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Risk Information Seeking and Processing Model

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CHAPTER 7

Risk Information Seeking and Processing Model

Sharon Dunwoody and Robert J. Griffin

Introduction

You could be forgiven if a 2006 study published in *Science* about decision making led you to conclude that thoughtful, effortful information seeking and processing were irrelevant to risk judgments. In that study, Dijksterhuis, Bos, Nordgren, and van Baaren (2006) found that simple choices (e.g., choosing among soap brands) were indeed improved if made immediately after conscious thought; complex decisions were not. In their experiment, individuals made better choices of cars (the complex condition) *not* when asked to select a car to buy immediately after considering several models across a dozen attributes but after a distraction took their minds off cars altogether for a period of time.

Put another way, the researchers argued that decisions about complicated things improve if an individual "sleeps on it" and then makes a quick decision, without engaging in conscious pondering. They call this process the "deliberation-without-attention" effect.

That seemingly volitional behaviors can be catalyzed by processes about which actors are unaware is a fascinating idea that may become fertile ground for the next generation of risk communication scholars. But while important decisions may indeed stem from unconscious processing, our brains can pull this off only if they actually have *something* to process; and that something is information. Thus, we argue in this chapter that information seeking and processing are critical components of risk decision making. Individuals vary greatly in the energy expended on these processes, and that variance may spell the difference between the formation of volatile versus stable attitudes about a risk, as well as the difference between acting or not acting in response to a risk.

Below, we examine the concepts of information seeking and processing, with a particular focus on their employment in risk decision making. We then focus on the risk information seeking and processing (RISP) model, devised to explore predictors of these information behaviors within a risk context. In the third part of the chapter, we present some original data analysis in service to testing the consistency of the RISP model across different types of risks and over time. Finally, we return to the "deliberation-without-consciousness" effect to offer a few last words regarding unobtrusive motivators of these information behaviors.

Information Seeking and Processing

Of the two concepts, information processing has received far more attention in the social sciences, in part because it has been a focus of a number of popular psychological theories about social cognition. However, as new information channels make user control increasingly (and, often, disconcertingly) common, the process of information seeking is becoming more salient as a research focus. We take a look at information seeking first and then move on to information processing.

Information Seeking

The concept of "information seeking" can be described as a volitional process of selecting information channels to reach desired informational goals, as well as one of making choices to attend to messages embedded in any particular channel. Although scholars have always assumed that information seeking would be the inevitable outcome of a perceived gap in one's knowledge, studies in information science, in communication, and, most recently, in the subfields of health and risk communication have made it clear that seeking behaviors are complex and contingently driven (Robson & Robinson, 2013). While most individuals, when faced with information gaps, express a desire for additional information, circumstances typically limit the number who progress to actual information seeking behaviors.

Information seeking models describe a number of factors that affect that progress to behavior, such as perceptions of an issue, including judgments of the issue's seriousness; enabling factors that reflect a person's perceived ability to search for information, including an individual's beliefs about the efficacy of available channels; and reinforcing factors such as the perceived utility of the seeking behaviors themselves (see, e.g., Green & Kreuter, 2005; Robson & Robinson, 2013). Many of these models were constructed to serve scholars in fields such as library sciences and information studies. Within communication, several models have been utilized over the years.

For example, Chaffee (1986) posited two information seeking factors that share much with those articulated above. He argued that, in a search for information, individuals will be guided by two elements: (1) the cost of accessing any particular information channel and (2) the likelihood that a channel will contain information relevant to the need. Here, the term *channel* is not an omnibus term but, rather, is intended to distinguish "channel" from "source." Channels gather, package, and then convey information acquired from sources. While much research has examined source credibility, we argue that audience tendencies to take cognitive shortcuts mean that they may rely on the credibility of channels more than on the credibility of sources. (For an extended discussion of the channel concept, see Dunwoody & Griffin, 2014.)

"Cost," in Chaffee's calculus, means much more than dollars and cents. Searching for a channel can also be costly in terms of time or in terms of the stress induced when folks find themselves searching in ambiguous circumstances. (Key word searches of the electronic universe offer a good example of the latter.) Chaffee's two dimensions handily explain individuals' preference for physicians as channels for health information (high relevance but high cost) and their overwhelming use, instead, of mediated channels, including the Internet (potentially low relevance but low cost) (Hesse et al., 2005).

Another popular framework for information seeking scholarship, the "uses and gratifications" perspective, emphasizes the goodness of fit between an individual's specific information goals and the type of content provided by a channel. It assumes that individuals' channel choices are "goal-directed, purposive and motivated" (Rubin, 2009, p. 167) and that information seekers base future channel choices on an assessment of the ability of any one channel to meet their information needs. A uses-and-gratifications framework, thus, may predict to the employment

of different channels for different risk communication goals. A chemical spill may lead a person to emphasize "surveillance" initially and to keep the television tuned to a credible news channel; later, that individual may opt into interpersonal channels for explanatory help and advice about personal protection strategies.

Another "seeking" alternative, of course, is to choose to avoid information about a risk (Case, Andrews, Johnson, & Allard, 2005; Howell & Shepperd, 2013; Sweeny, Melnyk, Miller, & Shepperd, 2010). Although rarely acknowledged in the general information seeking literature, avoidance has become increasingly salient in communication studies of risky situations. Witte's (1992) extended parallel process model offers one rationale for its selection: When highly fearful risks are coupled with few or no means of reducing one's exposure to those risks, individuals may opt to "manage" their fear by avoiding risk information altogether.

Information Processing

The scientific study of the ways people process information began decades ago (see, e.g., Norman, 1976). We find one of the most useful model "types" for communication to be the dual-processing models in psychology. These theories have in common a differentiation between cognitive processes that are fast and automatic versus those that are purposive and effortful. The former are labeled *heuristic*, *reflexive*, and *intuitive*, while the latter are often termed *analytic*, *high effort*, and *rational* (Evans, 2008, p. 257). The duality seems to have evolved, in part, to account for the apparent contradiction between people's capacity to invest time and effort in making meaning and their tendency to, instead, "satisfy their goal-related needs in the most efficient ways possible" (Eagly & Chaiken, 1993, p. 330).

One of the more successful dual-process theories is Shelly Chaiken's heuristic–systematic model (HSM). Chen and Chaiken (1999) differentiate between the two basic modes as follows:

> *Systematic processing* entails a relatively analytic and comprehensive treatment of judgment-relevant information. Judgments formed on the basis of systematic processing are thus responsive to the actual content of this information. Given its nature, systematic processing requires both cognitive ability and capacity. . . . The other basic mode, *heuristic processing*, entails the activation and application of judgmental rules or "heuristics" that, like other knowledge structures, are presumed to be learned and stored in memory. . . . Relative to systematic processing, heuristic processing makes minimal demands on the perceiver. (p. 74)

Most of the dual-processing models (for a comprehensive list and discussion, see Evans, 2008) assume that people can engage in systematic and heuristic processing simultaneously, but the theories typically describe systematic processing as more desirable than its heuristic counterpart. Heuristic processing is seen as a "cognitive shortcut" that may lead to flawed decisions. Wimmer and Shohamy (2012) offer physiological evidence of the role of the brain in facilitating such shortcuts by, for example, increasing the likelihood that past experience will "bias" decisions made in novel situations.

Indeed, although some scholars promote the pragmatic benefits of heuristic decision making (see, e.g., Gigerenzer, 2007; Gigerenzer & Selten, 2002), numerous studies have suggested that systematic processing is more likely to lead to stable attitudes and behaviors (Chaiken, Liberman, & Eagly, 1989; Natter & Berry, 2005), attributes presumably of value in risky situations. The HSM assumes, in fact, that a person's recognition that she has too little information to make a confident judgment about a risk is enough to send her into systematic processing mode; the perception of insufficient information, in other words, will motivate her to devote time and energy to deliberative work (Trumbo, McComas, & Besley, 2008).

In the RISP model described in the next section, we adopt the position that effortful information gathering and processing are not only important precursors to making good risk judgments, but they are also important behaviors *in and of themselves.*

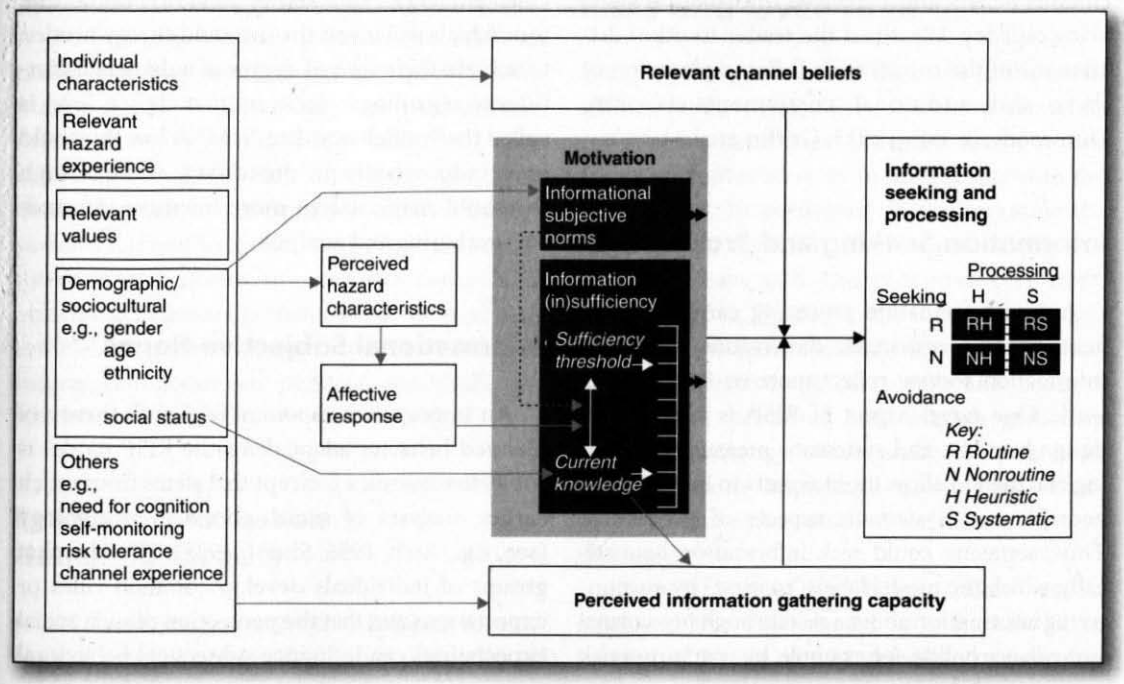
The RISP Model

RISP evolved from a perceived need to make the seeking and processing of risk information central foci of study. Although numerous studies have utilized one or the other of these concepts (see, e.g., Cline & Haynes, 2001; Czaja, Manfredi, & Price, 2003; Kreuter et al., 2007; Matthews, Sellergren, Manfredi, & Williams, 2002), few risk scholars have sought to explore factors that would predict differential use of these two processing strategies. Thus, the model employs risk information seeking and processing as dependent—not independent—variables to better understand the factors that might prompt individuals to engage in more or less effortful, analytical work when faced with a risk.

An early goal of the model was to avoid reinventing the wheel, so we focused on adapting concepts that existing scholarship had shown to be important to information seeking and processing behaviors. We culled those concepts from several well-known approaches; among them were Slovic's "psychometric paradigm" (Slovic, 1987), the HSM discussed above, and Ajzen's theory of planned behavior (Ajzen, 1988). We now turn to a discussion of the primary components of the model and the theories from which they were gleaned.

Figure 7.1 provides a visual representation of the model. While the original model moved beyond information seeking and processing—with Ajzen's theory of planned behavior as foundational—to predict risk-related coping behaviors (Griffin, Dunwoody, & Neuwirth, 1999), it is the first part of the model, represented in the figure, that has been most rigorously tested and given the RISP label.

Figure 7.1 Risk Information Seeking and Processing Model



RISP posits that risk information seeking and processing will be driven primarily by a person's subjective assessment of the gap between what he knows about a risk and what he feels he needs to know in order to respond to that risk adequately. That information gap judgment, in turn, will stem from an array of factors, including characteristics of the individual such as socioeconomic status and ideological predisposition, perceptions of the hazards posed by the risk, level of worry about the risk, and perceived social normative pressures to learn about the risk. Finally, the model predicts that beliefs about the available information channels and perceptions of one's ability to gather information effectively will moderate the link between the perceived information gap and a person's information seeking and processing intentions. Although the model takes affect into account, RISP is essentially cognitive in nature.

To make this chapter manageable, we will briefly explain a subset of the model's variables: the information seeking and processing dependent variables; two important motivators, the perceived information gap, labeled "information (in)sufficiency," and informational subjective norms; and two mediating concepts, relevant channel beliefs and perceived information gathering capacity. We direct the reader to other discussions of the model for a fuller explanation of these and additional components (Griffin, Dunwoody, & Yang, 2013; Griffin et al., 1999).

Information Seeking and Processing

Just as information *processing* can have both heuristic and systematic dimensions, so might information *seeking* reflect more or less effortful work. One novel aspect of RISP is its effort to design heuristic and systematic measures of seeking and then to allow those aspects to interact with heuristic and systematic aspects of processing. Thus, someone could seek information heuristically, which the model labels "routine," by encountering information about a risk through her normal surveillance habits, for example, by watching a risk story on a morning TV news program. In contrast, she could engage in more systematic seeking, labeled "nonroutine," by purposely searching for information in channels that she would not normally monitor, for example, by looking for a specific study of the risk in the peer-reviewed literature or contacting someone at a state health agency. Regardless of seeking mode, she can devote varying amounts of time and energy to understanding (via processing) the message.

She can also decide to avoid information about the risk, perhaps because the risk makes her too fearful or because she regards the risk as trivial or unlikely.

Information (In)Sufficiency

Systematic seeking and processing are challenging tasks, so individuals presumably engage in such behaviors only when sufficiently motivated. Although the HSM advances multiple motives for processing, the one most relevant to RISP is the "accuracy motivation," which asserts that a greater or lesser need for accurate attitudes and beliefs catalyzes information processing choices (Chen & Chaiken, 1999). Chaiken et al. (1989) argue that individuals will invest the time and energy needed to achieve their desired degree of judgmental confidence regarding a decision; that chosen level is called the "sufficiency threshold." A low threshold may induce heuristic processing, while a high threshold may catalyze more intensive information gathering and analysis.

Informational Subjective Norms

An important component of Ajzen's theory of planned behavior adapted for the RISP model is subjective norms, a concept that stems from much earlier analyses of social norms in psychology (see, e.g., Asch, 1956; Sherif, 1935). The idea that groups of individuals develop common rules or expectations and that the perception of such social expectations can influence subsequent behavioral

choices of individuals remains a compelling focus of research. Many scholars employ norms that reflect the risk behaviors they seek to modify, whether recycling or avoiding texting while driving (Lapinski & Rimal, 2005; Rimal & Real, 2005). Since we are interested in information seeking and processing behaviors, we explore respondent perceptions of whether or not other individuals expect him or her to learn about the risk. We employ the label "informational subjective norms."

Relevant Channel Beliefs

Individuals clearly do not regard all channels as created equal. We develop beliefs about information channels over the course of our lives that can influence our information seeking and processing decisions. Kosicki and McLeod (1990) argued that our judgment of the "quality" of a channel matters, as do beliefs about whether a channel is possibly biased or beholden to special interests. As noted earlier, beliefs about the cost of using a channel may literally drive us into the arms of a more accessible one despite concerns about the relevance of the information available there (Chaffee, 1986; Hesse et al., 2005).

Additionally, we may perceive the utility of channels to vary depending on our specific information needs. While we may not trust government channels to provide "objective" risk information, we may feel comfortable relying on those channels for information about laws and policies relevant to a risk. While we may readily interpret risk stories in mediated channels as informing us generally about a risk, we may nevertheless deem such channels to be less useful for information about our personal risk challenges (Dunwoody & Griffin, 2014).

Perceived Information Gathering Capacity

Of course, another potential roadblock to seeking and processing behaviors is our perception of our ability to cull the information needed from information channels regardless of their assumed quality. Searches for information about health risks, for example, sometimes take individuals into highly technical prose filled with mathematical representations of disease probability (see Chapter 11, this volume). Perceptions of low self-efficacy in such situations may doom the search to failure, perhaps before it even starts. The concept of "capacity" used here, thus, is driven largely by efficacy.

Self-efficacy has a long history as an important mediator of behavior change (Ajzen, 1988; Bandura, 1982). But while most studies explore individuals' perceptions of their ability to engage in behaviors to, say, reduce smoking or avoid binge drinking, we focus here on information seeking and processing *as behaviors* themselves. Hence, we have adopted the term *perceived information gathering capacity*, thus applying the concept of *capacity* from the HSM (Eagly & Chaiken, 1993) and extending it to both risk information seeking and processing.

A Test of the Model Across Risks and Over Time

Comparatively few survey data sets in the social sciences allow researchers to examine the replication of results over time. Fortunately, two archived studies allow us to do just that with the RISP model. In particular, we will examine the relationships that risk information seeking and processing have with their proximate predictors, as illustrated in Figure 7.1: the motivational variables (information insufficiency and informational subjective norms), relevant channel beliefs, and perceived information gathering capacity. Although some analyses have been published from these data sets, none have compared results across studies and across time in this manner.

One data set, the "Great Lakes" study, employed the RISP model as a framework to investigate the use of risk information concerning

health and environmental risks related to the Great Lakes. A professional research organization conducted an annual, three-wave telephone sample survey of a panel of adult residents from two metropolitan areas bordering the Great Lakes (Milwaukee, Wisconsin, and Cleveland, Ohio) from 1996–1997 through 1998–1999. The study was funded by a grant from the federal Agency for Toxic Substances and Disease Registry. The other data set, also employing the RISP model, is from the "Watershed" study. For this project, a professional research organization conducted an annual, two-wave telephone sample survey of a panel of adult residents of two urban river watersheds in the Milwaukee area in the winter of 1999–2000 and again a year later. Questions tapped the respondents' use of information about flooding and environmental risks related to the local rivers and their environs. The study was supported by a STAR (Science to Achieve Results) grant from the U.S. Environmental Protection Agency, the U.S. Department of Agriculture, and the National Science Foundation.

It is important to note that, within each study, respondents were divided into separate "paths" of questions, each path asking about a different risk. In the Great Lakes study, individuals for whom eating Great Lakes fish was a relevant matter were asked about potential health risks to themselves from consuming fish that may contain polychlorinated biphenyls—a family of toxic chemicals that were banned in the United States in the 1970s but that persist nonetheless in the Great Lakes ecosystem. Other respondents, on a random basis, were asked about personal health risks from consuming tap water drawn from the Great Lakes or about ecological risks to the Great Lakes ecosystem itself, an impersonal risk in the sense that the respondent himself or herself was not threatened. In the third wave of this study, interviews were done only with respondents in the fish-related path of questioning. In the Watershed study, individuals in one watershed were randomly assigned to one of two paths of questions: ecological risks to the local river or risks to homes and properties from flooding. In the other watershed, respondents were asked only about ecological risks to the local river.

Despite these differences in risk topics, the questionnaire items that operationalized variables from the RISP model were otherwise identical or, in the case of one variable, at least comparable. This approach allows us to merge responses across paths for each year of each study to reveal the overarching patterns of relationships between seeking and processing variables and their proximate predictors. Details on the general measurement and analysis strategies used for these data sets, as well as results based on specific risks, can be found elsewhere (e.g., Griffin et al., 2008; Griffin et al., 2013; Griffin, Neuwirth, Dunwoody, & Giese, 2004; Griffin, Neuwirth, Giese, & Dunwoody, 2002; Griffin, Powell, et al., 2004; Kahlor, Dunwoody, Griffin, & Neuwirth, 2006; Kahlor, Dunwoody, Griffin, Neuwirth, & Giese, 2003). On a study-by-study basis, some of those results may vary a bit from the umbrella analyses to be presented in this chapter because of the characteristics of the specific risks examined in those studies and some differences in analysis strategies (e.g., addition or exclusion of some variables). Further information on self-report measures of heuristic and systematic processing of risk information can be found in Smerecnik, Mesters, Candel, De Vries, and De Vries (2011); see also Johnson (2005).

Table 7.1 illustrates a series of analyses that regress information seeking, avoidance, systematic processing, and heuristic processing on the various proximate predictor variables (see Figure 7.1) for each wave of both studies. Except for the operationalization of perceived information gathering capacity, which was changed from the Great Lakes study to the later Watershed study, the same measures are used across all of these analyses. Of particular note is the way that information insufficiency is measured and represented in the analysis. Respondents had been asked to indicate on a 0 to 100 scale how much they currently know about the given risk (current knowledge). Then they were asked, using the same scale, to estimate the total amount of knowledge that they would need in order to achieve an understanding of the

Table 7.1 Performance of Predictors of Risk Information Seeking and Processing Across Two MultiWave Surveys

Multiple Regression Analyses (betas)										
Dependent Variable	***Information Seeking***					***Information Avoidance***				
Study	***Great Lakes***			***Watershed***		***Great Lakes***			***Watershed***	
Year (Wave)	***G1***	***G2***	***G3***	***W1***	***W2***	***G1***	***G2***	***G3***	***W1***	***W2***
Information (in)sufficiency										
Current knowledge	.09***	.14***	.11*	.20***	.22***	−.08**	−.09**	−.09	−.15***	−.12**
Information sufficiency threshold	.20***	.21***	.16***	.24***	.24***	−.22***	−.23***	−.15**	−.26***	−.24***
Informational subjective norms	.36***	.32***	.40***	.16***	.20***	−.20***	−.15***	−.22***	−.05	−.13***
Channel beliefs										
Media distort	−.05	−.03	−.08*	−.03	−.04	.12***	.13***	.12**	.06	.12***
Media have processing cues	.00	.01	−.04	.05	−.01	−.10***	−.06	−.05	−.10**	−.04
Perceived information gathering capacity	−.10***	−.15***	−.15***	.16***	.11**	.11***	.09**	.11*	−.15***	−.11**
Adjusted R^2	.26***	.27***	.29***	.25***	.25***	.18***	.15***	.14***	.20***	.18***
N	1,116	878	457	759	717	1,116	878	457	759	717

(Continued)

Table 7.1 (Continued)

Dependent Variable	***Systematic Processing***					***Heuristic Processing***				
Year (Wave)	***G1***	***G2***	***G3***	***W1***	***W2***	***G1***	***G2***	***G3***	***W1***	***W2***
Information (in)sufficiency										
Current knowledge	.08**	.04	.02	.13***	.13***	−.09**	−.09**	−.07	−.18***	−.17***
Information sufficiency threshold	.19***	.21***	.22***	.30***	.29***	−.23***	−.26***	−.25***	−.29***	−.27***
Informational subjective norms	.31***	.27***	.24***	.13***	.22**	−.21***	−.13***	−.25***	−.09**	−.20***
Channel beliefs										
Media distort	−.05	−.04	−.06	−.07*	−.07*	.14***	.08**	.08	.06	.11***
Media have processing cues	.16***	.15***	.06	.17***	.11***	.05	.06	.05	−.06	.02
Perceived information gathering capacity	−.07**	−.06	−.06	.15***	.09**	.10***	.16***	.17***	−.13***	−.11***
Adjusted R^2	.24***	.19***	.16***	.27***	26***	.18***	.17***	.23***	.24***	.26***
N	1,116	877	457	759	717	1,116	877	457	759	717

*p = .05; **p = .01; ***p = .001.

risk good enough for their purposes (information sufficiency threshold). With current knowledge controlled in the multiple regressions, the threshold variable represents the relationship of information insufficiency (the information gap) to the dependent variable.

Although the RISP model suggests that motivation (information insufficiency and informational subjective norms), channel beliefs, and capacity might interact to affect risk information seeking and processing, the multiple regressions in Table 7.1 do not examine interactions. Instead, only the direct relationships between the independent and dependent variables are analyzed, with each independent variable controlled by the others in each regression. Since each analysis is based only on cross-sectional data, the results do not reveal patterns of causal direction or influence.

Results in Table 7.1 indicate that the motivation variables have, in general, the strongest and most consistent patterns of relationships with risk information seeking, avoidance, and processing across time and across both studies. Congruent with expectations from the RISP model, the greater the information insufficiency gap (as represented by the threshold variable), the more likely that individuals will seek additional information about the risk, the less likely they will avoid it, the more likely they will process the information systematically, and the less likely they will process it heuristically. The same patterns of relationships with seeking, avoidance, and processing also hold for informational subjective norms, with only one exception—a nonsignificant relationship with avoidance in the first Watershed wave.

The RISP model treats as exploratory the direct and indirect relationships that individuals' channel beliefs might have with seeking, avoiding, and processing risk information. As illustrated in Table 7.1, channel beliefs show somewhat consistent patterns of relationships with three dependent variables. Beliefs that information channels provide cues about the trustworthiness of the information they contain are related positively to systematic processing of risk information in four of the six comparisons. Similarly, individuals' beliefs that information channels are biased and distort reality tend to be associated with avoiding such channels for risk information (four of six comparisons) and with processing the risk information superficially (three of six comparisons). Although consistent with the model, these relationships are weak, perhaps a function of operationalizing channel beliefs to reflect respondents' general views of mass media content. Indeed, Griffin et al. (2013) have called for a reconceptualization of the channel beliefs components of the RISP model to reflect individuals' expectations about the specific outcomes for themselves from using a wide variety of channels for gathering risk information and how they value those outcomes. Such an approach might adapt Palmgreen and Rayburn's (1982) expectancy value model, which shares its roots with the theory of planned behavior (Ajzen, 1988).

Table 7.1 also illustrates the effects of changing the measures of perceived information gathering capacity between the Great Lakes study and the later Watershed study. For the Watershed study, respondents answered six Likert-scaled items that reflected their self-reported capacity to seek risk information from media, government agencies, and other sources (e.g., knowledge of where to go for the information, having the time to do so), and their capacity to process it (e.g., possessing the abilities to understand the information and to separate fact from fiction). This summated measure of capacity correlates positively with seeking risk information and processing it systematically and negatively with avoiding the information and processing it heuristically, across both waves of the Watershed study. Even though the results are relatively weak, they are consistent with the model. In contrast, the capacity measure used in the Great Lakes study tends to have had the opposite relationships with risk information seeking, avoiding, and processing (especially heuristic). This set of two Likert-scaled measures asked respondents, much more broadly, to indicate how easy or difficult it would be for them to get useful information about the

risk from mass media and other sources and to acquire any information they need from those channels if they wanted to. These items emphasize risk information seeking but not necessarily processing.

It is unclear why these two versions of capacity work in contrary ways, albeit weakly, in these analyses. It certainly may be the case that our construction of one or both of these operationalizations is unreliable. Another explanation, however, might be the different loci of control emphasized in the measures: The Watershed capacity scale tends to focus more on internal locus of control and perceived self-efficacy (e.g., Bandura, 1977, 1995), whereas the Great Lakes capacity scale has stronger overtones of external locus of control, that is, the individual being subject to the availability of risk information in media and other sources. A related possibility is that, with the Great Lakes capacity measure, those who perceive greater ease of access to the risk information may not feel the need to expend much effort to get it. Regardless, the Watershed capacity measure (Griffin et al., 2008) seems to be a better fit conceptually for the RISP model, since it details several relevant components of self-efficacy within the individual and includes processing as well as seeking measures. It warrants further exploration and development.

Neither channel beliefs nor perceived information gathering capacity had strong direct relationships with risk information seeking, avoidance, or processing in this analysis. Of course, much of the impact that channel beliefs and capacity might have on these dependent variables could be contained in the proposed interactions these factors may have with the motivational variables (information insufficiency and informational subjective norms). It would also be worth exploring the relationships between capacity and channel beliefs, especially as the latter would become redefined in expectancy value terms. It is possible that an individual's beliefs about the personal outcomes of using various channels for risk information (e.g., online channels, professional channels, and mass media) could be affected by his or her self-efficacy in getting and processing the information from those channels, or vice versa. For example, as mentioned earlier, individuals typically identify physicians as their preferred channel for health information, yet they are more likely to access health information via mediated channels such as the mainstream media and the Internet (Hesse et al., 2005). The reason—at least in the American culture—is that people do not feel that they can easily access a physician and, thus, are reacting to lower levels of self-efficacy (Hesse et al., 2005). (For a discussion of the relationships between self-efficacy and outcome beliefs, see Williams, 2010.)

Reflections for Theory and Research

Tests of the RISP model over time and across risks indicate that individuals will indeed engage in more effortful information seeking and processing of risk information when they feel social pressures to know about the risk or sense that they have insufficient information for decision making. This is good news for policymakers and for communication professionals who emphasize the importance of providing information as an important catalyst to learning and possible behavior change. Further research might explore other motivations for seeking and processing that might be applicable to risk information, including the defense and impression motivations that complement the HSM accuracy motivation (e.g., Chen, Duckworth, & Chaiken, 1999) and a variety of drivers that stem from the media uses and gratifications models (e.g., McGuire, 1974; Rubin, 2009).

We suspect that many factors influence the relationship between motivations and the seeking and processing of risk information; among them are a person's perception of his ability to find information successfully and beliefs about the nature and quality of available information

channels. RISP studies to date support these speculations at only a modest level; additional work is needed to explore the potency of such moderators, especially as they might interact with individuals' motivations to seek and process risk information.

Affect likely also plays a role in people's decisions about information. The RISP model as explored to date is heavily cognitive, since the proximate predictors of seeking and processing, including informational subjective norms, are based essentially on beliefs. RISP has yet to examine affective dimensions to any great extent, although Griffin et al. (2013) have called for such exploration. Mood states, for example, can influence how people seek and process the information they need for making a judgment (e.g., Clore et al., 2001; De Vries, Holland, & Witteman, 2008; Schwarz, 1990). Risk perception researchers have embraced "the affect heuristic" in recent years (see, e.g., Slovic, 2010; see Chapter 3, this volume). Thus, scholars need to find a way to incorporate both cognitive and affective factors in their efforts to understand predictors and outcomes of seeking and processing risk information.

Recommendations for Practice

Studies of information seeking and processing suggest that practitioners who seek to use information to inform or motivate need to be sensitive to such "drivers" as perceived need for information and individuals' senses of efficacy when it comes to finding and using novel information. These factors will come as no surprise to experienced risk communication strategists. But the all-too-common focus in many campaigns on ensuring the credibility of sources may lead practitioners to neglect the critical importance of channel credibility. If, as we suspect, many individuals make decisions based on the credibility of the channel—not the source—then the potency of messages situated in the wrong channel will be greatly reduced.

After decades of research and practical experience, the experienced risk communicator knows a great deal about how to motivate individuals to seek and process information about personal risks. But what courses of action can be effective when the risks of interest are "impersonal," that is, not obviously relevant to the individual? Many practitioners work within this impersonal domain, trying to motivate behavior change in the face of climate change or to confront major public health issues that affect "others." The RISP model offers one clue. Individuals facing, say, an issue affecting the environment may feel no personal involvement in the topic but may ramp up their information seeking and processing behaviors when they believe that others feel they should do so. Informational subjective norms—the perception that others believe one should learn about such a risk—are among the strongest predictors of seeking and processing in these impersonal situations. This suggests that practitioners should seek every opportunity to make audiences aware of their social environment when that environment has declared a particular risk to be important.

Conclusions

As a result of our decades of research on information seeking and processing, we have become intrigued by the potential of informational subjective norms. In our studies, if an individual felt that others expected her to learn about the risk, she was more likely to engage in effortful seeking and processing of information. This suggests that individuals are sensitive to the information management behaviors of others and may take behavioral cues from others even when they, themselves, do not regard a risk as sufficiently salient to require an expenditure of energy.

Also notable is that norms are often unobtrusive. That is, they often operate outside the awareness of the individual. When people are asked to identify factors that influenced their decision to modify their behaviors, they rarely

mention their awareness of the behaviors of others (descriptive norms) or a perception that others think they should behave in certain ways (injunctive norms). Yet studies show that these norms are, in fact, among the most powerful predictors (see, e.g., Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008).

This brings us back full circle, to the "deliberation-without-attention" effect (Dijksterhuis et al., 2006) mentioned at the beginning of this chapter, which posits that good decisions about complex problems can happen in the absence of purposive attention and effort. Scholarly interest in unobtrusive motivators of decision making is on the rise, thanks in part to scientists' increased access to brain activity, and there may well be powerful, unobtrusive motivators—in addition to norms—that drive information seeking and processing. We await a new generation of communication researchers-turned-neuroscientists to open those doors.

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