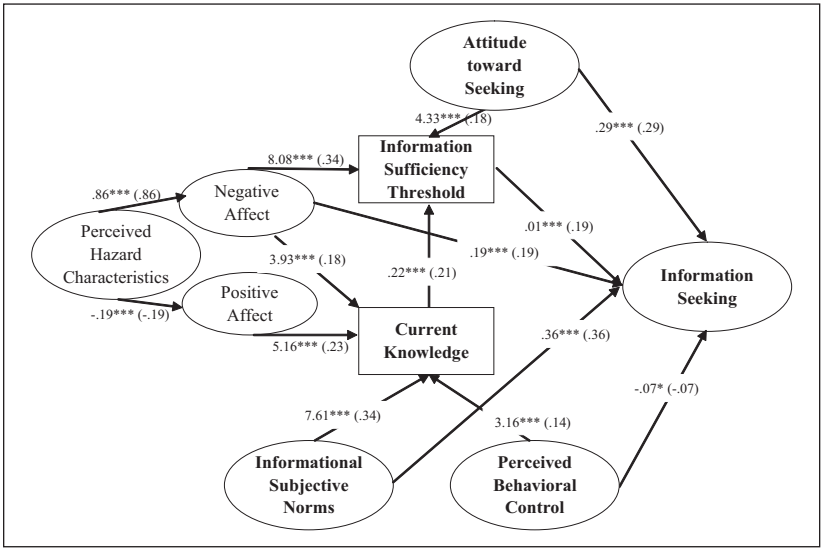

Figure 2. Results for the conceptual model with statistically significant paths with information seeking as the endogenous variable (standard solutions are in parentheses).

The sixth hypothesis is focused on perceived behavioral control. In both models, perceived behavioral control was positively related to perceived knowledge. However, perceived behavioral control was negatively related to both information seeking ($\beta = -.07$, $p < .05$) and information avoidance ($\beta = -.31$, $p < .01$). Thus, Hypothesis 6 was partially supported.

The final hypothesis is focused on respondents' attitude toward information seeking. In both models, attitude toward seeking was positively related to information insufficiency. Attitude toward information seeking was positively related to information seeking ($\beta = .29$, $p < .01$) and negatively related to information avoidance ($\beta = -.34$, $p < .01$). Thus, Hypothesis 7 was supported.

The final model explained 59% of the variance in information-seeking intentions and 39% of the variance in information avoidance.[6]

Discussion

Results from this study largely support the RISP model's propositions about the sociopsychological factors that account for individual variation in information seeking and information avoidance. The highlights of this study are

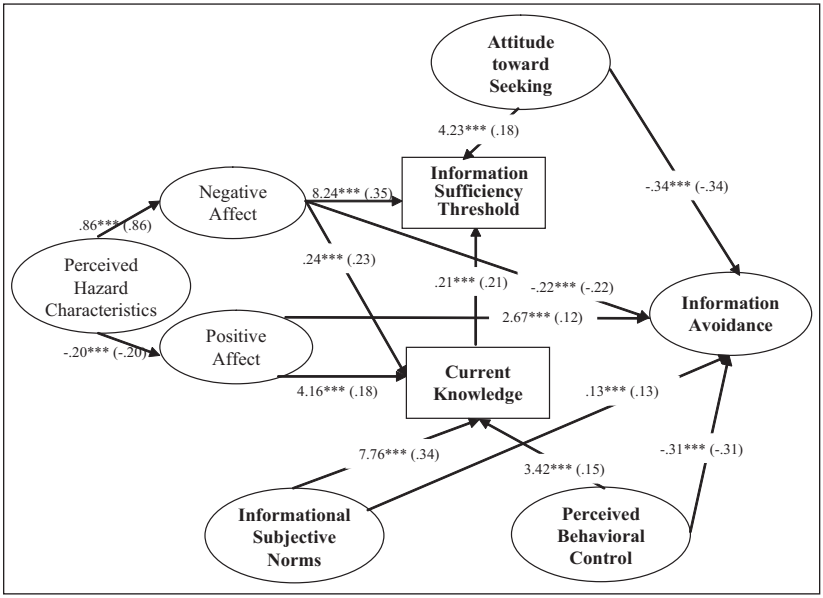

Figure 3. Results for the conceptual model with statistically significant paths with information avoidance as the endogenous variable (standard solutions are in parentheses).

that even though one's cognitive need for information appears to drive risk information-seeking intentions, information avoidance seems driven primarily by attitude toward seeking, affective response to climate change, and efficacy beliefs/perceived behavioral control related to seeking. In particular, people who feel concerned, worried, and anxious about climate change are more likely to want to seek more risk information and less likely to avoid such information. In contrast, those who feel excited, hopeful, and happy about climate change are more likely to avoid or just completely ignore risk information. This finding is distinct from previous research that identifies positive affect as having the potential to stimulate more active information seeking, at least in the context of clinical trial enrollment (Yang et al., 2011). We believe that the different research contexts may account for this difference.

For example, consistent with Brashers's (2001) research cited above, it is possible that individuals who report positive affect are, among other things, maintaining a sense of hope about the future for climate change (the mean was highest for this item). This hope could be the result of beliefs that climate

change is a function of natural climate cycles that will return to normal over time, or it could be a function of beliefs that scientists and governments are working hard to resolve the crisis. These scenarios are both speculation, since we did not gather data on what beliefs might drive positive affect, but both seem plausible given the relationship between positive affect and avoidance shown in the research on AIDS patients (Brashers et al., 2000). That research suggests that because AIDS is a disease fraught with chronic uncertainty, patients can learn to cope with the uncertainty by manipulating it to maintain a desired emotional state. That is, a patient can maintain uncertainty by avoiding new information, which allows him or her to also avoid having to cope with the negative affect that might surface if confronted with a "certain" but negative message. As is suggested by our results, this relationship also seems to surface when some people attempt to manage a scientific fact that is fraught with uncertainty, as in the case of climate change.

Consistent with prior RISP research, when controlling for current knowledge, information insufficiency is positively related to information seeking. This relationship, however, is quite marginal as compared to the relationship between the other four predicting variables and information seeking. Furthermore, in the information avoidance model, information insufficiency dropped out as a significant predictor. Initially, the pattern observed here seems surprising, since the relationship between information insufficiency and information seeking (avoidance) has been reported consistently in RISP studies (Griffin et al., 2008; Kahlor, 2007; Kahlor et al., 2006). However, several recent studies using SEM to evaluate the RISP model have found similar results (cf. Kahlor, 2010, Yang et al., 2011). It is possible that when direct paths are specified between the other predicting variables and information seeking, the relative impact of information insufficiency becomes less noticeable. It is also possible that in the current research context, as well as in the other studies where information insufficiency is not a significant predictor, people are not motivated to seek information primarily because they need to boost their judgmental confidence by gaining information sufficiency. For instance, cancer patients did not gather information about clinical trials because they wanted to know all there is to know about the trials but because clinical trial participation could offer them the last ray of hope (Yang et al., 2011). Thus, the drive to seek or avoid information may be due to reasons outside of sufficiency, at least in certain contexts.

Consistent with other studies (Kahlor, 2007, 2010), this research effort was able to link information-seeking intentions, as well as avoidance, to cognitive and affective evaluations of the potential risk. Indeed, both structural models showed that risk perceptions had a significant, indirect relationship

with information seeking ($\beta = .22$, $p < .001$) and information avoidance ($\beta = -.23$, $p < .001$). That is, people who were concerned about the ecological hazards from climate change were more likely to have negative feelings and less likely to have positive feelings about climate change. The combination of heightened risk perceptions and elevated negative feelings appears to motivate information seeking and reduce information avoidance.

On the other hand, people who had positive feelings about climate change were more likely to avoid new information about this topic, perhaps because whenever media attention to an issue increases, the dangers and consequences of climate change are usually more prominently featured (McComas & Shanahan, 1999). In addition, previous research suggests that information can offer both instrumental and emotional value to the seeker (Case, Andrews, Johnson, & Allard, 2005). Our results support this notion. It appears that people who sense negative affect about climate change probably seek information to make sure that the threat is not imminent (instrumental), while those who sense positive affect about this issue may simply avoid this information for mood maintenance purposes (emotional; Isen, 1987).

We expected ISN to be positively related to knowledge insufficiency and information seeking but negatively related to information avoidance. To our surprise, ISN was positively related to current knowledge about climate change, as well as to both information seeking and avoidance. After controlling for current knowledge, however, ISN was not significantly related to the information sufficiency threshold in either model. This result seems inconsistent with past studies based on the RISP model (Griffin, Neuwirth, Dunwoody, & Giese, 2004; ter Huurne et al., 2009). However, in this research context, the significant relationship between ISN and self-reported current knowledge seems sensible. When people perceive (and care) that others expect them to know about climate change, they might purposely present themselves as knowing a lot about this issue. Alternately, people who act according to social norms might have paid more attention to climate change information and actually developed a greater knowledge base. Over the years, general awareness of climate change among Americans has increased sharply, and the majority of Americans view climate change as a serious problem (Leiserowitz, 2006; Program on International Policy Attitudes, 2005). Our findings seem to reflect this shift in public risk perceptions and issue salience (even if knowledge has not improved markedly).

The direct effect of ISN on information seeking suggests that impression management can serve as another motivator for information seeking, in addition to the cognitive accuracy motivation (Eagly & Chaiken, 1993). People who care about others' expectations regarding their own behavior may be

more willing to seek information. In contrast, the unexpected marginal positive relationship between ISN and information avoidance suggests that psychological reactance might be at work among the college students in our sample (Brehm, 1966). When they perceive that they are expected to know more about climate change, they might intentionally avoid the information to maintain their behavioral freedom. Future research should further explore this conjecture.

Our measure of perceived behavioral control touched on one's perceived ability to find and understand climate change information. Thus, people who are more confident in their ability to engage in information seeking about climate change also report higher existing knowledge about this topic. The negative relationship between perceived behavioral control and information avoidance supports our hypothesis. Those with greater capacity to gather information about climate change are less likely to avoid new information. However, the marginal negative relationship between perceived behavioral control and information seeking seems puzzling. Our information-seeking measures are focused on people's intent to seek information in the near future. One possible explanation, therefore, is that people with greater perceived information-gathering capacity are more likely to delay information seeking to a later time when it becomes necessary. Future research should also explore how the urgency of the information-seeking activity influences this relationship.

Consistent with several recent studies (Kahlor, 2007, 2010), attitude toward information seeking once again exhibited a strong positive relationship with information insufficiency threshold and information seeking. Attitude toward seeking also had a strong negative relationship with information avoidance. These results support the extension of the RISP model by incorporating the TPB proposition that attitude based on behavioral beliefs serves as an immediate antecedent to behavioral intention. People who hold a favorable attitude toward information seeking about climate change are also more likely to sense a greater need for knowledge about this issue. This result is also consistent with the RISP model's original proposition. These findings have direct implications as to how to improve public communication of the ecological risks related to climate change. It is important to conduct formative research to gauge the target audience's existing attitude toward this issue, as well as their attitude toward gathering information about the issue. This information could help us determine whether cognitive-based or affective-based message-design strategies might be more effective. For instance, if the target audience does not view information seeking about climate change as an activity that will benefit them (instrumental value) or make them feel

good (experiential value), communication campaigns that feature more visual imagery intended to induce affective responses might work well.

In viewing the results, it is important to point out limitations. Even though the survey provided reliable data for our analysis, it was based on responses from a convenience sample of college students, which limits the generalizability of our findings. However, the data allowed us to expand the affective component of the RISP model, which is overall a highly cognitive model. This theory development is meaningful given the different impact we observed between negative and positive affect on information-seeking intentions and avoidance. Additional limitations relate to measurement. Most of the concepts were adequately assessed, but only one dimension of the perceived hazard characteristics component was included in this analysis—risk perceptions. Griffin et al. (2008) included causal attribution, institutional trust, and personal control as other dimensions of perceived hazard characteristics. The "uncertain factor" of Slovic's (1993) psychometric model also seems relevant to research on climate change. Future research should explore including these other dimensions to measure perceived hazard characteristics with greater precision.

SEM often delivers a sense of directionality in the relationships established among the variables. In reality, no such directionality can be claimed based on cross-sectional data. For instance, an alternative interpretation of our result could be that information avoidance increases the amount of positive affect people sense, which subsequently reduces the amount of risk they perceive. Future research should include panel designs to establish possible causal linkages shown in the RISP model. We did not add additional paths suggested by the modification index, as there is no theoretical support for these relationships. To test all the relationships proposed in the RISP model, the current model lacks parsimony to some extent. Future research should test alternative versions of the model to make it more parsimonious.

Conclusion

Findings from this research present several means to improve the communication of risk information related to climate change. First, it seems important to communicate about climate change by highlighting the gap between one's general awareness and actual knowledge. The positive relationships between both ISN and perceived behavioral control and perceived current knowledge lead us to believe that respondents in our sample might have overestimated how much they really know about ecological risks related to climate change. They might also have reported a higher level of baseline knowledge due to social

desirability issues. Risk communication about climate change might benefit from arousing a sense of curiosity or debunking false beliefs about current knowledge so that people are not complacent with what they already know.

Risk communicators also need to highlight potential negative consequences related to climate change and foster a favorable attitude toward learning about climate change. Negative affect based on an elevated risk perception and favorable attitude toward information seeking consistently led to more seeking and less avoidance. To do this, risk communication about climate change might package learning about climate change as a socially responsible and socially popular behavior, especially among young people. Using moderate fear appeal in visual imagery might also be beneficial based on the fear appeal literature (Witte, 1994).

More important, risk communication about climate change needs to monitor the potential audiences' social environment, their perceived ability for finding and understanding information about climate change, and the types of emotions they associate with a topic like climate change. We want people to remain optimistic that human actions, such as reducing the emission of greenhouse gas, could help combat the effects of climate change. However, this sense of optimism needs to be distinguished from any contentment with the status quo. Leiserowitz (2006) found that the majority of Americans view risks from climate change as more distant and less likely to influence their day-to-day lives. This misperception presents an opportunity for risk communication. That is, we need to deliver a sense of urgency that can effectively stimulate emotional responses to this issue among the audience.

In sum, this study offers preliminary evidence that when both negative affect and positive affect are included, they work well with the other existing RISP components to predict information seeking and avoidance. The addition of these variables also enhances the predictive power of the model. Even though information seeking about climate change is driven by one's cognitive need for information sufficiency along with other affective and environmental factors, information avoidance occurs mainly because of how people feel about climate change and whether they view information seeking about climate change as a worthwhile and attainable behavior. Together, these results highlight the importance of monitoring audiences' existing attitudes and emotions associated with climate change to improve the communication of ecological risks related to climate change.

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Notes

1. Respondents from the two universities reported similar level of information seeking (t = 1.03, n.s.), attitudes toward information seeking (t = 1.87, n.s.), perceived behavioral control (t = .98, n.s.), ISN (t = 1.45, n.s.), perceived hazard characteristics (t = 1.34, n.s.), and current knowledge (t = 1.12, n.s.). However, respondents from the university in a warmer climate reported slightly higher information sufficiency threshold (t = 2.37, $p < .05$), more negative affect (t = 2.55, $p < .05$), less positive affect (t = 2.57, $p < .05$), and less information avoidance (t = 2.33, $p < .05$).
2. This was phrased in the question as "family" income. Still, the mean family income for the United States is around $50,000, which indicates that these students came from more affluent families.
3. A complete covariance/correlation table can be requested from the authors.
4. The augmented RISP model also does not retain demographic variables and other individual characteristics that were originally included in the RISP model due to the lack of consensus on how to include control variables in a theoretical model (Kahlor, 2007).
5. Preliminary regression analysis suggests that female respondents were more likely to seek information about climate change in the future (β = .05, $p < .05$), but none of the other demographic variables had a significant relationship with information seeking and avoidance.
6. Both models suggest that specifying two paths from current knowledge and ISN to positive affect can further improve the model fit. Since there is no theoretical support for these paths, we did not include this addition. However, it can be speculated that people who have positive feelings about climate change are likely those who do not know much about climate change yet are surrounded by like-minded individuals who further influence their opinions.

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Author Biographies

Z. Janet Yang is an assistant professor of health and risk communication at the State University of New York at Buffalo. Her research interests include communication about environmental issues, health, science, and risk.

LeeAnn Kahlor is an associate professor of advertising and public relations at the University of Texas at Austin. Her primary research interest is in health and environmental risk communication, with an emphasis on information processing.