WORRIED AND WIRED: MODERATING EFFECTS OF HEALTH ANXIETY ON
HEALTH INFORMATION SEEKING, DISCUSSION AND BEHAVIOR

A Thesis
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ABSTRACT

Research points to a variety of reasons an individual will seek health information both online and from friends and family. However, little is known about what factors influence an individual’s decision to seek medical attention based on the findings of their information search. As the health care industry hastily transitions to a more consumer-driven paradigm, obtaining a better understanding of the health decision-making behaviors of individuals becomes paramount to those interested in effective health communication. This study explores the relationship of online health information seeking and interpersonal discussion about health on health care utilization decisions such as visiting a doctor. Further, this study suggests that an individual’s level of health anxiety moderates these relationships.
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CHAPTER 1

INTRODUCTION

As suggested by Sonnenberg (1997), health information-seeking research should examine not only what information individuals seek, but also what information they find how their findings impact their health care. Research points to a variety of reasons an individual will seek health information both online and from friends and family. Much of this research is illness-specific focusing on the information seeking motivations and needs of individuals with chronic diseases such as cancer, diabetes, and AIDS (Dutta-Bergman, 2005). While understanding the active processes or activities individuals perform to learn about their disease or treatment is essential in understanding how people manage their health (Turk-Charles, Meyerowitz, & Gatz, 1997), research on an individual’s decision to seek health information in the absence of having a diagnosis of a specific condition is lacking (Dutta-Bergman, 2005; Tardy & Hale, 1998). Moreover, little is known about what factors influence an individual’s decision to seek medical attention based on the findings of their information search. As the health care industry hastily transitions to a more consumer-driven paradigm, obtaining a better understanding of the health decision-making behaviors of individuals becomes paramount to those interested in effective health communication. This study explores the relationship of
online health information seeking and interpersonal discussion about health on health care utilization decisions such as visiting a doctor. Further, this study suggests that an individual’s level of health anxiety moderates these relationships.

**Health Information-seeking**

Health information-seeking has been widely studied and findings suggest a variety of motivations behind an individual’s health information-seeking behavior. Defining the concept in perhaps the broadest terms, Tardy and Hale (1998) present health information-seeking as “verbal and nonverbal messages ascertained via everyday interaction, either purposeful or serendipitous, by members in a self-defined network, that serve not only to reduce uncertainty regarding health status, but also to construct a social and personal (cognitive) sense of health.” (p.338). Uncertainty is a common element in health information-seeking research, as it has been suggested that uncertainty is a central element in an individual’s experience with illness (Affifi & Weiner, 2004; Babrow, Kasch, & Ford, 1998; Brashers, 2001; Napoli, 2001; Pezza, 1990). Mishel’s (1988) uncertainty in illness theory elaborates on four central forms of uncertainty which could explain the motivation behind information seeking as a means to reduce “(a) ambiguity concerning the state of the illness, (b) complexity regarding treatment and the system of care, (c) lack of information about the diagnosis and seriousness of the illness, and (d) unpredictability of the course of the disease and prognosis” (p.255). Impressing that health information-seeking is not exclusive to individuals who are ill, however, Brashers, Goldsmith, and Hsieh (2002) explain possible motivations behind health-information seeking by asserting that while individuals with chronic illnesses may seek information to
further understand their disease or explore alternative treatments, healthy people may seek information to maintain or improve their current health.

This study examines two resources individuals may use for health information-seeking – the Internet and family and friends.

*The Internet*

Results from a 2003 survey by the Pew Internet and American Life Project estimate that 80% of adult Internet users (73 million Americans) have searched the web for at least one of 16 major health topics (Pew, 2003). Studies present the typical online health information seeker as more likely to be female, young adult-to-middle-aged, and most likely college educated with middle-to-high income (Pew, 2003; Rideout, 2001; Tu & Hargraves, 2003). The Pew Study also suggests that the typical user is thought to approach a web search without a definite research plan and spends approximately 30 minutes on each search, visiting between two and five sites. Further, the Pew study found a reciprocal relationship between online information seeking and likelihood to visit a doctor. In a study of 72 million consumers who had sought health information in the past year, Tu & Hargraves (2003) found that 20% had mentioned this information to their doctors. Further, Rogers and Mead (2003) found that online health information-seekers used the information they obtained online in their doctor’s visits to leverage treatment options and question diagnoses.

*Interpersonal discussion*

As suggested by Nussbaum (1989), individuals discuss health information with friends and family “at home or in restaurants or on a softball field” (p. 36). Despite this common tendency for individuals to discuss health information with members of their
social circles, Tardy and Hale (1998) point out that in communication research, “the mundane health-related interactions of individuals who are not facing critical illness either themselves or on the part of a loved one have not been of great interest” (p.337). While interpersonal relationships between the patient and provider have been thoroughly examined, more everyday, informal discussions within an individual’s social network lays relatively untouched, although the impact of these relationships is known to play a significant role on an individual’s health beliefs and behaviors (Brashers et al., 2002, Cline, 2003, Dutta-Bergman, 2004). In a study of 200 general practice patients, Conroy, Smyth, Siriwardena, & Fernandes, 1999), found that 42% of them had asked someone in their social network for advice regarding a problem for which they were seeing the doctor prior to seeking medical attention. The shift towards a more patient-centered healthcare philosophy is leading to more individuals looking to friends and family for support and guidance in medical decisions (Petronio, Sargent, Anda, Reganis, & Cichoki, 2004), pointing to an opportunity to examine more closely the influence that health-related discussion has on an individual’s motivation to utilize health care.

In summary, research points to a relationship between health information-seeking, both online and through interpersonal discussion, and health care utilization. As such, the first three hypotheses for this study are as follows:

$H1$: Individuals’ online health information seeking will be positively related to their discussions about health-related issues.

$H2$: Individuals’ online health information seeking will be positively related to their health care utilization decisions such as deciding to visit a doctor based
on information found online, the number of doctor visits an individual makes in a year, and the number of different doctors visited.

\textit{H3:} Discussing health-related issues with others will be positively related to health care utilization decisions.

\textit{Understanding health anxiety}

While research has shown that people engage in health information-seeking for a variety of reasons with a number of behavioral outcomes, the various motivations behind these activities remains unknown. One possible motivator for health information-seeking and consequent medical care utilization is the level of an individual’s health anxiety. Health anxiety, as defined by Lucock and Morley (1996), is “concern about health in the absence of pathology or excessive concern when there is some degree of pathology.” (p. 137). As a dimensional state that varies through time and space, rather than a static categorical trait, health anxiety can fluctuate from minor worry to significant fear (Owens, Asmundson, Hadjistavropolous, & Owens, 2004). While many individuals may experience varying levels of health anxiety from time to time, for those suffering from more chronic or exacerbated levels the impact can be severe, interfering with relationships, work performance and overall quality of life (Asmundson, Taylor, Sevgur, & Cox, 2001). The term \textit{health anxiety} is often interchanged with \textit{hypochondriasis} in clinical and psychology literature, and recent studies have pointed to the prevalence of hypochondriasis in general practice patients to range between 0.8% and 10.3% (Noyes, 2001).
As a means to decrease levels of anxiety, individuals often seek information from various resources. “People who start out anxious about their health and try to learn more are almost never reassured. You can always find at least one of the worst things you can imagine” offers psychiatry professor at Harvard Medical School, Arthur Barsky (Brink, 2000, p.64). Extant research in medicine and psychology suggests that health anxious individuals are likely to seek health information and reassurance from medical resources, friends and family (Conroy et al., 1999; Salkovskis, Warwick & Deale, 2003; Warwick & Salkovskis, 1990). Because patients with higher levels of health anxiety utilize health care considerably more than patients with lower levels it is surprising that more research has not been conducted on the predisposed proclivities of individuals relative to their levels of health anxiety and their motivations behind, satisfaction of, and consequent behaviors regarding health information-seeking (Barsky, Ettner, Hursky & Bates, 2001; Salkovskis & Warwick, 2001).

For individuals with heightened levels of health anxiety, the information they find, be it online or through interpersonal discussion, does not help to reduce their woes. As persistent reassurance checking is prevalent among these individuals, they tend to make frequent doctor visits and request expensive diagnostic tests or undergo unnecessary treatments (Hiller, Fichter, & Rief, 2003). “Doctor shopping” is common as the health anxious may seek reassurance from several different doctors while they attempt to find a diagnosis for their unexplained physical symptoms or misinterpreted bodily sensations (Asmundson et al., 2001; Hiller et al., 2003).

Of concern for health communication and medical professionals is the attention bias of individuals with high levels of health anxiety to health-related information. Health
anxious individuals are likely to over-exaggerate negative illness information or attend to information that supports their health concerns (Warwick & Salkovskis, 1990). This attention bias is thought to cause health anxious individuals to ignore positive health information in favor of more catastrophic information leading to reassurance behaviors, e.g., symptom checking and medical attention (Hadjistavropoulos, Craig, & Hadjistavropoulos, 1998; Owens, Asmundson, Hadjistavropoulos, & Owens, 2004) and possibly lead to the perpetuation of the anxious state (Warwick & Salkovskis, 1990).

Health communication theories have not specifically explored the role that anxiety may play in the cognitive processing of health messages (McCaul & Mullens, 2003; Millar & Millar, 1998). Fear, however, plays a central motivator in health behavior change, however, in Roger’s protection motivation theory (1975), as well as in Witte’s (1992) extension of Leventhal’s parallel process model. Protection motivation theory follows a value expectancy model in which the individual’s behavior is predicted by his or her attitudes and beliefs regarding the outcome of that behavior. Further, the theory posits that fear will arouse “protection motivation” and that an individual’s likelihood to adopt a positive behavior will increase as the level of protection motivation increases (Rogers, 1975). In Witte’s extension of the parallel processing model, fear is an emotional result of health threat appraisal and behavior change is a result of the individual’s desire to reduce the threat (Witte, 1998). While both the protection motivation theory and parallel process model help explain predictors of behavior change, they work only if the elected behavior change or decision achieves the desired outcome of the individual and the person feels he or she can perform the necessary action. For people suffering from higher levels of health anxiety, their worry does not necessarily
dissipate upon visiting a doctor and their bodily symptoms may remain despite medical
reassurance (Coia & Morley, 1998; Lucock, Morley, White, & Peake, 1997; Meechan,

Based on the health information-seeking tendencies that individuals with higher
levels of health anxiety tend to exhibit, the remaining hypotheses for this study are:

H4a: Health anxiety will moderate the relationship between health information
seeking and the frequency of visiting a doctor based on information found
online.

H4b: Health anxiety will moderate the relationship between health information
seeking and the number of doctor visits in the past year.

H4c: Health anxiety will moderate the relationship between health information
seeking and the number of doctors visited in the past year.

H5: Health anxiety will moderate the relationship between online health
information seeking and health-related discussion.

H6a: Health anxiety will moderate the relationship between health-related
discussion and the frequency of visiting a doctor based on information found
online.

H6b: Health anxiety will moderate the relationship between health-related
discussion and the number of doctor visits in the past year.

H6c: Health anxiety will moderate the relationship between health-related
discussion and the number of doctors visited in the past year.
CHAPTER 2

METHOD

Because a main focus of this study is online health information seeking, it employed a true electronic contact method without postal mail or telephone invitation or follow-up reminder messages to obtain a diverse Internet sample. E-mail addresses were purchased from a commercial permission-based e-mail sampling service. Using proprietary software, the e-mail vendor randomly selected 5,000 e-mail addresses of residents from a large, Midwestern state from their database of more than 2.5 million individuals over the age of 18 who have explicitly indicated an interest in receiving online surveys. No other selection or exclusion criteria were used.¹

The e-mail subject line read, “XXXXX University wants your opinion.” The e-mail invited participants to complete an online survey about how people used the Internet for different reasons. Additionally, the e-mail included a link to the online survey and provided a contact name and telephone number for more information.

¹ As noted by Porter and Whitcomb (2003), the proliferation of SPAM increases annoyance in Internet users of unsolicited e-mails and thus researchers employing online surveys should continue to seek creative measures to increase response rates. As a courtesy to the participants in the e-mail vendor’s database, the researchers of this study declined to send follow-up reminder e-mails despite previous research indicating an increase in response rate via this technique (Cook, Heath & Thompson, 2000; Kittleson, 1995; Sheehan, 2001).
Through dynamic tracking, it was found that of the 5,000 e-mails sent, 989 (20%) were opened. Of the e-mails that were opened, 239 individuals clicked-through to the survey. From this, a total response rate of 24-% was obtained. Similar to telephone solicitation calculations, the response rate was calculated by the number of completed surveys (240) divided by the number of e-mails opened (989).²

Participants

Of the 240 participants, the mean age was 42 (SD = 11.99), 71 % were female, and 71 % had completed some college or more. The median household income was between $30,000 and $50,000. Eighty-seven % were Caucasian, 9 % were African American, and the remaining 4 % indicated other.

Communication variables

Online health information seeking was defined as the frequency people use the Internet to search for health related information. Measured with a single item this variable ranged from have not searched for health information online (score = 1) to searching several times a day (score = 7) (M = 3.45, SD = 1.53). Health-related discussion assessed the extent to which people have discussions about health-related issues with friends or with family. This construct was measured with two items ranging from never (score = 0) to daily (score = 7) (a = .82) (M = 2.66, SD = 1.63).

² It should be noted that only HTML-based e-mail can be tracked for opens and for click-throughs to the survey. Disparity in the number of individuals who clicked-thru versus the number of completed surveys is a result of either non-HTML e-mail users or individuals who “cut and pasted” the survey url into their web browser.
Health care utilization decision variables

Three health care utilization decisions were measured. One item ranging from never (score = 1) to every time (score = 5) asked the frequency in which they have visited a doctor based on information they found online ($M = 1.60, SD = .87$). Additionally, two open-ended items asked for the number of doctor visits in the past 12 months ($M = 7, SD = 9.53$) and the number of doctors visited in the past 12 months ($M = 2.39, SD = 1.73$).

Moderating variable

Health anxiety was assessed using the Health Anxiety Questionnaire (Lucock & Morley, 1996) which measures the level to which an individual worries about his or her health. This scale consists of 21 items rated on a 1 (not at all) to 5 (most of the time) Likert-type scale ($a = .95$) ($M = 2.34, SD = .70$). Sample items include, “Do you ever find it difficult to keep worries about health out of your mind?” and “Do you ever examine your body to find whether something is wrong?” The full scale is included in Appendix A.

Control variables

Several exogenous variables expected to influence health information-seeking, discussion, and behaviors were controlled for in this study. Specifically, the influence of age, gender, ethnicity, and income were controlled (Fiscella, Franks, & Clancy, 1998). Further, one dichotomous item asking participants to report whether or not they had been under medical care or supervision for a temporary or chronic medical condition, such as asthma, diabetes, heart disease, physical therapy or pregnancy in the past year (43% reported a medical condition) was used as a control. Likewise, a dichotomous item asking
whether or not the participant had health insurance coverage (83% answered that they did have health insurance) was used as a control.

Data Analyses

Pearson product-moment correlation coefficients were calculated for Hypotheses 1 through 3 and hierarchal multiple regression was used for Hypotheses 4 through 6 using SPSS version 13. To test the interactive effects predicted by hypotheses 4a-c, 5, and 6a-c, a hierarchal multiple regression model was built with the antecedent variables entered first, followed by the independent variable and moderating variable along with the interaction term.
CHAPTER 3

RESULTS

Online health information seeking was positively related to the extent to which people engaged in health-related discussion \((r = .47, p < .01)\), supporting hypothesis 1. Hypothesis 2 received mixed support (Table 1). While online health information seeking was positively related to the decision to visit a doctor based on information found online \((r = .39, p < .01)\), the number of doctor visits \((r = .07, p > .05)\) nor the number of doctor’s visited \((r = .07, p > .05)\) yielded significant relationships. Health-related discussion with family and friends was significantly positive in its relationship with visiting a doctor based on information found online \((r = .44, p < .01)\), the number of doctor visits \((r = .16, p < .05)\) and the number of doctors visited \((r = .19, p < .01)\), supporting the predictions of hypothesis 3.
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*p < .05, **p < .001

Table 1: Correlation matrix of health anxiety, information-seeking, discussion and behavior

Hypotheses 4a through 6c further explored the relationships between health information seeking, health-related discussion and health care utilization decisions, specifically with health anxiety as a moderator.

Hypothesis 4a predicted a significant interaction between health anxiety and online health information seeking on making a doctor’s appointment based on information found online. Making a doctor’s appointment based on online health information was regressed onto health anxiety, health information seeking, and a product term to reflect the interaction as predictors in the model. Together, the predictors accounted for 29% of the variance in the doctor visits based on information found online, $R^2 = .29, F(10,209) = 10.13, p < .05$. An examination of the product term revealed a significant positive interaction, $\beta = .19, t = 4.25, p < .05$, partial $R^2 = .06$, suggesting that as health anxiety levels increase, the relationship between health information seeking online and visiting a doctor based on information found online also increases. This interaction was graphed and explored using a slope analysis which tested the significance.
of the regression lines at one standard deviation below and one standard deviation above
the mean for health anxiety, as well as at the mean (Aiken & West, 1991; Hayes, 2005).
The slope analysis revealed a significant positive conditional effect between online health
information seeking and making a doctor's appointment based on online information for
individuals with moderate levels of health anxiety ($\beta = .11, t = 2.92, p < .05$) and higher
levels of health anxiety ($\beta = .24, t = 5.36, p < .05$), but a non-significant negative
conditional effect for individuals at lower levels of health anxiety ($\beta = -.027, t = -.53,
p > .05$), as illustrated in Figure 1.

![Graph showing scatterplot with regression lines](image)

**Figure 1:** *Scatterplot showing conditional effects of health anxiety and online
information seeking on doctor visits based on information found online.*
Hypothesis 4b which predicted that health anxiety will moderate the relationship between health information seeking and the number of doctor visits in the past year was also supported. The predictors accounted for 15% of the variance in the number of doctor visits made in the past 12 months \( F(10,208) = 4.97, p < .05 \). An examination of the product term revealed a significant positive interaction effect \( \beta = 1.34, t = 2.39, p < .05 \), partial \( R^2 = .02 \). However, as presented in Figure 2, the slope analysis revealed a significant negative conditional effect between online health information seeking and the number of doctor visits in the past 12 months for individuals with low levels of health anxiety \( \beta = -1.56, t = -2.51, p < .05 \), suggesting that an individual who engages in frequent online health information seeking, but has low levels of health anxiety, utilizes less medical care. Interestingly, a negative, but non-significant conditional effect was found for individuals with moderate anxiety \( \beta = -0.63, t = -1.43, p > .05 \), yet a non-significant positive interaction was found for individuals with moderate levels of health anxiety, \( \beta = .29, t = .53, p > .05 \).
Figure 2: Scatterplot showing conditional effects of health anxiety and online information seeking on the number of doctor visits made in the past year

Hypothesis 4c was not supported, as no significant interaction was found for the number of doctors visited in the past year $\beta = .003$, $t = .03$, $p > .05$.

Hypothesis 5 predicted a significant interaction between health anxiety and online health information seeking on health-related discussion with family and friends. Health-related discussion was regressed onto health anxiety, health information seeking, and a product term to reflect the interaction as predictors in the model. Hypothesis 5 was supported, with the predictors accounting for 32% of the variance in health-related discussion, $R^2 = .32$, $F(10,209) = 11.47$, $p < .05$. An examination of the product term revealed a significant positive interaction effect $\beta = .41$, $t = 4.82$, $p < .05$, partial $R^2 = .07$. 
This suggests that as health anxiety levels increase, the relationship between health information seeking online and health-related discussion with family and friends also increases. The slope analysis further illustrates this as it revealed a significant positive conditional effect between online health information seeking and health-related discussion for individuals with moderate levels of health anxiety ($\beta = .33, t = 4.94, p < .05$) and higher levels of health anxiety ($\beta = .61, t = 7.40, p < .05$), but a non-significant positive conditional effect for individuals at lower levels of health anxiety ($\beta = .05, t = .56, p > .05$), as illustrated in Figure 3.

Figure 3: Scatterplot showing conditional effects of health anxiety and online information seeking on health related discussion
Hypothesis 6a predicted a significant interaction between health anxiety and health-related discussion with family and friends on making a doctor's appointment based on information found online. Making a doctor's appointment based on online health information was regressed onto health anxiety, health-related discussion, and a product term to reflect the interaction as predictors in the model. Together, the predictors accounted for 30% of the variance in the doctor visits based on information found online, $R^2 = .30$, $F(10,209) = 10.21$, $p < .05$. The product term revealed a significant positive interaction effect $\beta = .09$, $t = 2.19$, $p < .05$, partial $R^2 = .02$. This suggests that as health anxiety levels increase, the relationship between health-related discussions and visiting a doctor based on information found online also increases. As depicted in Figure 4, the slope analysis supports this suggestion as it revealed a significant positive conditional effect between health-related discussion and deciding to make a doctor's appointment based on information found online for individuals with moderate levels of health anxiety ($\beta = .144$, $t = 3.97$, $p < .05$) and higher levels of health anxiety ($\beta = .21$, $t = 5.57$, $p < .05$), but a non-significant positive conditional effect for individuals at lower levels of health anxiety ($\beta = .08$, $t = 1.56$, $p > .05$).
Figure 4: Scatterplot showing conditional effects of health anxiety and health related discussion on doctor visits based on information found online.

Hypothesis 6b was not supported, as no significant relationship was observed in the number of doctor visits over the past 12 months $\beta = -.56$, $t = -.41$, $p > .05$. Hypothesis 6c was supported, with the predictors accounting for 11% of the variance in the number of doctors visited in the past 12 months, $R^2 = .11$, $F(10,209) = 3.78$, $p < .05$. A significant positive interaction effect was found $\beta = 1.34$, $t = 2.39$, $p < .05$, partial $R^2 = .022$. These results suggest that as an individual's level of health anxiety and frequency of health-related discussion increases, as does the number of doctors that the individual visits in a year. The slope analysis revealed a significant positive conditional effect between online
health information seeking and health-related discussion for individuals with moderate levels of health anxiety ($\beta = .33$, $t = 4.94$, $p < .05$) and higher levels of health anxiety ($\beta = .61$, $t = 7.40$, $p < .05$), but a non-significant positive conditional effect for individuals at lower levels of health anxiety ($\beta = .05$, $t = .56$, $p > .05$), as illustrated in Figure 5.

![Scatterplot showing conditional effects of health anxiety and health related discussion on the number of doctors visited in the past year](image)

Figure 5: Scatterplot showing conditional effects of health anxiety and health related discussion on the number of doctors visited in the past year
CHAPTER 4

DISCUSSION

The results of this study, overall, support the hypotheses that health anxiety variances influence health information-seeking, both online and offline, which subsequently influenced health care decisions. The significance of these findings, however, forms a foundation for future research. Because levels of health anxiety vary for individuals throughout time and space, and as a result of personal and sociocultural factors, the results of this study yield fodder for further research from a communication standpoint in three areas.

First, as Cline (2003) suggests, health communication as a theoretical paradigm is lacking in the exploration of informal, interpersonal communication contexts despite research that points to its necessity. The results of this study suggest a relationship between interpersonal discussion and health information seeking, as well as health care utilization. As such, future research should focus on “health talk” in our everyday lives. As mentioned in the literature review, much of the research on health information seeking—both online and off—examines the needs and behaviors of individuals with a specific illness. Future studies should focus on the daily health communication exchanges that occur, perhaps using ecological momentary assessments.
Second, this study also points to closer examination of the impact of health anxiety on communication within the patient-provider relationship. The results suggest that individuals with higher levels of anxiety, who seek higher amounts of health-information – both online and off, tend to make more medical appointments based on information they found online. Further, Conroy, et al. (1999) posit that information-seeking through discussion with friends or family may not yield the necessary reassurance a health anxious individual needs to reduce uncertainty, thus leading to increased medical attention from professionals. Previous studies have shown that individuals with health anxiety are less likely to recall positive reassurance information from their physicians and less likely to experience a reduction in health anxiety (Lucock et al., 1997; Meechan, et al, 2005; Vandvik, Wilhelmsen, & Farup, 2003). The reassurance literature is robust, however, the results of this study indicate further examination is needed into the cognitive effects that anxiety may play in a patient’s receptiveness to reassurance messages. Because symptoms do not disappear when a patient receives a benign test result, health care practitioners may want to incorporate coping strategies for these medically unexplained symptoms for the patient.

Lastly, the recruitment method of this study can not go without mention. Unlike other studies employing a multi-mode recruiting mechanism, (e.g., postal letter or telephone introduction with follow-up e-mail), this study relied on electronic communication exclusively. Likewise, the recruitment method did not provide an incentive for participation, nor were follow-up reminder contacts sent. Both of these facets could serve as possible baselines in response rate for comparison in future studies that do use these techniques. Further, the sample for this study was drawn from a
database of Internet users who had previously indicated an interest in receiving online surveys. This method was intentional as a liability against anti-SPAM legislation and to help preserve an element of professional integrity to academic research; a practice which should be recognized by future researchers using e-mail recruitment techniques.

Limitations

For this study, three broad behavior outcomes from information-seeking and interpersonal discussion were examined: the decision to seek medical attention (make a doctor’s appointment), the number of doctor visits in the past year, and the number of doctors visited in the past year. Future research should explore additional outcomes and rationale behind them, e.g., self-medicating with over-the-counter medication. Further, because cost, access to care, and underlying health beliefs could influence an individual’s health care decisions, those variables should be examined alongside the communication variables presented.

While being a noted element of this study, the recruitment method and sample was also a critical limitation. The raw response rate was low when compared with previous studies and with those of offline techniques. However, because the study used an e-mail vendor to track the number of e-mail opens, possible strategies for better open-rates in the future, e.g., pilot testing multiple subject lines, can be developed.

Conclusion

This study points to a shift in focus from studying health anxiety, health information-seeking, and interpersonal discussion as separate variables and charges for a more integrated approach to understanding information consumers. Additionally, this study supports the call of fellow health communication researchers to further examine the
more informal, but not difficult to reach, interpersonal communication networks, as well as the impact that health anxiety may have on not only an individual's motivation to seek information, but their interpretation of their findings and consequent health care utilization.
APPENDIX A

HEALTH ANXIETY QUESTIONNAIRE
Health Anxiety Questionnaire

1. Do you ever worry about your health?

2. Are you ever worried that you will get a serious illness in the future?

3. Does the thought of a serious illness ever scare you?

4. When you notice an unpleasant feeling in your body, do you tend to find it difficult to think of anything else?

5. Do you ever examine your body to find whether something is wrong?

6. If you have an ache or pain do you worry that it may be caused by a serious illness?

7. Do you ever find it difficult to keep worries about your health out of your mind?

8. When you notice an unpleasant feeling in your body, do you ever worry about it?

9. When you hear of a serious illness or the death of someone you know, does it ever make you more concerned about your own health?

10. When you wake up in the morning do you find you very soon begin to worry about your health?

11. When you read or hear about a serious illness on TV or radio does it ever make you think you may be suffering from that illness?

12. When you experience unpleasant feelings in your body do you tend to ask friends or family about them?

13. Do you tend to read up about illnesses and diseases to see if you may be suffering from one?
14. Do you ever feel afraid of news that reminds you of death (such as funerals, obituary notices)?

15. Do you ever feel afraid that you may die soon?

16. Do you ever feel afraid that you may have cancer?

17. Do you ever feel afraid that you may have heart disease?

18. Do you ever feel afraid you may have another illness?

Which illness? ______________

19. Have your bodily symptoms stopped you from working or attending school during the past six months or so?

20. Do your bodily symptoms stop you from concentrating on what you are doing?

21. Do your bodily symptoms stop you from enjoying yourself?
BIBLIOGRAPHY


