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**To cite this article:** Kevin B. Wright & Lawrence R. Frey (2008) Communication and Care in an Acute Cancer Center: The Effects of Patients' Willingness to Communicate About Health, Health-Care Environment Perceptions, and Health Status on Information Seeking, Participation in Care Practices, and Satisfaction, *Health Communication*, 23:4, 369-379, DOI: 10.1080/10410230802229886

**To link to this article:** <http://dx.doi.org/10.1080/10410230802229886>



Published online: 22 Aug 2008.



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# Communication and Care in an Acute Cancer Center: The Effects of Patients' Willingness to Communicate About Health, Health-Care Environment Perceptions, and Health Status on Information Seeking, Participation in Care Practices, and Satisfaction

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This study investigated the role of willingness to communicate about health (WTCH) among older patients in a state-of-the-art cancer center. Specifically, relationships were examined between patients' WTCH and their information seeking, perceptions of coping activities the center offered, and satisfaction with the center. The study also explored how those relationships may be mediated by patients' perceptions of the health-care environment and their health status. The results indicated that WTCH may play an important role in predicting information-seeking behaviors, perceived helpfulness of center-sponsored activities, and overall satisfaction with care received at the center. Evidence also was found that perceptions of the health-care environment mediated cancer patients' WTCH. The implications of these findings for communication theory and application, as well as limitations and future directions for research, are discussed.

Two significant trends in modern health care are the privileging of a "patient-centered" perspective over a "disease-centered" perspective and the creation of acute-care centers for those with particular health needs that stand in sharp contrast to traditional medical facilities such as hospitals. A patient-centered perspective promotes health care based on individual patients' unique characteristics, conditions, and circumstances (see, e.g., S. J. Brown, 1999; Gerteis, Edgman-Levitan, Daley, & Delbanco, 2002; R. C. Smith, 2002; Stewart et al., 2003; Warner, 1998). A growing number of acute care centers offer relatively "holistic" approaches to meet individual health-care needs through both traditional interactions between patients and physi-

cians, nurses, and other health-care personnel (e.g., about treatments) and "alternative" health-care practices, such as complementary therapies (e.g., massage and relaxation sessions), support groups, and social group activities (e.g., outings; see, e.g., Lefkowitz, 2006).

To be optimally effective, patient-centered health care and acute care centers emphasize patients' active participation in their health care. The consequences of doing so are apparent, as studies show that greater patient involvement in the health-care process is linked to increased patient satisfaction with medical encounters, better adherence to treatments, and positive health outcomes such as reduced stress, pain, and symptom distress (see, e.g., J. B. Brown, Stewart, & Ryan, 2003; Golin, DiMatteo, & Gelberg, 1996; Greenfield, Kaplan, & Ware, 1985).

An important factor underlying patients' participation in their health care is their willingness to communicate about

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their health. To be actively involved in their health care, patients must talk with health-care personnel and others (e.g., their families) about their health. Research, however, indicates that individuals facing health concerns vary in their willingness to communicate about health (WTCH) issues and in health-care situations (e.g., Bauman, Gerverey, & Siegel, 1992; Brashers, Haas, Klinge, & Neidig, 2000; Brashers, Haas, Neidig, & Rintamaki, 2002; S. Ford, Fallowfield, & Lewis, 1996; Ward, Leventhal, Easterling, Luchterhand, & Love, 1991).

This study investigates the role that WTCH plays among predominately older patients in an acute cancer center that offers a holistic approach to cancer care. Cancer is a particularly significant disease to study given that in 2002 over 10 million U.S. citizens had a history of cancer, and about 1.4 million new cases were expected in 2006 (American Cancer Society, 2006). Cancer is now the second-leading cause of death in the United States, accounting for 1 of every 4 deaths, with more than 1,500 people dying of it daily (American Cancer Society, 2006). Given the scope of this health issue, it is not surprising that cancer has attracted the application of a patient-centered care perspective (see, e.g., Kreps, 2003; Nussbaum, Baringer, & Kundrat, 2003; O'Hair et al., 2003) and the creation of acute care centers (see, e.g., Richardson, Sanders, Palmer, Greisinger, & Singeltary, 2000).

What is surprising is the lack of studies of whether and how communication may help people to cope with living with cancer (Kreps, 2003). O'Hair et al. (2003) noted that studies of patient communication following a diagnosis of cancer are infrequent, and they suggested that more empirical research on postdiagnostic communication processes is needed. This study seeks to fill that gap in the literature by examining the role that WTCH may play in those who utilized the acute cancer center investigated. Specifically, the study assesses relationships between people's WTCH and their information seeking, participation in activities the center offered to cope with cancer, and their satisfaction with the center. In addition, we examine how WTCH may be mediated by patients' perceptions of the cancer center environment and by their health status. By exploring these relationships, we seek to shed light on the importance of communication in promoting patient-centered health care within acute care centers.

## LITERATURE REVIEW

The following literature review describes the concept of WTCH, examines information seeking by people with cancer and how it might be related to WTCH, explains how that willingness may be mediated by patients' perceptions of the health-care environment and by their health status, and then offers hypotheses about the relationships between these variables. We then examine other communicative practices offered at the acute cancer center studied and how participation in, and

the perceived helpfulness of, those practices might be related to WTCH and the other variables studied.

## WTCH

The communication trait of *willingness to communicate* (WTC) was defined by McCroskey and Richmond (1998) as "an individual's predisposition to initiate communication with others" (p. 120). Evolving from work conducted by Burgoon (1976) and Mortensen, Arnston, and Lustig (1977) on predispositions toward verbal behavior, and by McCroskey and Richmond (1982) on shyness, the WTC trait was introduced by McCroskey and Richmond in 1985, followed by an instrument to measure it (McCroskey, 1992; McCroskey & Richmond, 1987). Although WTC is generally conceived as a relatively enduring trait, McCroskey and Richmond (1998) contended that it is often affected by situational characteristics.

WTCH represents a situational application of the WTC construct. The concept is grounded in the research evidence that people often differ with respect to the extent to which they are comfortable talking about health in general and with regard to particular aspects of their health (see, e.g., Brashers, Haas, & Neidig, 1999; Crowell, 2004; Eaton & Tinsley, 1999; Morgan & Miller, 2002; S. W. Smith, Kopfman, Massi-Lindsey, Yoo, & Morrison, 2004). Brashers et al. (1999), for instance, argued that patients often differ in their willingness to take an active role when communicating with physicians. Cline (2003) also found that individuals find it difficult to talk about health-related issues, particularly the topics of body image, fears, symptoms and body functions, and death. With regard to cancer, specifically, S. Ford et al. (1996) showed that those with cancer often do not feel comfortable talking about their illness with medical personnel, and Siminoff and Fetting (1991) found that the emotions of people living with cancer often were the least-discussed topic in a medical setting. Individuals with cancer may also feel uncomfortable talking about their health with other people, such as family members and friends, because they do not want to burden them with the problems caused by the disease (DiMatteo & Hays, 1981; Gotcher & Edwards, 1990).

To assess people's WTCH, Wright, Frey, and Sopory (2007) developed and tested a WTCH scale with two distinct samples (people living with cancer and undergraduate students). The results indicated similarities for the WTCH scale item-factor solutions across both samples and significant relationships among WTCH, patient-self advocacy, and health information seeking. Health information seeking is especially important for those with cancer.

## Health Information Seeking and WTCH

A cancer diagnosis, like many other serious illnesses, is a traumatic event that can produce many uncertainties for

those affected about the course of the disease, lifestyle changes, treatment options, and effects on their relationships with others (Kahana & Kahana, 2001; Kreps, 2003). People with cancer not only must learn to cope with these initial aspects of the cancer diagnosis but must also adapt to the many uncertainties of living with this disease, such as individual differences in response to treatments and difficulty in accurately predicting length of survival. These uncertainties often lead to confusion and emotional stress that can exacerbate physical problems and lead to a lower quality of life (Albrecht & Goldsmith, 2003).

The experience of such uncertainty is directly linked to the communication processes of gathering and interpreting information about an illness (Babrow, 2001; Brashers, 2001; Parrott, Stuart, & Cairns, 2000). Babrow (2001) developed problematic integration theory to understand the communicative processes people facing illness use to manage health information in their efforts to deal with uncertainty, although relatively little work has focused on people with postdiagnosis cancer. In line with that theory, O'Hair et al. (2003) contended those with cancer (and other illnesses) manage these uncertainties by acquiring information from many different sources (e.g., health-care providers, friends, news sources, and Web sites). One central source for information for those living with cancer, of course, is their health-care provider. Cancer treatment, ideally, is a collaborative communication process between health-care providers and those living with cancer (Baile & Beale, 2001; Kreps, 2003), and information seeking by those with cancer has been associated with patients discussing information with physicians (Czaja, Manfredi, & Price, 2003). Information initiated by those with cancer or gathered from them by health-care providers is also crucial to patient-centered care providers for recommending treatment options that are most appropriate for the particular person affected (Kreps, 2003).

People living with cancer, however, potentially have a variety of other sources of information apart from their health-care providers, including family, friends, fellow patients, and other people they know who have the disease (see, e.g., Johnson, 1997; O'Hair et al., 2003). These interpersonal relationships are potentially important sources of information about cancer, and they can be highly influential in providing people with cancer with information that may help them to make treatment decisions and in offering them social support (Kreps, 2003). In addition, there are a variety of mediated sources of information available to those coping with cancer, such as books and, especially now, Internet resources (see e.g., Viswanath, 2005) such as the National Cancer Institute's Cancer Information Service (see, e.g., Squires et al., 2006). Information about cancer, thus, is more abundant and more available than ever before.

Although health information seeking results in significant beneficial effects for those with cancer, such as increased knowledge about cancer, better coping, less

stress, more social support, and appropriate changes in lifestyle (see, e.g., Shim, Kelly, & Hornik, 2006; for a review, see van der Molen, 1999), many factors influence health information seeking by those with cancer. Recent research has focused on cancer patients' ethnicity (e.g., Kakai, Maskarinec, Shumay, Tatsumura, & Tasaki, 2003; Nguyen & Bellamy, 2006), information needs (e.g., Bennenbroek, Buunk, Van der Zee, & Grol, 2001; Boberg et al., 2003; Lock & Wilson, 2002), and media preferences (e.g., James, James, Davies, Harvey, & Tweddle, 1999; Mills & Davidson, 2002; Wallberg et al., 2000). Most relevant to this study, Eaton and Tinsley (1999) and Robinson (2003) found that general personality traits (communication apprehension and extroversion) are related to patient information seeking and participation in health contexts. This study extends that work by focusing on WTCH and information seeking by those with cancer. Moreover, this study explores the role of two mediating variables—patients' perceptions of health-care environment and health status—on that and the other relationships studied.

### Health-Care Environment and WTCH

There is some evidence that WTCH may be mediated by patients' perceptions of the health-care environment when confronting illness (du Pré, 1998; Frey, Adelman, Flint, & Query, 2000; Kreps & Thornton, 1992). Frey et al. (2000), for example, found that residents' perceptions of an AIDS comprehensive care residence as an "interpersonal" environment versus an "institutional" environment influenced the degree to which they interacted with other residents and staff, including talking about AIDS and seeking social support. Health-care environments perceived to be more interpersonally oriented, thus, should positively influence the degree to which those living with cancer seek information.

### Health Status and WTCH

Research has found that health status influences the types of individuals with whom those who are ill interact and seek information. For example, researchers drawing on socioemotional selectivity theory have shown that social network patterns differ depending on whether a person is in the early or late stages of an illness due to a reprioritization of goals based on time perspective (Carstensen & Fredrickson, 1998; Carstensen, Isaacowitz, & Charles, 1999; Lockenhoff & Carstensen, 2004). In general, individuals in the late stages of a terminal illness tend to prefer "strong ties" (e.g., significant other, family members, and friends) due to a limited time perspective and the emotionally meaningful nature of these relationships, whereas individuals in earlier stages of an illness have a more open-ended time perspective and are more likely to interact with and seek information from more diverse social network members (e.g., support groups and other "weak ties"). In some cases, individuals with a limited

time perspective may restrict their social networks to a few key individuals and seek health information from noninterpersonal sources such as the media (Lockenhoff & Carstensen, 2004). Thus, it is important to assess individuals' health status when investigating their health information-seeking practices.

Based on the findings from the studies reviewed, it appears that a combination of WTCH, perceptions of the health-care environment, and health status likely influence health information seeking by those who are ill. However, no studies to date have assessed the impact of these variables on health information seeking, despite empirical evidence that suggests they may be influential. Therefore, the following hypotheses were posed for this study:

- H1: A combination of patients' WTCH with providers, perceptions of the cancer center as an interpersonal environment, and health status scores will be positively associated with the amount of information that people with cancer seek from cancer center providers.
- H2: A combination of patients' WTCH with nonproviders, perceptions of the cancer center as an interpersonal environment, and health status scores will be positively associated with the amount of information that people with cancer seek from nonproviders.
- H3: A combination of patients' WTCH in general, perceptions of the cancer center as an interpersonal environment, and health status scores will be positively associated with the amount of information that people with cancer seek from cancer center media sources.

#### Other Communicative Practices for Coping with Cancer and WTCH

Although information is an important form of communication for coping with cancer (and other illnesses), it is but one communicative means of meeting the needs of those living with cancer. Modern cancer centers, such as the one investigated in this study, often offer many other communicative practices that range from relatively intrapersonal practices (e.g., teaching people how to keep a journal) to collective practices that deal with cancer (e.g., support groups) or provide opportunities to socialize with others (e.g., outings with other patients). Many of these communicative practices are designed to provide people with social support, which may help to offset deficiencies in people's traditional social networks when it comes to communicating about cancer (see, e.g., Helgeson, Cohen, Schulz, & Yasko, 2000; Martin, Davis, Baron, Suls, & Blanchard, 1994; Wright & Frey, *in press*), and offer people with cancer ways to manage their uncertainties about the nature of cancer, treatment options, and ways of coping with the disease (L. A. Ford, Babrow, & Stohl, 1996). Kreps and Massimilla

(2002) concluded that positive support can help cancer patients to improve coping behaviors, reduce psychological distress, increase their overall quality of life, and potentially extend their survival time.

Although the relationship between WTCH and participation in such communicative activities has not been studied previously, it is reasonable to assume that WTCH influences whether people participate in such activities and the degree to which they perceive such activities to be helpful in coping with cancer. Moreover, health status should mediate people's participation in such activities; for example, people in the late stages of cancer may not have the physical strength to attend support group meetings or social outings sponsored by a cancer center, whereas people who are functioning reasonably well in terms of health status (or perceive that they are) may be more likely to participate in such activities. Finally, it also is likely that WTCH (controlling for both perceived and physical health status) influences people's satisfaction with the services provided by an acute cancer center—an important outcome variable to assess because it has been found to influence a variety of health outcomes, such as increased patient adherence (see Di Palo, 1997; Greene, Majerovitz, Adelman, & Rizzo, 1994; Williams & Calnan, 1991)—but it is unknown whether WTCH and satisfaction are mediated by perceptions of the cancer center as an interpersonal environment. Therefore, the following research questions were posed:

- RQ1: Is a combination of patients' WTCH in general, perceived health, and physical health associated with the degree of perceived helpfulness of cancer center activities in coping with cancer?
- RQ2: Is a combination of patients' WTCH in general, perceptions of the center as an interpersonal environment, perceived health, and physical health associated with satisfaction with the cancer center?

## METHOD

### Cancer Center Site

The cancer center site selected for study is located in a large southern U.S. city and serves approximately 1,000 patients. The cancer center is similar to other centers that offer clients a more holistic approach to cancer care as compared to traditional hospital settings. In addition to standard interactions with oncologists and other staff, the cancer center offers many other activities (most of which can be viewed as communicative practices) in which clients can participate, including a support group, an information group, a spiritually based group, complementary therapies (e.g., massage), a library, Internet resources (including a center Web site), a journal-keeping exercise, and social group activities (e.g., outings). Moreover, much of the center is physically structured in a nontraditional environment,

including support group meeting space and a patient area designed to look like a comfortable living room.

Access to this cancer center was obtained by the first author, who approached center administrators about conducting a study to assess relationships among clients' predispositions toward communicating about health, health information-seeking practices, and participation in cancer center activities. The center administrators were interested in understanding the relationships between these variables and how the center's sources of information and the activities offered there could be improved based on the findings of such a study. An oncologist from the cancer center volunteered her time to recruit clients for the study.

### Sample Characteristics

Over a 9-month period, 95 patients who made use of the cancer center completed the questionnaire employed. The oncologist volunteer approached individuals during scheduled appointments at the cancer center and asked them to complete the questionnaire. Participation was voluntary, and participants were told that they would receive the findings after the study was completed. The researchers obtained institutional review board approval for this research from their institution, and all participants read and signed an informed consent form prior to participating in the study.

The average age of the sample was 59.81 ( $SD=12.64$ ) years. Thirty of the respondents were men and 65 were women. The majority of the sample was White, but 21% of the participants were African-Americans. Clients ranged in their affiliation with the cancer center from 3 visits to 25 years. The following types of cancer and numbers of people with them were represented in the sample: breast cancer (26), lymphoma (17), colon (10), lung (9), prostate (4), leukemia (4), and other (25).

### Questionnaire Items

The questionnaire employed contained the following measures. Factor analyses were conducted on each measure created by the researchers, and Cronbach's alpha was used to assess the reliability of each factored measure.

**WTCH scale.** The researchers used Wright et al.'s (2007) instrument to measure patients' WTCH. This instrument consists of 10 items measuring a person's willingness to communicate about his or her health with a variety of people, rated using a 5-point Likert-type scale, with higher numbers indicating greater willingness. This measure has two dimensions: "willingness to communicate with providers" ( $\alpha = .71$ ) and "willingness to communicate with nonproviders" ( $\alpha = .75$ ). The summed items for these two factors (WTCH-providers and WTCH-nonproviders) constituted the operationalization of participants' WTCH (total WTCH).

**Sources of health information.** Participants were first asked to indicate the amount of information they had received about cancer from the center—specifically, from center physicians, nurses, receptionists, support groups, other patients, and the center's Web site—using a 5-point Likert-type scale ranging from 1 (*none*) to 5 (*very high*). An exploratory factor analysis revealed a three-factor solution ( $\alpha = .91$ ), with Amount of Information Obtained From Providers as the first factor, Amount of Information Obtained From Nonproviders (including other patients within the center and friends outside the center;  $\alpha = .91$ ) as the second factor, and Amount of Information Obtained From Cancer Center Media Sources ( $\alpha = .92$ ) as the third factor (see Table 1).

**Perceived helpfulness of cancer center activities.** As previously mentioned, this cancer center offers a number of activities for patients that are frequently recommended by center physicians and other providers. Respondents were asked to evaluate each activity they had participated in with regard to how much it helped them to cope with cancer, using a 5-point Likert-type scale ranging from 1 (*very unhelpful*) to 5 (*very helpful*). A factor analysis revealed a three-factor solution, with Outings and Use of Center Media ( $\alpha = .87$ ) as the first factor, Support/Information Groups and Journal Keeping ( $\alpha = .83$ ) as the second factor, and Spiritually Based Group/Complementary Therapies ( $\alpha = .72$ ) as the third factor (see Table 2). The summed items for these three factors subsequently were used as the operationalization of clients' perceptions of the cancer center's activities.

**Perceived health status.** Participants were asked to describe their present health and quality of life using a 5-point Likert-type scale ranging from 1 (*poor*) to 5 (*excellent*). A factor analysis revealed that these two items loaded on one factor ( $\alpha = .87$ ); therefore, the summed score of these two items was operationalized as a measure of perceived health status.

**Physical health status.** The Eastern Cooperative Oncology Group (ECOG) Performance Status Scale

TABLE 1  
Factor Loadings for Sources of Health Information

Source	Amount		
	Factor 1	Factor 2	Factor 3
Physician	.18	.81	.05
Nurse	.22	.88	.17
Receptionist	.27	.83	.26
Center support group	.62	.01	.23
Other patients	.80	.26	.47
Significant other	.79	.29	.20
Friend	.78	.36	.43
Books in center library	.32	.17	.81
Center videos	.29	.14	.82
Center Internet	.33	.10	.71

TABLE 2  
Factor Loadings for Cancer Center Communicative  
Practices/Activities

Item	Factor 1	Factor 2	Factor 3
Support group	.34	.92	-.29
Information group	.31	.92	-.27
Complementary therapies	.38	.03	.78
Spiritually based group	.04	.12	.72
Library	.88	.35	.14
Internet resources	.88	.47	.11
Journal keeping	.39	.85	.09
General outings	.95	.46	.01
Social group activities	.91	.24	.01

(Oken et al., 1982) was used to measure participants' physical health status. Oncologists use this scale extensively to evaluate the functional ability of those living with cancer to perform daily living activities at a given point in time. The measure ranges from a score of 0, which represents a person who is fully active and able to perform all predisease daily activities without restriction, to a score of 4, which indicates a person who is completely disabled, confined to a bed or chair, and who cannot engage in any form of self-care. An oncologist from the cancer center rated each participating client on the ECOG scale based on the client's physical performance at the time that the questionnaire was completed.

**Cancer center perceptions.** To gain an understanding of how participants perceived the cancer center, we adapted metaphors from Frey et al.'s (2000) study of an AIDS residence. Participants were asked to indicate how strongly they agreed or disagreed, using a 5-point Likert-type scale (with higher scores reflecting greater agreement), with six metaphors (listed in alphabetical order) that described the cancer center: family, home, hospice, hospital, institution, and sanctuary. Because the original scale was modified slightly, an exploratory factor analysis was conducted to assess item loadings. Similar to the original scale, the first factor, Interpersonal Center Perception ( $\alpha = .74$ ), comprised the family, home, and sanctuary metaphors, and the second factor, Institutional Center Perception, comprised the hospice, hospital, and institution metaphors ( $\alpha = .81$ ; see Table 3). For this study, the institutional

TABLE 3  
Factor Loadings for Cancer Center Metaphors

Metaphor	Interpersonal	Institutional
Family	.86	.10
Home	.89	.01
Hospice	.02	.73
Hospital	.03	.90
Institution	.09	.90
Sanctuary	.70	.14

perception items were reverse-coded and a composite score was created by adding the scores from the two factors.

**Cancer center satisfaction.** Satisfaction with the cancer center was measured by three items, using a 5-point Likert-type scale (with higher scores reflecting greater satisfaction): (a) "I am very satisfied with the cancer center," (b) "I would strongly recommend the center to other people in need of its services," and (c) "Overall, the cancer center is a positive place." A factor analysis revealed these items to be a unidimensional scale, with a reliability coefficient of .93. Therefore, a summed score on these three items was used as the operationalization of participants' satisfaction with the cancer center.

## RESULTS

H1 predicted that a combination of patients' WTCH with providers, perceptions of the center as an interpersonal environment, and perceived health would be positively associated with the amount of information sought from cancer center providers. A multiple-regression analysis using WTCH-provider scores, interpersonal center perception scores, and perceived health scores as predictor variables (testing for interaction effects) and provider information source scores as the dependent variable revealed a significant interaction effect between WTCH-provider and interpersonal center perception scores,  $F(1, 77) = 14.16$ ,  $\beta = .44$ ,  $t = 3.76$ ,  $p < .001$ , but no interaction effect with perceived health scores,  $F(1, 77) = .054$ ,  $\beta = .06$ ,  $t = .23$ ,  $p > .05$ . The results thus provided only partial support for H1.

H2 predicted that a combination of patients' WTCH with nonproviders, perceptions of the center as an interpersonal environment, and perceived health would be positively associated with the amount of information sought from nonproviders. A multiple-regression analysis using WTCH-nonprovider scores, interpersonal center perception scores, and perceived health scores as predictor variables (testing for interaction effects) and nonprovider information source scores as the dependent variable revealed a significant interaction effect between WTCH-nonprovider and interpersonal center perception scores,  $F(1, 77) = 7.75$ ,  $p < .001$ ,  $\beta = .14$ ,  $t = 2.78$ ,  $p < .001$ , and between interpersonal center perception and perceived health scores,  $F(1, 77) = 5.69$ ,  $p < .05$ ,  $\beta = .20$ ,  $t = 2.39$ ,  $p < .05$ , in predicting non-provider information source scores. The results thus supported H2.

H3 predicted that a combination of patients' WTCH in general, perceptions of the center as an interpersonal environment, and perceived health would be positively associated with the amount of information participants sought from cancer center media sources. A multiple-regression analysis using total WTCH scores, interpersonal center perception scores, and perceived health scores as predictor

variables (testing for interaction effects) and cancer center media information source scores as the dependent variable revealed a significant interaction effect between total WTCH and interpersonal center perception scores,  $F(1, 77) = 14.17, p < .001, \beta = .44, t = 3.76, p < .001$ , but no interaction effect with perceived health scores,  $F(1, 77) = .05, p > .05, \beta = .06, t = .23, p > .05$ , in predicting cancer center media information source scores. The results thus provided partial support for H3.

RQ1 asked whether a combination of patients' WTCH in general, perceived health, and physical health was associated with the perceived helpfulness of cancer center activities in coping with cancer. A series of multiple-regression analyses were conducted (testing for interaction effects) using total WTCH scores, perceived health scores, and ECOG (physical health) scores as predictor variables and perceived helpfulness of cancer center activity scores (for each of the three types of activities) as the dependent variable. The analyses revealed a significant interaction effect between total WTCH and ECOG scores,  $F(1, 77) = 4.74, p < .05, \beta = .63, t = 2.18, p < .05$ , but no interaction effect with perceived health scores,  $F(1, 77) = .04, p > .05, \beta = .02, t = .19, p > .05$ , in predicting outings and use of cancer center media. With regard to predicting the perceived helpfulness of support/information groups and journal-keeping activities, the regression analysis indicated a significant interaction effect between total WTCH and ECOG scores,  $F(1, 77) = 7.05, p < .05, \beta = .64, t = 2.66, p < .05$ , but no interaction effect with perceived health,  $F(1, 77) = .05, p > .05, \beta = .02, t = .23, p > .05$ . Finally, in terms of predicting the perceived helpfulness of spiritually based groups/complementary therapies, the regression analysis found a significant interaction effect between total WTCH and ECOG scores,  $F(1, 77) = 5.56, p < .05, \beta = .37, t = 2.36, p < .05$ , but no interaction effect with perceived health,  $F(1, 77) = .001, p > .05, \beta = -.002, t = -.04, p > .05$ .

RQ2 asked whether a combination of patients' WTCH in general, perceived health, perceptions of the center as an interpersonal environment, and physical health was associated with satisfaction with the cancer center. A regression analysis revealed a significant interaction effect between perceived health and total WTCH scores,  $F(1, 77) = 4.43, p < .05, \beta = .06, t = 2.11, p < .05$ , and between total WTCH and interpersonal center perception scores,  $F(1, 77) = 4.83, p < .05, \beta = .07, t = 2.20, p < .05$ , in predicting satisfaction with the cancer center. However, there was no interaction effect between total WTCH and physical health scores,  $F(1, 77) = 2.16, p > .05, \beta = .02, t = 1.50, p > .05$ .

## DISCUSSION

The purpose of this study was to investigate the role of WTCH among patients of a state-of-the-art cancer center. Specifically, we examined relationships between cancer

patients' WTCH and their information-seeking behaviors, perceived helpfulness of activities that the center offered to cope with cancer, and satisfaction with the cancer center. In addition, we explored how these relationships may be mediated by patients' perceptions of the health-care environment and by their health status.

The results showed that patients' WTCH was an important communication predisposition related to the amount of information that they sought from all three information sources (providers, nonproviders, and media sources). This finding supports research that general personality/communication traits, such as extroversion and communication apprehension, influence patients' active participation in health care, such as information seeking (Eaton & Tinsley, 1999; Robinson, 2003). In addition, it extends this work by focusing specifically on the relationship between the situational communication trait of WTCH and information-seeking behaviors, and by examining that relationship within the context of an acute cancer center.

Of particular interest is the finding that patients' perceptions of the cancer center as an interpersonal environment may be an important mediating variable facilitating their WTCH with providers and with nonproviders and when seeking information from media sources. Research has found that patients' health-care environment perceptions may influence their communicative behaviors (du Pré, 1998; Frey et al., 2000; Kreps & Thornton, 1992), and this study links such perceptions to patients' information-seeking practices. This finding could have important implications for improving the quality of patient care in similar health-care settings. For example, interventions could be developed to enhance the environment and/or the interpersonal communication skills of physicians, nurses, leaders of support groups and other activities, and other staff within similar cancer centers.

Participants in this study mentioned the home-like setting, frequent opportunities to interact with other cancer survivors, and the extra time that oncologists and other staff members spent with them as the most important features of the cancer center that made them feel comfortable and more likely to participate in the activities the center offered. However, one limitation of this study is that only general perceptions of the health-care environment were assessed as opposed to specific environmental features. Future research should assess more specific features that lead such an environment to be perceived as interpersonally oriented. In addition, future work would benefit from comparing traditional health-care settings to more interpersonally oriented settings to assess the degree to which these environments potentially affect patients' information-seeking practices.

These findings also have implications for the process of information management for people facing illness. Information management is an important component of problematic integration theory (Babrow, 2001), and that theory has been applied to health-care settings (Babrow, Hines, & Kasch,



2000; Brashers, Goldsmith, & Hsieh, 2002; Hines, Babrow, Badzek, & Moss, 2001). *Information management* refers to cognitive and communicative activities that contribute to a person's knowledge or beliefs, such as seeking, avoiding, and interpreting environmental stimuli (Brashers, Goldsmith, et al., 2002). Researchers using problematic integration theory have examined the complex ways in which people seek and avoid health information from a variety of sources, including providers, peers, family, and mediated sources (Babrow et al. 2000; Brashers, Neidig et al., 2000). Brashers, Goldsmith, et al. (2002) contended that within health settings, "Information seeking and avoiding are collaborative activities that require negotiation and collaboration among participants" (p. 266). The findings from this study are consistent with this aspect of problematic integration theory, and they extend previous work by demonstrating the role that WTCH may play in this collaborative process of information management. Collaboration and negotiation assume that people are willing to talk about their health with others; hence, patients' WTCH may be an important predisposition to assess when examining their information-management behaviors. In addition, the findings provide evidence for the mediating role that patients' perceptions of the health-care environment may play in their WTCH and information-seeking behaviors within health-care settings. Future research would benefit by continuing to examine these variables with respect to the health information-seeking process, particularly with regard to information avoidance.

Participants' perceived health did not interact with their WTCH in terms of predicting the amount of information that they sought from the three sources, as originally hypothesized. Perhaps patients' perceived health status does not considerably influence their overall predisposition to communicate about health when seeking health information, especially when the health-care context is perceived to be interpersonally oriented. Although previous research has found that health status can influence social network choice (Carstensen & Fredrickson, 1998; Lockenhoff & Carstensen, 2004), perhaps the relatively small sample size made it difficult to detect differences in the amount of information that patients sought from the various sources based on their perceived health status.

Another limitation of this study is that it did not focus on patients' motives for communicating with others in the cancer center. Individuals' motives likely influence the degree to which they are willing to communicate about health issues. For example, researchers drawing on problematic integration theory have found that variables such as information source convenience influence people's information-seeking behaviors (Brashers, Goldsmith, et al., 2002; Johnson, 1997), and the fear of being stigmatized or receiving inappropriate support from social networks may deter people from gathering information from interpersonal sources and lead them to rely on mediated sources

(Brashers, 2001; Brashers, Goldsmith, et al., 2002). Future research should examine specific goals that people with cancer have for communicating with certain sources of information, as well as other variables that could influence their WTCH.

The findings from this study also suggest that patients' predispositions toward communicating about their health were related to their perceptions of the helpfulness of cancer center activities such as joining a support group or going on outings with other clients. However, it appears that patients' physical health status is an important mediating variable in predicting the perceived helpfulness of such activities, especially in cases where individuals have limited mobility or are too sick to engage in certain types of activities. Physical health status, thus, is an important variable to consider when designing activities for older cancer patients, many of whom may have limited mobility due to other health problems (e.g., arthritis), in addition to cancer-related physical health issues. Limited mobility certainly could affect the perceived helpfulness of the activities that comprised Factor 1 (cancer center library, cancer center Internet resources, and outings), activities (at least the first and last ones) that require patients to physically go to the cancer center or to another location. The cancer center studied does provide Internet services to patients, but many of these individuals reported that they did not have Internet access at home. This finding could be due to the older sample studied and the fact that older individuals still represent a relatively small segment of all Internet users in terms of using it for health-related concerns (Wright & Query, 2004), which poses problems for cancer (and other health-care) centers that provide information via the Internet to an older clientele.

The salient issues associated with increased age are relevant to this study, of course, because of the sample participants' age ( $M = 59.81$ ). Research has shown, for instance, that older individuals who are ill rely primarily on their immediate network of family and friends for social support (as opposed to fellow survivors), experience significant problems interacting with health-care providers, and demonstrate memory problems that may affect the processing of cancer-related information (Nussbaum et al., 2003; Thompson, Robinson, & Beisecker, 2004). Hence, this age group may not be representative of other age groups, especially in terms of WTCH, although issues such as health status cut across age groups, and older individuals are the most significant population affected by cancer, constituting over 60% of people with cancer in the United States (Cohen, 1999; see also the essays in Sparks, 2003). Future research, however, needs to determine whether the findings from this study apply to other age groups (e.g., middle-age or younger populations).

In terms of the RQ1, both WTCH and physical health status should be factors influencing patients' participation in cancer center support groups and spiritually based

groups, but it is less clear why journal keeping loaded on the same factor as support groups (although patients are asked to attend journal-keeping workshops with cancer center staff). Given the relatively small sample size, it is possible that the factor analyses yielded a relatively unstable factor structure for these items. However, it is likely that WTCH plays an important role in terms of patients' participation in, and satisfaction with, such activities.

Finally, RQ2 asked about relationships between patients' WTCH, perceived health, physical health, perceptions of the center as an interpersonal environment, and satisfaction with the cancer center. The finding that patients' WTCH was positively associated with their satisfaction is consistent with previous work, such as the positive relationship found between patient-initiated topics and health-care satisfaction (see Greene et al., 1994). Future research should examine specific health-related topics that patients are willing to discuss in health-care settings, in addition to their general tendency to discuss health-related issues.

The significant interaction effect between patients' WTCH and perceptions of the center as an interpersonal environment in predicting satisfaction with the cancer center demonstrates the importance of health-care environment perceptions as a mediating variable. This finding suggests that creating a health-care environment that puts patients at ease, promotes a safe place to discuss health issues, and contains policies or structures that facilitate interpersonally oriented interaction between patients and providers, staff, and other patients may increase patients' satisfaction. These findings thus extend work on perceptions of health-care environments (du Pré, 1998; Frey et al., 2000; Kreps & Thornton, 1992) by linking such perceptions to patient satisfaction. The analysis also indicated that patients' perceived health (although not physical health) influenced their satisfaction with the center, suggesting that those who perceived that their health was not improving or who perceived a diminished quality of life found the center to be less satisfying than those individuals who had more positive perceptions of their health status. Although this is a difficult problem to remedy given the aggressive nature of certain forms of cancer, acute cancer centers should continue to find ways to improve patients' quality of life throughout the course of their cancer treatments. Future work should continue to examine these and other variables that may influence patient satisfaction in these and other health-care settings.

## CONCLUSION

A patient-centered approach to health care emphasizes people taking a proactive approach by communicating about their health with health-care providers and others. Health communication scholarship contributes substantially to this approach when it reveals the important role that communication plays in helping to meet the information needs of those

who are ill. This study demonstrated the significant effects of a relatively new communication predisposition—WTCH—in an important health-care environment—an acute cancer care center. Understanding how this communication predisposition is related to patients' perceptions and behaviors, and, in turn, how that communication predisposition is mediated by the health-care environment and other important factors, undoubtedly will prove helpful in promoting patient-centered health care within this and other cancer care centers and, hopefully, in other health-care settings.

## ACKNOWLEDGMENT

The authors thank Cathy Oster, M.D., of the Memphis Cancer Center, for her invaluable contributions to this project.

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