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Breaking Bad News: Effect Of Physician Communication On Analog Patients' Response

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BREAKING BAD NEWS: EFFECT OF PHYSICIAN COMMUNICATION ON ANALOG PATIENTS' RESPONSE

by

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ABSTRACT OF THE DISSERTATION

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Breaking bad news is a difficult, yet unavoidable part of healthcare for physicians and patients alike. Although expert opinion suggests that certain strategies for breaking bad news may be better than others, there is little methodologically rigorous research to support current guidelines. This study used an experimental paradigm to test two communication strategies, forecasting bad news and framing prognostic information, when giving people a life-limiting diagnosis of colon cancer. Videotapes depicted a physician disclosing a diagnosis of cancer and discussing prognosis. Participants (N = 128) were asked to imagine they were going to see a doctor for physical symptoms they had been experiencing and were randomly assigned to one of one of four videotape conditions: (a) bad news warning (i.e., "I'm afraid I have bad news."), positive outcome framing (e.g., chances of survival); (b) no warning, positive outcome framing; (c) bad news warning, negative outcome (e.g., chances of death) framing; or (d) no warning, negative outcome framing. Results showed that the type of warning recommended in current guidelines (and examined in this study) was not associated with lower

psychological distress (i.e., anxiety, affect), nor did it improve recall of consultation content. In contrast, individuals who heard a positively framed prognosis were significantly less anxious and had lower negative affect than those who heard a negatively framed prognosis. They rated their prognosis as significantly better than those who heard the negative frame and were significantly more hopeful. Despite these desirable outcomes, a trend toward reduced accuracy in recalling the prognostic statistics was observed in the positive condition. Because the goal of a prognostic discussion is generally to balance accurate knowledge with optimal psychological well-being, these findings suggest indirectly that mixed framing (i.e., explaining prognosis with both positive *and* negative frames) may be best, although further research is needed. The results from this study contribute to a growing body of literature exploring optimal approaches for communicating bad news in health care. Though individual differences preclude a one-size-fits-all approach, this empirical evidence should help doctors to communicate bad news in ways that enhance understanding while minimizing distress for each patient.

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CHAPTER 1: OVERVIEW

Breaking bad news, such as disclosing an alarming diagnosis or conveying poor prognosis, is reported to be one of the most difficult communication tasks faced by health care professionals (Hagerty, Butow, Ellis, Dimitry, & Tattersall, 2005). Many physicians describe this task as stressful, and patients relate experiences of receiving bad news from physicians whose approach was insensitive or inadequate (Butow et al., 1996; Christakis, 1999; Friedrichsen & Milberg, 2006). Numerous guidelines have been discussed in journal articles, editorials, and formal protocols in an effort to help physicians carry out these difficult conversations; however, these guidelines and recommendations tend to highlight only general communication strategies and are based largely on expert consensus (Baile et al., 2000). For example, guidelines often encourage physicians to forecast impending bad news with a warning, that is, a statement such as "I do not have good news." Though it is suggested that this type of warning may soften the blow and improve the patient's understanding, there is not yet research to support this claim.

Furthermore, these general guidelines rarely offer recommendations for how to discuss topics that are particularly difficult for physicians, such as disclosing poor prognosis to patients. It is debated, for instance, whether it is more beneficial to frame a prognosis in terms of positive outcomes (e.g., "You have a 30% chance of survival") or negative outcomes (e.g., "You have a 70% chance of death"; Rodriguez, Gambino, Butow, Hagerty, & Arnold, 2008). Discerning whether physicians' framing of prognosis might influence patients' recall and interpretation is critical (Gordon & Daughtery, 2003; Rodriguez et al., 2008), as research shows that patients tend to overestimate (i.e., are more positive about) their own prognosis (Mackillop, Stewart, Ginsburg, & Stewart,

1988). Moreover, these misjudgments tend to be associated with seeking more aggressive treatment compared with patients with more realistic understandings of their prognosis (Weeks et al., 1998).

In short, although expert opinion suggests that certain approaches to breaking bad news may be better than others, there is a dearth of methodologically rigorous investigations to support current guidelines. Little is known about "which of the personal, interpersonal, news-specific, situation-specific, and transmission-specific variables" may contribute to patients' recall, interpretation and response to bad news (Ptacek & Eberhart, 1996, p. 496).

The purpose of this dissertation was to examine the effect of forecasting bad news and framing prognostic information when people receive a life-limiting diagnosis. The study had the following specific aims:

1. Determine whether forecasting bad news affects psychological distress and information recall in analog patients receiving a hypothetical cancer diagnosis.
2. Determine whether the framing of the prognosis (positive outcome vs. negative outcome) influences psychological distress, recall, and interpretations of prognosis and feelings of hope in analog patients.
3. Determine whether analog patient characteristics (e.g., personality, age, education, health information style) interact with warning and framing to influence analog patient outcomes.

CHAPTER 2: LITERATURE REVIEW

Overview

Research on patient-physician communication has a relatively long history in the social, behavioral, and medical sciences. Research on breaking bad news, however, is limited. According to one review, fewer than 25% of publications on breaking bad news present original data (VandeKieft, 2001), and empirical data that are available tend to be based primarily on retrospective investigations and self-report studies of physician opinion and patient preferences (Ptacek & Eberhart, 1996). The literature reviewed in this chapter will focus primarily on studies of cancer patients, as the majority of research and discussion on breaking bad news has been conducted within oncology.

The first section of this review defines bad news and provides a general overview of the two forms of bad news that are examined in this study: diagnosis and prognosis. This is followed by evidence suggesting that patients often have high levels of distress and poor understanding of what they have heard after receiving bad news, varying with particular aspects of physician communication. Research on patients' preferences and physicians' perspectives on bad news delivery is then reviewed. A general discussion of practice guidelines is included next, followed by a more detailed discussion of two communication strategies: warning of impending bad news and framing prognostic information in terms of positive versus negative outcomes. This chapter concludes with a discussion of the limitations of prior studies and the associated need for controlled experimental studies to explore whether particular communication strategies can enhance patient recall and understanding while minimizing distress.

Bad News Defined: The Importance of Diagnosis and Prognosis

In healthcare, bad news is a phrase that is used liberally to describe any information that "results in a cognitive, behavioral or emotional deficit in the person receiving the news that persists for some time after the news is received" (Ptacek & Eberhardt, 1996, p. 496). This definition implies that, ultimately, the interpretation of bad news is subjective and may vary according to an individual patient's personality and past experiences (Fallowfield & Jenkins, 2004). Another commonly cited definition describes bad news as "any news that drastically and negatively alters the patient's view of his or her future" (Buckman, 1984, p. 1597). Most communication research has focused on bad news in the form of disclosing a diagnosis such as Alzheimer's disease or cancer; however, bad news may range from telling a patient that he needs to take medication for high cholesterol to telling family members that a patient has died. Conveying poor prognosis, that is, telling a patient that a cure is unlikely or that he does not have long to live, is reported to be an especially challenging communication task (Schofield & Butow, 2004).

Though sometimes assumed to be synonymous with life expectancy, prognosis generally refers to the predicted course and outcome of a disease. Prognosis considers both disease-related and treatment-related information including the spread of the disease, the chance of a cure, 5- or 10-year survival rates, qualitative expectations of disease progression, and differences in morbidity and mortality with and without treatment (Rodriguez et al., 2008). Some researchers distinguish between qualitative prognosis (i.e., the patient is/is not expected to die from this disease) and quantitative

prognosis (i.e., how long the patient is expected to live; Kaplowitz, Campo, & Chiu, 2002).

Although difficult for physicians to communicate and for patients to hear, bad news is an unavoidable part of healthcare. Ethical and legal standards in Western cultures encourage patients to be involved in medical decision-making, and emphasis is placed on the patient's own preferences for treatment and care. As such, patients need to understand both their diagnosis and prognosis, even when that information is bad, in order to make informed decisions according to their preferences and values. Indeed, studies have shown that how patients understand their diagnosis and estimate their prognosis is related to what treatments they choose to pursue (Weeks et al., 1998).

Challenges of Bad News Communication

Psychological Distress

In spite of the inherently subjective nature of bad news, receiving a diagnosis of cancer, particularly one with poor prognosis, can be expected to incite some level of fear and distress. A certain amount of anxiety is normal in response to a diagnosis of cancer, yet many patients experience more severe, clinically significant psychological distress that can interfere with their quality of life and ability to manage and cope with the disease (Schofield & Butow, 2004). For instance, a large study of approximately 4,500 patients with newly diagnosed cancer found that 18% had clinically significant levels of depression and 24% had clinically significant levels of anxiety as assessed with the Brief Symptom Inventory (Zabora, Brintzenhofeszoc, Curbow, Hooker, & Piantadosi, 2001).

A smaller study of women with ovarian cancer reported similar findings, with 35% of patients evidencing mild to moderate depressive symptoms and 20% showing

moderate to severe depression using the Beck Depression Inventory (Norton et al., 2004). Notably, one investigation found that the level of mood disturbance shortly after lung cancer diagnosis (before beginning treatment) was the strongest predictor of mood disturbance 6 months later, even after controlling for patient characteristics such as coping style and response to treatment (Akechi et al., 2006). Although the authors of that investigation did not control for prediagnosis mood, this preliminary evidence suggests that steps taken to minimize anxiety and depression early in the healthcare encounter may be important for minimizing longer term psychological distress. Only limited research, however, has examined the extent to which facets of physician communication contribute to patients' anxiety and depression following bad news.

One such study found that breast cancer patients' psychological adjustment 6 months after surgery was significantly associated with patients' recall of their physician having a caring and empathic attitude when communicating the cancer diagnosis (Roberts, Cox, Reintgen, Baile, & Gibertini, 1994). Other studies have reported similar results (e.g., Butow et al., 1996; Omne-Ponten, Holmber, & Sjoden, 1994). In addition, a survey of patients with gynecologic cancer found that patients who were anxious and/or depressed were more likely to report that their physicians had held back information when communicating the diagnosis compared with patients without anxiety or depression. Anxiety was also associated with a greater need for emotional support at the time of the diagnosis, and women who were depressed were more likely to report feeling dissatisfied with the doctor-patient relationship (Paraskevaidis, Kitchener, & Walker, 1993).

Another retrospective study of recently diagnosed melanoma patients found that among other communication factors, patients who reported that their doctors discussed the severity of the cancer and those who recalled their doctor talking about life expectancy reported lower levels of depression approximately 3 to 4 months after receiving a cancer diagnosis (Schofield et al., 2003). These differences, however, did not persist when patients were assessed again 3 to 4 months later. All of these studies provide preliminary evidence of an association between patients' perceptions of physician communication and patients' postdiagnosis adjustment; however, conclusions are limited by the studies' retrospective designs and imprecise characterization of physicians' communication behaviors.

Patient Comprehension

In addition to minimizing psychological distress, maximizing patient recall and comprehension of diagnostic and prognostic information is an important goal in the delivery of bad news. As stated previously, patients need to understand the novel and often complicated medical information provided by their physician if they are to participate in decision-making about their own care (Schofield & Butow, 2004). Unfortunately, prior research has suggested that patients may not achieve adequate understanding. For instance, a study of patients' recall following an initial appointment with their oncologist found that patients remembered only 25% of the information presented and only 45% of the information classified by oncologists as most important (Dunn et al., 1993). Another investigation of cancer outpatients reported that nearly 30% misunderstood the extent of their disease (i.e., whether it was localized or metastatic) and

40% could not correctly identify the goal of the treatment they were receiving (i.e., curative vs. palliative; Gattellari, Butow, Tattersall, Dunn, & MacLeod, 1999).

Patient comprehension regarding prognosis appears to be particularly poor (Gattellari et al., 1999; Mackillop et al., 1988; Weeks et al., 1998). To illustrate, in the large-scale SUPPORT study (the Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments), patients with advanced lung and colon cancer and their treating physicians were asked to estimate the patient's chances of surviving 6 months (Weeks et al., 1998). Response options were less than 10%, approximately 25%, 50%, 75%, or 90% or greater. Results revealed that patients tended to overestimate their chances of survival compared with physician estimates, as well as their actual duration of survival. For instance, three-quarters of patients with a less than 10% chance of surviving 6 months erroneously estimated their chances of survival to be 75% or more. Similar discrepancies were seen for patients with higher 6-month survival rates; overall, 82% of patients overestimated their chances of survival compared with their physician, and 59% did so by 2 or more prognostic response categories.

These discrepancies are concerning for two reasons: first, patients were significantly less accurate than physicians in predicting actual 6-month survival; second, patient estimates of prognosis were significantly associated with treatment preferences. Specifically, among patients with a less than 10% chance of surviving 6 months according to their physician, those patients who believed they had a 90% or greater chance of surviving 6 months were 8.5 times more likely to choose life-extending treatment at the expense of pain and discomfort compared with patients who estimated their 6-month survival probabilities at less than 90% (Weeks et al., 1998).

In sum, many patients appear to have a poor understanding of their own disease and prognosis, and these misinterpretations have important implications for treatment preferences. Patients who considerably overestimate their prognosis may choose more aggressive treatments without appreciation that such treatments may produce painful side effects without significantly lengthening their lives (Lamont & Christakis, 2001). These findings do not appear to be unique to patients close to death, as a similar tendency to overestimate prognosis and misinterpret treatment goals has been documented in outpatients with less advanced stages of cancer (Gattellari et al., 1999).

Common sense suggests that numerous factors likely contribute to these misunderstandings. Although patient intellect, personality, and denial likely play a role, it is reasonable to believe that the manner in which physicians communicate may be relevant, even after controlling for patient characteristics (Christakis, 1999; Sabbioni, 1999). For instance, one study found that patients' retrospective ratings of the clarity of information received were associated with better recall (Gattellari et al., 1999), yet this finding clearly confounds patients' ratings with their recall. More research is needed to elucidate the association between physician communication and patient recall and interpretation of prognostic information.

Patient Preferences

Patients repeatedly identify good doctor-patient communication as an essential element in quality healthcare (Butow, Dunn, & Tattersall, 1995). A recent survey of 440 patients with advanced cancer, COPD, and heart disease showed that more than 98% of these patients cited open and honest communication with their physician as very or extremely important to their care. Communication was the third most important element

of quality end-of-life care, even more important than relief of symptoms, being treated as an individual, and 23 other aspects of care (Heyland et al., 2006). Communication appears to be equally important to patients with less advanced disease. A survey of 232 outpatients with cancer found that 99% of patients cited communication skills as a very or moderately important aspect of care, though the study did not clarify which skills were considered most important (Wiggers, Donovan, Redman, & Sanson-Fisher, 1990). Moreover, a recent qualitative study of cancer patients' perspectives found that many patients believed that communication with their physician could influence important cancer outcomes, most notably their survival, by virtue of its effect on decision-making, immune functioning, and attitude as well as their emotional distress, sense of control, and feelings of hope (Thorne, Hislop, Armstrong, & Oglov, 2008).

Though overshadowed by studies of physician opinion until recently, several researchers have attempted to discern what information patients want when receiving bad news. Despite some variability according to patients' age, education, and disease stage, a recent review of the literature concluded that the majority of patients "want as much information as possible" regarding topics ranging from diagnosis to treatment and prognosis (Barclay, Blackhall, & Tulsky, 2007, p. 961). More specifically, one study of cancer patients' preferences found that patients placed the highest priority on receiving information regarding their disease and their treatment options, above elements such as being comforted, reassured, or talking about their feelings regarding the news (Parker et al., 2001).

With respect to prognosis, one survey of women with early-stage breast cancer found that over 90% of women considered it very important to know their chances of

being cured, their chances of the recommended treatment working, and the disease characteristics affecting their probability of cure (e.g., tumor size, lymph node involvement). Sixty percent of women reported it was very important to know 10-year survival rates for women taking the recommended therapy; only 30% wanted to know maximum and minimum life expectancy figures (Lobb, Butow, Kenny, & Tattersall, 1999). A similar study revealed that 91% of women with newly diagnosed breast cancer wanted to know prognostic information before making treatment decisions (Lobb, Kenny, Butow, & Tattersall, 2001). These preferences do not appear to change considerably in more advanced disease stages; 80 to 85% of patients with incurable metastatic cancer reported a desire to be given information about survival rates (Hagerty et al., 2004). Notably, however, in contrast to diagnostic and treatment-related information, some patients expressed a desire that their physicians inquire first before disclosing prognostic information (Hagerty et al., 2004).

Although most patients reportedly want to be fully informed of their condition, this desire for information does not come without qualifications. For example, patients consistently report wanting to receive bad news in a way that is honest and straightforward but does not destroy their hope. Similarly, “being too blunt” is commonly cited as a characteristic of poorly delivered bad news (Wenrich et al., 2001.) Patients have generally reported wanting their doctors to be empathic and supportive (Butow, MacLean, Dunn, Tattersall, & Boyer, 1997; Parker et al., 2001), to use simple language, and to allow plenty of time for questions (Parker et al., 2001).

Parker and colleagues (2001, p. 2051) found that “doctor warning me that there will be unfavorable news” was considered by patients to be an important, though not

essential element for delivering bad news. This technique was rated as somewhat less important than other aspects of communication such as being told of all treatment options, being given the news directly and honestly, and having the doctor take time to answer questions. Another study found similarly that 77% of breast cancer patients considered "[preparing patients] for the possibility of bad news as early as possible" to be among the top 10 most important principles for delivering bad news (Girgis, Sanson-Fisher, & Schofield, 1999, Table 1). It remains unclear how patients define preparation or what time frame may be considered as early as possible.

Somewhat less is known about how patients prefer to hear prognostic information. Davey and colleagues conducted semistructured interviews with 26 cancer patients and found that all patients preferred that physicians frame prognostic information in terms of positive outcomes (Davey, Butow, & Armstrong, 2003). In contrast, Lobb et al. (1999) found mixed results: 43% of women with breast cancer preferred to hear prognosis framed in terms of positive outcomes (e.g., chance of cure) because it "encourages determination to manage treatment positively," whereas 33% preferred the prognosis framed in terms of negative outcomes (e.g., chance of relapse) because it "emphasizes the importance of additional treatment" and was considered "more specific/precise" (p. 294).

Physician Perspectives and Practices in Breaking Bad News

Many physicians report delivering bad news to be a difficult and stressful experience, even for those who do it frequently. In a survey of 700 members of the American Society of Clinical Oncology, over 75% of clinicians reported breaking bad news to a patient at least 5 times in a typical month, with 45% doing so 10 or more times per month (Baile et al., 2000). Despite this frequency, 39% rated their ability to deliver

bad news as only fair, and 8% considered it poor. Fifty-eight percent of all clinicians in this survey identified "being honest but not taking away hope" to be the most difficult aspect of breaking bad news (Baile et al., 2000; p. 303). A similar survey found that, although the severity of distress experienced by most physicians while delivering bad news was only moderate (M = 2.9 on a scale ranging from 1 [*none*] to 5 [*a great deal]*), 42% of physicians reported that the stress evoked in the delivery of bad news typically lasted for several hours or even as long as 3 days after the conclusion of the consultation (Ptacek, Ptacek & Ellison, 2001). Other studies have reported that physicians who give bad news often (e.g., oncologists, colorectal surgeons) tend to experience high levels of burnout, and physicians who perceived their training in communication skills to be inadequate were more likely to report high levels of stress and burnout (Ramirez et al., 1995; Sharma, Sharp, Walker, & Monson, 2007).

Less is known about physicians' perspectives on communicating information about prognosis. Generally speaking, physicians report much greater difficulty in conveying prognosis than in disclosing diagnosis (Schofield & Butow, 2004). This perception is reflected in physicians' reported and observed practice. Although nearly all physicians in Western countries report disclosing diagnoses to cancer patients except in very rare or unusual cases (Novack et al., 1979), many physicians prefer to only discuss prognosis once the patient has requested that information (Gordon & Daughtery, 2003). One survey found that 29% of oncologists would occasionally withhold prognosis unless a patient specifically requested that information, and 17% said they would almost always do so (Baile, Lenzi, Parker, Buckman, & Cohen, 2002). Consistent with this survey, it does appear that many physicians tend to delay or avoid disclosing prognostic

information to patients. Perhaps the most notable documentation of this avoidance was obtained in the innovative SUPPORT study. In that large multicenter center investigation of 4,804 patients with life-limiting illnesses, a randomized intervention was implemented with the express goal of improving communication and decision making between patients, families, and physicians by (among other things) providing physicians with reliable, computer-generated prognostic information that could be included in family discussions of prognosis and treatment goals. Physicians, however, were not required to use this information, and in the end only 15% of physicians reported that they shared the prognostic information with patients and families (The SUPPORT Principal Investigators, 1995). The reasons for this low percentage were unfortunately not addressed in the study, but it seems possible that, in at least some cases, physicians felt uncomfortable discussing poor prognoses.

A few studies have attempted to document physicians' current practice of breaking bad news by audiotaping and analyzing consultations between oncologists and patients. One such study of patients with incurable cancer found that, although physicians discussed goals of treatment with 85% of patients and identified their cancer as terminal in 75% of cases, only 58% of patients received information about their life expectancy (Gattellari, Voigt, Butow, & Tattersall, 2002). A more recent study used the same methodology to examine oncologists' use of framing in communicating prognosis to patients with terminal cancer. The authors of that study found that oncologists were more likely to discuss treatment-focused prognosis (e.g., chances of treatment working; 72%) rather than disease-related prognosis (e.g., chances of survival; 28%). Further, 27% of physicians' prognostic statements were framed in terms of negative outcomes (i.e.,

chance of death or treatment not working), 50% were framed in terms of positive outcomes (i.e., chance of survival or cure), and 23% used mixed framing (Rodriguez et al., 2008).

With a few exceptions (e.g., Baile et al., 2002), systematic studies have not been conducted to elicit physicians' perspectives on optimal approaches to delivering bad news. Numerous editorials and opinion papers, however, have been written from the perspective of physicians on how best to deliver bad news. This literature will be summarized in the next section.

Practice Guidelines

General Review

Since the late 1970s, numerous articles and editorials with recommendations for breaking bad news have been published in a variety of medical journals (e.g., Buckman, 1984; Campbell, 1994; Eggly et al., 2006; Fallowfield, 1993; VandeKieft, 2001). Most of these articles were written by clinicians experienced in breaking bad news, and nearly all were based solely on the authors' opinions regarding best practices. There is notable variability in the specificity, structure, and content of the guidelines. Several qualitative reviews have attempted to address this variability by compiling and summarizing individual recommendations, yet these reviews, too, have relied primarily on the subjective judgment of individual authors (Barclay et al, 2007; Fallowfield & Jenkins, 2004; Ptacek & Eberhardt, 1996).

One group of researchers and practitioners in New South Wales, Australia attempted to use a more systematic consensus process to develop a protocol for breaking bad news (Girgis & Sanson-Fisher, 1995). Briefly, the authors first created a provisional

list of guidelines by reviewing past literature. This list was then reviewed by a panel of 28 professionals (oncologists, nurses, surgeons, social workers, clergy, and human rights experts), and subsequently rated by 100 cancer patients. Patients rated each guideline on a 5-point scale: 1 (*essential for doctor to do every time*), 2 (*desirable for doctor to do if time permits*), 3 (*unsure*), 4 (*not necessary*), 5 (*never should be done*). Sixteen guidelines that were recommended by the professional panel and rated as desirable or essential by at least 70% of patients were retained in the final protocol. These guidelines were:

1. Only one person should deliver the news.
2. Patients have an ethical and legal right to know their medical information.
3. A physician's main responsibility is to the patient.
4. Physicians should provide honest and reliable information.
5. Physicians should ask how much information patients want to hear.
6. Prepare the patient for the possibility of bad news as early as possible.
7. When disclosing results of several tests, do not give each result separately.
8. Disclose the diagnosis to the patients as soon as it is confirmed.
9. Find a private location and help the patient feel comfortable.
10. If at all possible, allow significant others to be present.
11. If at all possible, another healthcare professional should be present.
12. Notify health care professionals involved in the patient's care of how much the patient understood.
13. Express warmth, sympathy, encouragement, or reassurance with eye contact and body language.
14. If the patient does not speak English, have an interpreter present.
15. Consider the culture, race, religious beliefs, and social background of the patient.
16. Admit the emotional challenge of breaking bad news.

Girgis and Sanson-Fisher's (1995) consensus process appears to be the most systematic approach to guideline development to date, yet, unfortunately, the process still suffered from several limitations. First, unlike the patient sample, it does not appear that the professional panel used a systematic process in deriving their recommendations. Second, the authors presented only the final pool of 16 guidelines, making it impossible

to know whether their initial pool of guidelines (i.e., the provisional list based on literature review) was consistent with other qualitative review studies. Finally, and most importantly, although their consensus approach provided some preliminary evidence regarding patients' acceptance of practice guidelines, empirical evidence that these guidelines influence important patient outcomes remains absent.

One of the most frequently cited and well-organized set of guidelines is the SPIKES protocol (Baile et al., 2000). The acronym SPIKES stands for the six recommended steps in the process of breaking bad news: (a) **S**etting up the interview, (b) assessing the patient's **P**erception, (c) obtaining the patient's **I**nvitation, (d) giving **K**nowledge and information to the patient, (e) addressing the patient's **E**motions with empathic responses, and (f) **S**trategy and **S**ummary. Within each of these general steps, more detailed tasks and techniques are suggested. For instance, when setting up the interview, physicians are encouraged to find a private location, involve significant others, sit down, make eye contact, and avoid interruptions. When giving knowledge and information, the protocol recommends warning the patient that bad news is coming, using nontechnical language (e.g., spread rather than metastasized), avoiding undue bluntness (e.g., "You have very bad cancer and unless you get treatment immediately you are going to die," p. 306), and intermittently assessing the patient's understanding. Like most guidelines, Baile and colleagues developed the SPIKES protocol by synthesizing key principles and communication strategies from several qualitative reviews and preexisting guidelines for communicating bad news (e.g., Girgis & Sanson-Fisher, 1995; Ptacek & Eberhart, 1996). Hence this and other recently developed protocols continue to be based largely on expert consensus and descriptive studies of patient preferences.

In general, guidelines for breaking bad news, including the two protocols just described (Baile et al., 2000; Girgis & Sanson-Fisher, 1995) have been designed for application to any bad news conversation and thus include only basic recommendations, requiring each clinician to adapt the guidelines to his or her unique situation. Most protocols focus on general communication style and technique and exclude guidelines in specific content areas. For instance, neither SPIKES nor the Girgis and Sanson-Fisher guidelines address how prognosis should be conveyed despite the fact that this topic has been identified by physicians as one of the most difficult aspects of breaking bad news, particularly in oncology (Baile et al., 2002; Gordon & Daughtery, 2003). Communication about prognosis has been studied, though the literature on this topic is much smaller than the general literature on breaking bad news. Furthermore, as one review pointed out, most studies in the past have examined *whether* physicians should disclose information about prognosis to patients, with only more recent research addressing *how* patients prefer that prognostic information be conveyed (Hagerty et al., 2005).

In contrast to general guidelines for disclosing bad news, those that address prognosis tend to be included in separate protocols that are specific to oncology or end-of-life care. For instance, the Education in Palliative and End-of-Life Care (EPEC) Project is a curriculum designed by experts at Northwestern University and across the country to train physicians on how to care for dying patients (Emanuel, von Gunten, & Ferris, 1999). One module of that curriculum contains guidelines for communicating bad news, with one section (four short paragraphs) addressing how to communicate prognosis. The curriculum is limited, however, in that it addresses only life expectancy and appears to be based on expert consensus alone. The two main recommendations of

this section include ascertaining why patients want to hear prognosis before revealing any information and avoiding definitive estimates of life expectancy in favor of ranges or averages (e.g., hours to days left to live).

A more comprehensive set of guidelines is included in the lengthy protocol developed by the National Breast Cancer Centre and National Cancer Control Initiative of Australia (2003). Among other topics, this protocol makes recommendations for discussing prognosis including when prognosis should be discussed (e.g., prior to treatment, as part of treatment decision-making), what information should be provided (e.g., details of the cancer's stage and the effect on prognosis, chances of cure and average survival times), and how to discuss prognosis (e.g., framing prognosis in terms of positive and negative outcomes, presenting information in multiple formats—both words and numbers, both visual and verbal). The protocol was developed by a panel of representatives from various disciplines involved in cancer care that reviewed and synthesized existing literature. The authors cited the level of scientific evidence available to support each of the recommendations, and, like the general bad news protocols, most of the guidelines were based on expert consensus or self-report studies of patient preferences.

Warning of Impending Bad News

Offering a warning, (i.e., a statement or set of statements given in advance of the bad news to let the patient know that bad news is coming), is included in most published guidelines (e.g., Baile et al., 2000; Barclay et al., 2007; Faulkner, Maguire, & Regnard, 1994; Miranda & Brody, 1992). Others have described this technique as forecasting impending bad news (Maynard, 1996). Most recommendations discuss a simple, one line

warning such as, “I’m afraid I have bad news,” given mere moments before conveying the bad news itself. Others have suggested, however, that a warning may be given in advance of the bad news consultation such as over the telephone when the appointment is made (Ptacek & Eberhart, 1996). Further, the recommendation that “The patient…be prepared for the possibility of bad news as early as possible” (Girgis, Sanson-Fisher & Schofield, 1999, Table 1) found in some guidelines may be construed as implying that the *possibility* of bad news should be forecasted prior to the actual consultation, perhaps even before the bad news is certain.

Many authors describe warning as a technique intended “to reduce the element of shock” (Ptacek & Eberhardt, 1996, p. 498). As one group of practitioners explained, “The warning shot will give some indication to the person that they need to come to grips with something that could be unpleasant” (Faulkner et al., 1994, p. 147). Authors have suggested that reducing the shock of the news will have the two-fold effect of reducing anxiety and distress and increasing subsequent comprehension of the information being conveyed. For instance, Baile and colleagues (2000) suggested that warning “may facilitate information processing” (p. 306). No research to date has explicitly tested these presumed effects; however, the need to minimize shock and improve comprehension is evidenced by studies reporting that many patients (47% in one survey of patients with gynecologic cancer) feel “too shocked to take in any details” when first told that they have cancer (Paraskevaidis et al., 1993).

Despite the lack of empirical evidence, warning of impending bad news appears consistent with Sweeny and Shepperd’s (2007) bad news response model, which posits that a person’s initial expectations regarding the likelihood of a future negative event is

one factor that moderates subsequent emotional reactions when the negative event actually occurs. As these authors explain, research has shown that receiving bad news is particularly distressing when the news is unexpected.

For instance, one study tested college students for a fictitious medical condition and manipulated participants' expectations of receiving positive test results (i.e., bad news) by informing them that college students were either at high risk or low risk for this condition (Shepperd & McNulty, 2002). Participants assigned to the low risk condition were told that it was unlikely they would test positive for this condition, whereas participants in the high risk condition were told that it was likely that at least one student in the group of three being tested would test positive. Participants' mood was assessed before receiving risk information and after receiving results of the test (5 minutes later). After controlling for baseline mood, results indicated that participants who received positive test results displayed worse mood when the results were unexpected (i.e., low risk group) than when the results were expected (i.e., high risk group). The authors suggested that when individuals expect a negative outcome, they are able to prepare themselves emotionally for receiving bad news (Sweeny & Shepperd, 2007). This study provides some preliminary evidence to suggest the potential benefits to forecasting impending bad news; however, further research is needed to examine the effect of warning patients directly, particularly in the manner recommended by current guidelines.

Aside from Shepperd and McNulty's (2002) study, the only other research that has investigated the effect of warning on patient outcomes was conducted in the anesthesiology literature. This research looked at the effect of warning patients of impending pain due to an injection. Findings from this study showed that patients who

were warned that the needle might sting a little prior to receiving an injection actually reported *higher* ratings of pain compared with participants who were told "many people find the arm becomes heavy, numb and tingle tingly," which "allows the drip to be placed more comfortably" (Dutt-Gupta, Bown & Cyna, 2007, p. 872). Though the difference in scenarios and outcome variables prevents direct comparison with Shepperd and McNulty's study, this research does suggest that warning of negative outcomes should not be assumed to be universally beneficial. Experimental research could help to determine whether forecasting bad news, such as a cancer diagnosis, has an effect on patients' mood, as well as other outcomes such as anxiety and information recall.

Framing of Prognostic Information

Framing has been defined as a manner of communicating that "influences how information is conveyed by supporting some interpretations and downplaying others" (Rodriguez et al., 2008, p. 219). In the case of prognosis, framing refers to whether prognosis is described in terms of positive outcomes (e.g., chance of cure, 5-year survival), negative outcomes (e.g., chance of relapse or death), or both (i.e., mixed framing). Though mentioned less frequently than recommendations for giving a warning, increasing consideration has been given for how to frame prognosis in both practice guidelines (National Breast Cancer Centre and National Cancer Control Initiative of Australia; 2003) and research literature (e.g., Barclay et al., 2007; Hagerty et al., 2005; Rodriguez et al., 2008).

The guidelines developed by the National Breast Cancer Centre and National Cancer Control Initiative of Australia (2003) suggest that physicians "Use mixed framing: give chances of cure first, and then chances of relapse" (p. 50). This

recommendation does not appear to be followed in current practice, as one study found that only 23% of oncologists' comments regarding prognosis used mixed framing. Indeed, some physicians appear to intentionally manipulate the framing of prognosis—emphasizing survival rather than death, for example—in order to sound more optimistic or to sustain patient's hope (Rodriguez et al., 2008).

Additionally, as described earlier in this review, studies of patient preferences have revealed interindividual variability across patients and conflicting results across studies. One small study (N = 26) reported that all patients preferred to hear prognosis framed in terms of positive outcomes (Davey et al., 2003). Another reported that 43% of patients preferred positive framing and 33% preferred negative framing (Lobb et al., 1999). Neither study inquired about patients' preferences for mixed framing. In light of this evidence, the rationale behind this guideline is not entirely clear. The recommendation to use mixed framing appears to stem from concern that positive or negative framing alone could bias patients' interpretation of prognostic information, but there are no data to support this concern nor are there explicit hypotheses regarding the effect of positive versus negative versus mixed framing on patient outcomes.

The concern about potential framing bias likely originates in the health behavior literature where the effect of framing on individuals' judgment of risk and the likelihood of engaging in certain health behaviors has been studied extensively. In general, studies in this area report that loss-framed messages (i.e., messages emphasizing the negative consequences of not performing a behavior) are more effective in promoting screening behaviors, whereas gain-framed messages (i.e., messages emphasizing the benefits of performing of a behavior) are more effective in promoting prevention behaviors

(Rothman, Martino, Bedell, Detweiler, & Salovey, 1999). For example, one study found that women were more likely to complete breast self-examinations after reading a loss-framed brochure that highlighted the costs of failing to complete breast self-examinations and the risk of dying from breast cancer than a gain-framed brochure highlighting the benefits of breast self-examinations and chances of survival (Williams, Clarke, & Borland, 2001).

Other research has found that framing the risk of potential side effects influences patients' willingness to accept medical treatment. For instance, one study found that patients were significantly more likely to consent to a hypothetical treatment for chest pain described as 99% safe (i.e., gain framing) compared with the same treatment described as causing complications in 1 out of 100 people (i.e., loss framing; Gurm & Litaker, 2000). Similarly, for a hypothetical scenario involving chemotherapy with poor prognosis (probability of surviving less than 50%), cancer patients and healthy volunteers both expressed weaker preference for that treatment when the probability was described in terms of chance of death (i.e., negative framing) than when it was described in terms of chance of survival (i.e., positive framing; O'Connor, 1989).

Unfortunately, results from the studies just described offer little guidance for framing prognostic information. All of these studies targeted a particular behavioral outcome such as a willingness to engage in a health behavior or to accept a treatment. Conveying prognosis, in contrast, is not necessarily intended to produce an immediate or specific change in patients' behavior. In addition, studies have not explored participants' interpretations or recall of the statistical information, nor have they examined the effect of different framing formats on mood or anxiety. These additional outcomes may be

important to consider when studying the framing of prognosis given patients' tendency to overestimate their prognosis (Weeks et al., 1998) and experience psychological distress following receipt of bad news (Butow et al., 1996; Omne-Ponten et al., 1994). Experimental research could help to determine whether framing influences how patients hear and respond to news about their prognosis.

Limitations of Current Guidelines and Previous Research

For over 10 years the lack of empirical evidence has been discussed as a limitation of guidelines on breaking bad news (e.g., Ptacek & Eberhart, 1996; Wittenberg-Lyles, Goldsmith, Sanchez-Reilly, & Ragan, 2008). As Ptacek and Eberhardt argued in their 1996 review, "Common sense suggests that there are better and worse ways to convey bad news and that how the news is conveyed and the circumstances surrounding the receipt of the news have implications for the giver and the receiver. Reliance on common sense, however, is insufficient" (1996, p. 496). Given this longstanding criticism, the paucity of research is striking but perhaps not surprising. Studying communication as it naturally unfolds in health care settings is constrained by practical and ethical limitations. Consequently, most research in this area has been restricted to surveys of patient preferences and retrospective studies using correlational methods. Both methodologies provide only limited evidence. Surveys of preferences offer only one perspective on optimal approaches to health care communication, and patients' preferences may be biased by their own prior experiences of receiving bad news. The issue of bias is also of concern in retrospective designs, which confound patient recall of communication with patient outcomes. Neither approach allows the methodological control necessary to determine whether particular communication

strategies actually influence patient outcomes. Experimental research conducted in a laboratory setting could help to fill this gap by systematically manipulating physicians' communication and then observing how this affects the comprehension and emotional response of people receiving diagnostic and prognostic information.

Several recent studies have had success in studying questions of communication in oncology using a hypothetical scenario methodology. Most of these studies have used a videotape paradigm where research participants are asked to imagine that they are patients receiving news from a videotaped physician. One study randomized 123 healthy breast cancer survivors and 87 age-matched women without cancer to watch one of two videos of a physician discussing treatment options for cancer with a patient (Fogarty, Curbow, Wingard, McDonnell, & Sommerfield, 1999). Half the women saw a standard consultation video; the other half watched an *enhanced compassion* video, which included an additional 40 seconds of empathic and supportive communication in which the physician acknowledged the patient's distress and offered support and reassurance. As expected, there was a significant increase in postvideo anxiety for all participants compared with baseline anxiety (no difference between cancer survivors and healthy controls); however, women who saw the enhanced compassion consultation were significantly less anxious than those who saw the standard consultation that did not include empathic communication. There was no difference between the two groups' recall of information presented in the consultation.

A similar study used a videotape paradigm to compare the effects of three physician communication styles: patient-centered, disease-centered, and emotion-centered (Schmid Mast, Kindlimann, & Langewitz, 2005). Briefly, patient-centered

communication was described as understanding and positive, disease-centered communication was described as blunt and insensitive, and emotion-centered communication was described as kind and sad. Participants were 159 female college students who were randomly assigned to watch a video of a physician disclosing a diagnosis of breast cancer and explaining treatment options to a female patient. Results indicated that participants perceived the patient-centered physician as more emotional and appropriate in conveying the information than the other two communication styles. In addition, participant satisfaction in the patient-centered condition was significantly higher than in both the disease- and emotion-centered conditions. Finally, participants who viewed the disease- and emotion-centered videos showed a significant increase in postvideo tension/anger compared with baseline, whereas patients who saw the patient-centered video did not show an increase on this dimension. No other group differences were found for the effect of communication style on participant emotions.

A similar study examined the effect of physician communication style and physician gender on patient satisfaction using a virtual medical visit paradigm (Schmid Mast, Hall, & Roter, 2007). This study was unique because the physician was a computer-generated person who appeared on a computer screen and interacted with participants using prerecorded statements. The 167 college student participants then responded to the physician using scripted prompts that they were asked to put into their own words. Participants were asked to imagine that they had been experiencing headaches and were seeing the doctor to discuss symptoms, test results, and treatment. In contrast to other studies, the scenarios did not involve a diagnosis of cancer or other

serious illness; it is unclear from the article whether the test results involved breaking bad news, though this was not a focus of the study.

Communication style in the videos was varied along two dimensions: physician dominance (high or low) and physician caring (high or low). Physician gender was also manipulated. Results revealed a four-way interaction of physician dominance, physician caring, physician sex, and patient sex. For men communication style did not affect satisfaction in any scenario. In contrast, women who saw a female physician were more satisfied when the physician used a caring style (with no effect for dominance), and women who saw a male physician were less satisfied when the physician used a caring and nondominant style (Schmid Mast et al., 2007).

Although the three studies described here provide preliminary evidence that a video paradigm can be used to study the effects of physician communication, they have weaknesses. Two used college student samples; they examined limited outcomes such as patient satisfaction; and their focus was on broad communication styles, which make it difficult to identify specific communication behaviors that are most important in breaking bad news. The only video study to manipulate a discrete behavior examined the effect of physician posture when breaking bad news, finding that palliative care patients preferred physicians who delivered bad news while sitting down and perceived those physicians to be more compassionate compared with a physician who delivered bad news while standing up (Bruera et al., 2007). This study, however, had substantial limitations; most notably, the researchers showed patients both videos and found an order effect in which patients preferred the physician in the second video regardless of posture.

The videotape paradigm clearly shows promise in contributing to our understanding of optimal approaches to communicating bad news. It is highly controlled, enabling researchers to hold constant variables such as disease type and severity, length of consultation, and the content of the conversation so that specific communication variables of interest can be tested. In addition, the videotape approach allows researchers to assess anxiety, recall, and other important patient outcomes immediately after the bad news conversation, a procedure often not practically possible when using real patients. Despite these benefits, no studies have used this methodology to examine the effects of forecasting bad news or framing prognosis.

CHAPTER 3: RATIONALE AND HYPOTHESES

The purpose of this dissertation was to examine the effects of forecasting bad news and framing prognostic information when people receive a life-limiting diagnosis. An experimental videotape paradigm was used to permit the methodological control absent from most prior studies. Holding constant the other components of a bad news consultation, the two variables of forecasting and framing were manipulated across conditions. This approach maximized the ability of the study to discern differences in individuals' perceptions and affective response according to specific communication behaviors. Participants were randomly assigned to one of four videotape conditions in a two (warning vs. no warning) by two (positive vs. negative framing) factorial design.

Warning Hypotheses

Hypothesis 1. Participants who were warned of impending bad news were expected to report higher positive affect and lower negative affect after receipt of the diagnosis compared with participants who were not warned of the news.

This hypothesis is consistent with expert consensus and with Sweeny and Sheppard's (2007) bad news response model, which posits that individuals who expect a negative outcome will experience less negative affect than those not expecting a negative outcome when the negative outcome occurs.

Hypothesis 2. Participants who were warned of impending bad news were expected to report lower anxiety after receipt of the diagnosis compared with participants who were not warned of the news.

This hypothesis is also consistent with the bad news response model (Sweeny & Sheppard, 2007), although the authors do not make specific reference to anxiety in their theory.

Hypothesis 3. Participants who were warned of impending bad news and those who were not were expected to demonstrate equivalent recall of the consultation content.

Though it has been suggested in practice guidelines that forecasting bad news should result in improved recall due to a reduction in anxiety that mediates improved information processing, it was expected that any reduction in anxiety experienced in this study would not be large or significant enough to influence recall of consultation content. Fogarty and colleagues (1999) failed to find improvement in participant recall in their videotape study of physician empathy, despite a significant reduction in anxiety in the enhanced empathy condition. It was anticipated that the effect of warning on anxiety would be smaller than the effect of empathy because of differences in the robustness of the manipulation; the present study uses a one-sentence warning compared with 40 seconds of empathic communication in the study by Fogarty et al. Thus, I did not expect to find an effect of the warning condition on participant recall.

Framing Hypotheses

Hypothesis 4. Participants who heard a positively framed prognosis and those who heard a negatively framed prognosis were hypothesized to be equally accurate in their recall of the statistical percentages given by the physician when explaining prognosis.

Prognosis framing was not expected to influence participants' recall of the prognosis. Though recall has rarely been addressed in prior framing research, one study

of the effect of message framing on breast self-examination reported that participants in positive and negative framing conditions did not differ on recall of the information presented in the pamphlet they read (Myerowitz & Chaiken, 1987).

Hypothesis 5. Participants who heard a negatively framed prognosis were expected to interpret the news as worse than participants who heard a positively framed prognosis.

Though no prior research has addressed the effect of prognosis framing on participants' interpretations of that information, the rationale for this hypothesis is implicit in the definition of framing: communication that "influences how information is conveyed by supporting some *interpretations* and downplaying others" (Rodriguez et al., 2008, p. 219). Consistent with this definition, positive-outcome framing has been cited as a strategy used to imply that there is hope (Lamont & Christakis, 2001; Rodriguez et al., 2008). Furthermore, that positive and negative framing may lead to different interpretations is suggested by a study reporting that positively framed prognoses are perceived as encouraging "determination to manage treatment positively," whereas negatively framed prognoses are perceived as perceived as more "specific/precise" and are interpreted as highlighting the need for additional treatment (Lobb et al., 1999, Box 4).

Hypothesis 6. Participants who heard a negatively framed prognosis were expected to report lower positive affect and higher negative affect compared with participants who heard a positively framed prognosis.

Though no prior research has examined the effect of prognosis framing on affect, logic and expert consensus suggest that the focus on treatment failure and the increased

salience of death in the negative framing condition, in contrast with the focus on treatment success and survival in the positive framing condition, would be associated with worse affect.

Hypothesis 7. Participants who heard a negatively framed prognosis were expected to report higher anxiety compared with participants who heard a positively framed prognosis.

Similar to the hypothesized effects on affect, no prior research has examined the effect of prognosis framing on anxiety. A similar logic, however, suggests that the negative frame's focus on treatment failure and the increased salience of death, in contrast with the focus on treatment success and survival in the positive framing condition, would be associated with greater anxiety.

Hypothesis 8. Participants who heard a negatively framed prognosis were expected to feel less hopeful for the future compared with participants who heard a positively framed prognosis.

Though prior research has not examined the relationship between framing and hopefulness, physicians have reported using positive outcome framing to preserve patient hope (Lamont & Christakis, 2001; Rodriguez et al., 2008). Furthermore, studies have shown that some patients prefer hearing a positively framed prognosis because it "encourages determination to manage treatment positively" (Lobb et al., 1999, Box 4). In addition, a pessimistic attitude has been reported by patients to decrease feelings of hopefulness (Sardell & Trieweiler, 1993).

Additional Research Questions

Personality

I explored relationships between individual differences in personality and participants' affect, anxiety, and hope following the receipt of bad news. Also of interest was whether these individual differences might interact with communication variables (warning and framing) to influence affect, anxiety, and hope. I had no a priori hypotheses about these relationships.

Health Information Style

I also explored relationships between individual differences in health information style and participants' affect, anxiety, and hope following the receipt of bad news. Participants with greater preferences for health information were expected to report lower negative affect, higher positive affect, and lower anxiety after receiving bad news. Also of interest was whether these individual differences might interact with communication variables (warning and framing) to influence affect, anxiety, and hope.

CHAPTER 4: METHODS

Participants

Power

Fogarty and colleagues (1999) reported that the average difference in anxiety (using the STAI-S) between participants who watched an enhanced compassion video of a physician discussing breast cancer and those who watched a standard physician video was 4.7 with a standard deviation of 5.94. This resulted in an effect size (Cohen's d) of .79, which was similar to the effect size reported by another videotape study using the Profile of Mood States to detect differences in the tension/anger domain (Schmid Mast et al., 2005). Despite these rather substantial effect sizes, a decision was made to use a more conservative effect size to determine sample size for the current study because the focus on more narrow aspects of communication such as warning (which was composed of only one statement) and framing (which was manipulated using just two statements) was expected to produce a smaller change in anxiety than the roughly 40 seconds of compassionate statements used to manipulate compassion by Fogarty et al. (1999). In addition, some hypotheses posited a null relation; interpretation of the failure to reject the null hypothesis as reflecting little difference in the populations is more tenable with a larger sample size. Thus for a Cohen's d effect size of .35 on anxiety with a two-tailed significance level of 0.05 and 80% power, a sample of 128 was required.

Participant Characteristics

The 128 participants were healthy, community-dwelling adults ranging in age from 50 to 87 years. Because this study used a hypothetical scenario involving a diagnosis of colon cancer, this age cut-off was selected based on epidemiological data

showing that the risk of developing colon cancer increases substantially after age 50. According to the American Cancer Society, more than 90% of individuals diagnosed with colorectal cancer are over 50 years old, and the organization recommends regular colon cancer screenings (i.e., colonoscopies) beginning at age 50 (American Cancer Society, 2008a).

All participants were recruited from Volunteers for Health, a research participant registry maintained by Barnes Jewish Hospital as well as the Psychology Department's Older Adult Volunteer Pool. Participants were *not* cancer patients, although individuals with personal or family history of cancer were not excluded. Participants were screened for significant cognitive impairment using the Blessed Orientation-Memory-Concentration Test (Katzman et al., 1983). Participants with scores of six or greater were excluded. The only other exclusion criterion was medical training; individuals with training or experience as physicians were excluded from the study. Participants with other allied health training such as nurses, physician's assistants, and pharmacists were not excluded.

Materials

Vignettes

Two vignettes (Appendix A) were used to help participants imagine themselves in a hypothetical medical scenario prior to receiving bad news. The medical information provided in the vignettes was based on current information in the oncologic literature (Mayo Clinic Staff, 2008; National Cancer Institute, 2008). The first vignette asked participants to imagine that they were seeing a physician for recurrent stomach pains. This vignette included a brief description of their symptoms, indicated that they have

seen a doctor once, had undergone a colonoscopy, and were seeing their doctor for the second time today; the goal of the current visit was to discuss the test results from the prior visit.

The second vignette, which participants read later in the experiment, asked them to imagine that they were coming back to see the doctor a week later to receive results from more extensive testing that was done to determine the stage of their cancer. This vignette identified the procedures done in the intervening week and described how the participant was feeling physically.

Videotapes

Overview. In addition to the two vignettes four videotapes were created to examine the research questions posed in this study. Videotapes were modeled after those used in previous studies using this paradigm (e.g., Fogarty et al., 1999); two videos depicted a physician disclosing a diagnosis of colon cancer, and two videos depicted a physician discussing prognosis. The same physician was portrayed in all four videos. Videos were not intended to replicate an entire medical consultation but, rather, were designed to depict only brief 2-minute segments of a typical consultation. Scripts were reviewed for content by a gastroenterologist, a colorectal surgeon, and an oncologist experienced in diagnosis and bad news communication. The medical details and prognostic information included in the videos were based on current information in the oncologic literature (American Cancer Society, 2008b; National Cancer Institute, 2008). Video scripts were developed in accordance with current recommendations for delivering bad news such as expressing empathy and avoiding medical jargon. See Appendix B for copies of the video scripts. Manipulation statements are in bold.

All four videotapes were recorded with an actual physician delivering each script while sitting at a desk in his office. In order to make the experience more realistic for the participant, tapes were recorded with the physician facing the camera as if he were communicating with the participant directly. Videos A1 and A2 were approximately 2 min in duration. Videos B1 and B2 were approximately 1 min 50 sec in duration. Participants viewed videos on a desktop computer screen using the program QuickTime 7.6.

Warning videos (A1 and A2). The bad news warning variable consisted of two levels (warning vs. no warning) and was manipulated in the two diagnosis videos. Both diagnosis videos included the following elements: brief greeting, summary of the patients' symptoms and prior medical visit, description of test results and disclosure of a cancer diagnosis, and brief summary of recommended next steps. In the warning condition (A1) the video script contained one statement not included in the no warning condition (A2): "I'm afraid I have bad news." *[Pauses momentarily, making eye contact with patient.]*. Video A2 (no warning) was created using the video footage from video A1 and editing out the warning statement listed above.

Framing Videos (B1 and B2). The prognostic framing variable also had two levels (positive vs. negative-outcome) and was manipulated in the prognosis videos. Both prognosis videos contained a brief greeting, summary of procedures completed since the last visit, a statement about the spread of the disease, recommendations for treatment, disclosure of prognosis statistics, and closing remarks. These videos were identical except for details in two sentences describing prognosis:

1. Fortunately, there's about an 80% chance that you will remain cancer free after treatment. In addition, I can tell you that about 65% of people who are your age and have this disease will be alive in 5 years (positive-outcome framing; B1).
2. Unfortunately, there's about a 20% chance that your cancer will come back after treatment. In addition, I can tell you that about 35% of people who are your age and have this disease will die within 5 years (negative-outcome framing; B2).

Video B2 (negative framing) was created by editing the video footage from video B1 to replace the two positively framed sentences with the two negatively framed sentences.

Measures

Demographics Variables

Participants provided information about their age, gender, ethnicity, education, and relationship status.

Health

Participants were asked to rate their overall health with one question from the Medical Outcomes Study Short-Form Health Survey (SF-36; Ware, 1993). The question reads: "In general, would you say your health is…" Response options ranged from 1 (*poor*) to 5 (*excellent*) with higher scores indicating better overall health. Participants were also asked about their personal and family/close friend history of serious illness, including cancer. Using a modified listing developed for a study of stress and health in aging, participants reviewed a list of illnesses and conditions including diabetes, cancer, stroke, heart disease, and high blood pressure (Stanford Medical School Investigators, 2008). Participants were asked to indicate whether or not they or their close friends or family members have ever been diagnosed with any of the listed illnesses.

Personality

The NEO Five-Factor Inventory (NEO FFI) was used to assess personality (Costa & McCrae, 1992). The NEO-FFI is a shortened, 60-item version of the NEO Personality Inventory-Revised (NEO PI-R) and is designed to assess the five domains of personality originally described by Costa and McCrae (1992): Extraversion, Agreeableness, Conscientiousness, Emotional Stability/Neuroticism, and Intellect/Openness. Each of the five factors is assessed with 12 statements (e.g., "I am not a worrier;" "I like to have a lot of people around me"). Participants rate the degree to which statement describes them using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Responses are summed for each factor; scores range from 12 to 60 with higher scores signifying more of the trait. According to the manual internal consistency reliabilities range from .74 to .89. In the current study, Cronbach's alphas for the 5 scales were as follows: Neuroticism, .88; Extraversion, .74; Openness, .74; Agreeableness, .78; and Conscientiousness, .87.

Health Information Style

Participant preferences for information and involvement in medical decision-making was assessed with the Information Subscale of the Krantz Health Opinion Survey (KHOS-I; Krantz, Baum & Wideman, 1980). This subscale includes seven statements about individuals' tendency to ask questions during health care consultations as well as the level of involvement they desire in decisions about their own medical care. For each item participants indicate whether they agree (0) or disagree (1) with the statement. Responses from individual items are summed, and scores range from 0 to 7, with higher scores indicating a greater information-seeking style. The KHOS-I has been used

extensively in studies of patient-physician communication and has been shown to predict the number of questions asked by patients in a medical consultation (Krantz et al., 1980) as well as cancer patients' preferences for greater information about their prognosis (Hagerty et al., 2004). Internal consistency reliability for the KHOS-I has been reported at .76 (Krantz et al., 1980). The alpha for the current study was .74.

Dependent Variables

Self-reported mood/affect. The short form of the Positive and Negative Affect Schedule (Short PANAS; Kercher, 1992; Mackinnon et al., 1999) was used to assess participants' affect. The Short PANAS consists of 10 adjectives describing particular emotions, selected from the original 20 adjectives in the original PANAS (Watson, Clark & Tellegen, 1988) in an effort to maintain the integrity of the distinct constructs of positive and negative affect. Five of these adjectives describe positive affect (inspired, alert, excited, enthusiastic, determined), and five adjectives describe negative affect (afraid, upset, nervous, scared, distressed). Participants indicate to what extent each adjective describes the way they are feeling at the moment. Response options are presented on five-point Likert scale: 1 (*very slightly or not at all),* 2 (*a little),* 3 (*moderately*), 4 (*quite a bit),* and 5 (*extremely*). Separate scores are computed for the positive and negative subscales by summing responses to each item. Scores range from 5 to 25 with higher scores reflecting greater positive (or negative) affect. Previous research has shown the Short PANAS to have good reliability with adults (ages 18 to 79) for both scales (internal consistency of .78 for the positive scale and .87 for the negative affect scale). Similar alphas have been reported with older adults (i.e., 65 years and older; .72 for positive affect and .86 for negative affect). In the current study, alphas were .62, .73,

.81 and .75 for positive affect, and .96, .95, .95, and .95 for negative affect at the prewarning, postwarning, preframing, and postframing assessments, respectively. The low alpha for prewarning positive affect was likely due to the ambiguous meaning of some positive items (e.g., excited) combined with the fact that at this first administration participants were adjusting to the instructions to respond according to how they felt *in that moment*, based on the hypothetical scenario they had just read. By the second (postwarning) administration of the PANAS, participants had adjusted to these instructions and were well immersed in the scenario, resulting in more internally consistent responses.

Anxiety. State anxiety was assessed with the six-item short form State-Trait Anxiety Inventory, State Version (STAI-S; Marteau & Bekker, 1992). This short form survey was created as a more time efficient measure that still maintains the psychometric integrity of the original STAI-S (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The scale was developed by computing item-remainder correlations between each of the 20 statements with the 19 remaining items in the original STAI-S. The authors then selected the three anxiety-present items (I feel tense, I feel upset, I feel worried) and the three anxiety-absent items (I feel calm, I feel relaxed, I feel content) that had the highest item-remainder correlations. The number of items was chosen to balance the minimum number of items with the best possible reliability and correlation with the original scale. The authors also tested 10-, 8-, 4-, and 2-item versions of the scale.

Like the original STAI-S, participants rate their current feelings on a 4-point Likert scale: 1 (*not at all*), 2 (*somewhat*), 3 (*moderately*), 4 (*very much*). Responses to each item are summed. Scores range from 6 to 24 with higher scores indicating greater

anxiety. The 6-item scale has a reported alpha-reliability of .82 in pregnant outpatients, and scores on the abbreviated scale correlate .91 with the scores on the 20-item scale (Marteau & Bekker, 1992). In the current study, alphas were .93, .92, .91, and .90 at the prewarning, postwarning, preframing, and postframing assessments, respectively.

Information recall. After the diagnosis video, participants answered six yes/no questions (Appendix C) developed for this study to test recall of the information provided by the physician regarding diagnosis (name and details of condition), treatment, and recommendations. Correct answers were summed, and scores ranged from 0 to 6, with higher scores indicating better recall.

Prognosis recall. First, participants were presented with one free-recall question which asked them to "write what you remember the doctor telling you about what to expect in the future, especially any percentages or statistics that the doctor gave you." These qualitative responses were not analyzed in the current study. Next, two cued-recall questions asked participants to recall the information provided about their prognosis (chances of recurrence; 5-year survival rate or 5-year mortality rate). For instance, participants in the positive framing condition were asked, "What are the chances that you will remain cancer free after treatment?" Participants in the negative framing condition were asked, "What are the chances that your cancer will come back after treatment?" Similarly, participants in the positive framing condition were asked, "What percentage of people who are your age and have this disease are alive in 5 years?" Participants in the negative framing condition were asked, "What percentage of people who are your age and have this disease die within 5 years?" In each case, participants were instructed to record the percentage given by the doctor for that particular prognostic statement.

Interpretations of prognosis. In addition to their ability to recall the percentages provided, we assessed participants' interpretations of the prognostic information conveyed. After the prognosis video participants rated the news they received from the physician on a 100-point scale ranging from 0 (*worst news I could have ever received*) to 100 (*best news I could have ever received*). A similar measure (on a 10-point scale) has been used in previous studies of communication in cancer (e.g., Gattellari et al., 2002).

Hopefulness. Participants' feelings of hopefulness for the future were assessed using a modified version of the Life Orientation Test-Revised (LOT-R; Scheier, Carver & Bridges, 1994). This scale includes 10 statements; 3 statements are positively framed (e.g., Overall, I expect more good things to happen to me than bad), 3 statements are negatively framed (e.g., If something can go wrong for me, it will), and 4 statements are unscored filler items. Participants rate their agreement with each statement on a 5-point Likert scale: 0 (*strongly disagree*), 1 (*disagree*), 2 (*neutral—neither agree nor disagree*), 3 (*agree*), 4 (*strongly agree*). Participants in this study were instructed to rate their agreement now, after hearing the news from the physician. Scores ranges from 0 to 24, with higher scores indicating greater hopefulness. Although the LOT-R was originally developed as a trait measure, the scale has been used as an outcome variable in psychological intervention studies with cancer patients, who had increased positive orientation on the LOT-R following a stress management intervention (Antoni et al., 2001). A Cronbach's alpha of .78 has been reported for the six scored items (Scheier et al., 1994). Alphas for the current study were .85 at the prevideo assessment and .80 at the postvideo assessment.

In addition to this standardized questionnaire, hope was assessed by asking participants to rate how hopeful they felt in nine domains: that they will live 1 year; live 5 years; live 10 years; live longer than the doctor expects; receive the treatment they need; the cancer will never return after treatment; they will remain independent after treatment; any pain or symptoms will be well controlled; and that they will be well cared for and supported. Finally, participants rated how hopeful they felt about the future overall. All ten of these ratings were made on a 100-point scale, ranging from 0 (*not at all hopeful*) to 100 (*extremely hopeful*). Cronbach's alpha for the ten items was .88. See Appendix D for the full questionnaire.

Procedure

Potential participants from Volunteers for Health and the Psychology Department's Older Adult Volunteer Pool were screened by phone for medical training or significant cognitive impairment. Those who met the criteria described in the previous section were invited to participate. Participants generally reviewed the consent documents and completed the demographics questions, a personality inventory, and health information style measures at home prior to coming to their appointment. The experiment itself was conducted at the Psychological Services Center, and the consent process was administered in a therapy room, which was intended to mimic the waiting room in a doctor's office. After providing informed consent, participants who elected not to fill out the baseline assessment measures at home completed those questionnaires in the therapy room. See Table 1 for a timeline of procedures and assessments. Participants were randomly assigned to one of four videotape conditions: (a) warning, positive outcome framing, (b) no warning, positive outcome framing, (c) warning,

negative outcome framing, and (d) no warning, negative outcome framing. Randomization was conducted using the random list generator at the website www.random.org. Each participant watched one of two diagnosis videos, in which the bad news warning was manipulated, followed by one of two prognosis videos, in which the framing of the prognostic information was manipulated.

Table 1

Time of Procedures and Assessments

Step	Activity
1	Obtain demographics Assess personality Assess health information style
2	Read Vignette A (initial symptoms and tests) Write about thoughts and feelings (2.5 minutes)
3	Administer affect and anxiety measures (first time)
4	Watch Video A (cancer diagnosis)
5	Administer affect and anxiety measures (second time) Recall information provided by physician
6	Write about thoughts and feelings concerning cancer diagnosis (5 minutes)
	BREAK (5 minutes)
7	Read Vignette B (interim surgery and biopsy) Write about thoughts and feelings (2 minutes)
8	Administer affect and anxiety measures (third time) Administer hopefulness scale (first time)
9	Watch Video B (prognosis)
10	Administer affect and anxiety measures (fourth time) Administer hopefulness scale (second time) Recall prognosis Interpret prognosis Rate hopefulness domains

Prior to watching the first video all participants read a brief vignette that instructed them to imagine that they were seeing a physician for recurrent stomach pains. As described previously, the vignette (Appendix A) included a brief description of their symptoms and an explanation that they were seeing their doctor for the second time to discuss the test results from the prior visit. After reading the vignette, participants were asked to imagine that they were in this situation and to write for 2.5 minutes about what they are thinking and feeling. The writing task was intended to help participants imagine themselves in the medical scenario. Immediately after writing participants completed baseline affect and anxiety measures. They were then be taken into a private experiment room where they were reminded again to imagine that they were really meeting with the doctor and that the doctor would be speaking to them about their test results. After the experimenter left the participant alone and closed the door, participants watched one of the two videos of a physician disclosing a diagnosis of cancer. Immediately after watching the first video participants again completed affect and anxiety measures as well as questionnaires that assessed their recall of the information provided. These questionnaires were administered with pencil and paper and were concealed in a folder until after participants had viewed the video.

Participants were then taken back to the original therapy room where they were asked to think about the news they had just received. As a filler task before viewing the second video, participants were instructed to think about the news they had received (i.e., the diagnosis of colon cancer) and about preparing for the recommended surgery and to write about their thoughts and feelings about their situation for 5 minutes. When they

finished writing all participants were given a 5-minute break, during which time they could use the rest room, get a drink of water, or read a magazine.

Following the break, all participants read a second vignette (Appendix A) that instructed them to imagine that they were coming back approximately a week later to receive results from more extensive testing that was done to determine the stage of their cancer. Participants then completed measures of anxiety, affect, and hopefulness before being taken back to the private experiment room where they watched a second video that depicted the same physician discussing prognosis and treatment for colon cancer. Following this second video participants repeated affect, anxiety, and hopefulness measures as well as questionnaires that assessed their recall of the prognosis, interpretations of prognosis, and additional ratings of hope. Finally, participants were debriefed and paid $15 for their participation.

CHAPTER 5: PILOT STUDIES

A pilot study was conducted with the stimuli described in the previous chapter in order to determine the feasibility of using a videotape paradigm and to examine participants' ability to detect the manipulation statements. Individuals read two vignettes described previously (see Appendix B). The first vignette asked participants to imagine that they had been experiencing stomach pains, had undergone a colonoscopy, and were going to the doctor to hear the results of additional tests. The second vignette asked participants to imagine that they had undergone surgery for colon cancer and were going back to the doctor to hear the results of additional tests. After reading each vignette participants watched a video of a doctor speaking with them and then completed questions designed to test the effectiveness of the manipulation.

Ten older adults (aged 50 to 85 years) completed the pilot study. For the warning video 100% were able to correctly identify whether they had received a warning of bad news prior to being told that they had colon cancer. For the prognosis video 80% of participants were able to correctly identify the framing of their chances of the treatment getting rid of the cancer, and 90% were able to correctly identify whether they had been told their chances of survival or their chances of death.

A qualitative review of individual warning data revealed two participants who did not specifically remember the warning "I'm afraid I have bad news" in response to a free-recall question. Despite being unable to recall this specific phrase, these participants did report that the physician had let them know that the news was going to be bad; all 5 participants in the no warning condition reported that the physician did not say anything to let them know that the news was going to be bad.

A qualitative review of the prognosis framing data revealed three participants who erroneously reported that the physician had given them one of the two prognostic statements framed in both positive and negative terms. When queried, it became apparent that some participants recognized that the two phrases were statistically equivalent, but they were correctly able to identify which framing had been given to them. The question was modified to emphasize recall of the exact phrases uttered by the physician; this modification appeared to be effective; all subsequent participants correctly recalled the prognosis they had received after the question was changed. Notably, the prognosis statements in the scripts tested in the pilot study included ranges of percentages that were partially overlapping (e.g., 60 to 65% of people who are your age and have this disease will be alive in 5 years; there is a 55 to 60% that the cancer will come back after treatment.). I removed the ranges of percentages in order to reduce the load placed on participants' memory and potential confusion between the two prognostic phrases.

Participants reported that the computer screen on which the videos were displayed was a comfortable size and the videos were audible and easy to understand. After the experiment several participants commented on similar medical events experienced by themselves or their loved ones; they reported no difficulty in imagining themselves in the situation described.

CHAPTER 6: RESULTS

Descriptive and inferential statistics were used to assess equivalence of the four warning/framing groups on several demographic and health-related variables. Two analyses of variance (ANOVA) were computed to determine whether participants in the four warning and framing conditions differed by age or self-reported health (see Table 2). Chi-square tests of association were computed to determine if participants in the four conditions differed by gender, ethnicity, education, relationship status, personal history of cancer, or having a family member or friend with cancer (see Table 3). There were no significant differences between groups on any of these variables (all *p*s > .05); therefore, none were included as covariates in subsequent analyses.

Table 2

Means (and Standard Deviations) of Participant Characteristics by Condition

	Positive frame		Negative frame		
	Warning[a]	No warning[a]	Warning[a]	No warning[a]	*F*(3, 124)
Age (years)	69.12 (8.81)	66.41 (9.03)	71.69 (10.75)	68.78 (11.14)	1.50
Health	3.56 (.95)	3.84 (0.77)	3.47 (1.02)	3.56 (.98)	0.97

Note. Condition means compared with ANOVAs. All *p*s > .05. Health ratings were on a 4-point scale ranging from 1 (*poor*) *to* 4 (*excellent*).

[a] $n = 32$ for each condition.

Table 3

Percentages of Participant Characteristics by Condition

	Positive frame		Negative frame		
	Warning[a]	No warning[a]	Warning[a]	No warning[a]	χ^2(df)
Gender					
Female	53	59	53	37	3.35 (3)
Race					
Black	6	3	6	6	0.45 (3)
White	94	97	94	94	
Education					
High School/GED	13	13	19	28	10.6 (15)
Some college	22	28	19	28	
College degree	31	25	25	13	
Some grad school	9	6	0	6	
Master's degree	22	22	31	22	
Professional degree	3	6	6	3	
Relationship status					
Never married	3	13	13	6	15.3 (9)
Married/partnered	62	56	47	75	
Widowed	16	6	28	3	
Separated/divorced	19	25	12	16	
Personal cancer hx	28	22	38	19	3.36 (3)
Family/friend cancer hx	84	75	88	72	3.28 (3)

Note. All *p*s > .05. Personal cancer hx = Positive personal history of cancer. Family/friend cancer hx = Positive family or friend history of cancer.

[a] n = 32 for each condition.

Tests of Hypotheses

Warning Hypotheses

The first set of data analyses addressed hypotheses concerning warning or no warning about bad news. The measures used in these analyses included the affect, anxiety, and content memory scores collected immediately before and after viewing the first video. Half of the participants saw a video with a warning and the other half saw a video without a warning.

Prior to conducting the primary analyses, a manipulation check was conducted to determine whether participants in the two warning conditions were able to detect whether or not they had received a warning. After viewing the first video, participants were asked, "Right before the doctor told you that you had cancer, did he say anything that let you know that the news was going to be bad?" Participants in the warning condition should have answered yes to this question, and participants in the no warning condition should have answered no. A chi-square test of association revealed a significant difference in the two groups' responses to this question, $\chi^2(1, N = 128) = 22.8, p < .001$. Seventy-one percent of the sample (91 participants) correctly identified whether the physician had warned them of the impending bad news. Of the 29% who did not, 20 participants (54%) in the no-warning condition erroneously thought they received a warning, and 17 participants (46%) in the warning condition did not realize they received a warning. Subsequent warning hypotheses were tested with data from the full sample as well as the subsample of 91 participants who correctly identified the warning condition to which they had been randomized.

Hypothesis 1. Participants who are warned of impending bad news will report higher positive affect and lower negative affect after receipt of the diagnosis compared with participants who are not warned of the news.

Hypothesis 2. Participants who are warned of impending bad news will report lower anxiety after receipt of the diagnosis compared with participants who are not warned of the news.

Means and standard deviations for the affect and anxiety measures are presented in Table 4. In order to test the effect of warning on these measures, individual unstandardized residuals for each of the three dependent variables were first calculated in order to partial out the variance in prevideo affect and anxiety scores. Specifically, postvideo scores were regressed on prevideo scores in a linear regression for each of the measures. The estimates of postvideo scores from these regression equations were then subtracted from the observed postvideo scores. The resultant residual postvideo scores for positive affect, negative affect, and anxiety were entered as dependent variables in a multivariate analysis of variance (MANOVA). Group (warning vs. no warning) was entered as a between-subjects variable. Results of the MANOVA failed to yield a significant multivariate effect of warning group, Pillai's trace $V = .01$, $F(3, 124) = 0.49$ $p = .69$.

To ensure that the nonsignificant effect of warning was not due to participants' failure to identify the manipulation (warning vs. no warning), several additional analyses were conducted. First, a MANOVA was conducted for each condition (i.e., warning and no warning) comparing those who had accurately identified the manipulation with those

who had not on residualized positive affect, negative affect, and anxiety scores. For both the warning and no-warning conditions, there was no significant difference between the

Table 4

Means and Standard Deviations of Positive Affect, Negative Affect, and Anxiety by Warning Condition

	Warning[b]		No warning[b]	
	M	*SD*	*M*	*SD*
Positive Affect				
Previdео positive affect	12.68	3.36	12.36	4.07
Postvideo positive affect	13.75	4.34	13.20	3.99
Negative Affect				
Previdео negative affect	11.90	6.13	12.68	6.44
Postvideo negative affect	19.12	5.73	18.64	6.19
Anxiety				
Previdео anxiety	13.64	5.97	14.44	5.51
Postvideo anxiety	18.66	5.13	18.55	5.42

Note. Positive and negative affect scores each ranged from 5 to 25, with higher scores reflecting greater positive (or negative) affect. Anxiety scores ranged from 6 to 24 with higher scores indicating greater anxiety.

[a] $N = 128$. [b] $n = 64$ for each condition.

accurate and inaccurate subgroups, warning Pillai's Trace $V = .01$, $F(3, 60) = 0.26$, $p = .88$, no-warning Pillai's Trace $V = .01$, $F(3, 60) = 0.24$ $p = .87$.

An additional MANOVA was conducted using only participants who had correctly identified the warning condition to which they were randomized. That is, participants were eliminated from this analysis if they did not receive a warning but erroneously reported that they had or if they did receive a warning but erroneously reported that they had not. The multivariate effect of warning with this subsample remained nonsignificant, Pillai's Trace $V = .01$, $F(3, 87) = 0.28$, $p = 84$. As can be seen in Table 5, means and standard deviations for the three outcome measures in this subsample were similar to those in the full sample shown in Table 4.

Hypothesis 3. Participants who are warned of impending bad news and those who are not will demonstrate equivalent recall of the consultation content.

An independent samples *t* test was conducted to compare mean recall scores of consultation content between the two groups (warning vs. no warning). As expected, there was no difference in recall between those who received a warning ($M = 5.73$, $SD = 0.51$) and those who did not ($M = 5.71$, $SD = 0.49$), $t(126) = 0.16$, $p = .86$. These results remained the same when participants who did not accurately recall the warning manipulation were excluded. Those in the warning group ($M = 5.85$, $SD = .36$) were similar to those in the no warning group ($M = 5.82$, $SD = .39$), $t(89) = -0.42$, $p = .68$.

Table 5

Means and Standard Deviations of Positive Affect, Negative Affect, and Anxiety by Warning Condition for Participants Who Accurately Identified the Warning Manipulation Only

	Warning[a]		No warning[b]	
	M	*SD*	*M*	*SD*
Positive Affect				
Prevideo Positive Affect	12.70	3.32	12.55	4.03
Postvideo Positive Affect	13.87	4.24	13.47	3.83
Negative Affect				
Prevideo Negative Affect	11.62	6.28	12.25	6.57
Postvideo Negative Affect	19.19	5.90	18.70	5.90
Anxiety				
Prevideo Anxiety	13.58	6.09	14.23	5.56
Postvideo Anxiety	18.79	5.20	18.61	5.43

Note. Positive affect and negative affect scores each range from 5 to 25 with higher scores reflecting greater positive (or negative) affect. Anxiety scores range from 6 to 24 with higher scores indicating greater anxiety.

[a] $n = 47$. [b] $n = 44$.

Framing Hypotheses

The second set of data analyses addressed framing of the prognosis. These analyses were more complex because they incorporate not only the differences in framing (positive vs. negative) but also the previous manipulation of warning versus no warning. Because the previous results indicated that the warning manipulation had no effect on affect, anxiety, or recall, however, data were collapsed across warning condition for some of the ensuing analyses.

Hypothesis 4. Participants who hear a positively framed prognosis and those who hear a negatively framed prognosis will be equally accurate in their recall of the statistical percentages given by the physician when explaining prognosis.

This hypothesis was examined using responses to two cued recall questions. For instance, participants in the negative frame were asked "What are the chances that the cancer will come back after treatment?" and "What percentage of people who are your age and have this disease will die within 5 years?" Participants were asked to respond with the associated statistic (percentage). Thus, to examine this hypothesis, recalled percentages were compared with the actual percentages given by the physician in the videotapes. Responses of "don't know" or "can't remember" were treated as inaccurate recall.

Participants were first placed into one of three groups according to the total number of statistics they recalled accurately (i.e., reported exactly correct): (a) those who accurately recalled both prognostic statistics, (b) those who accurately recalled one statistic but not the other, and (c) those who recalled neither prognostic statistic accurately (Figure 1). A chi-square test of association was then conducted to determine if

accuracy varied between the positive and negative framing conditions. As hypothesized, there was no difference between the positive and negative framing groups on overall recall of the prognostic statistics, $\chi^2(2, N = 128) = 3.62$, $p = .83$.

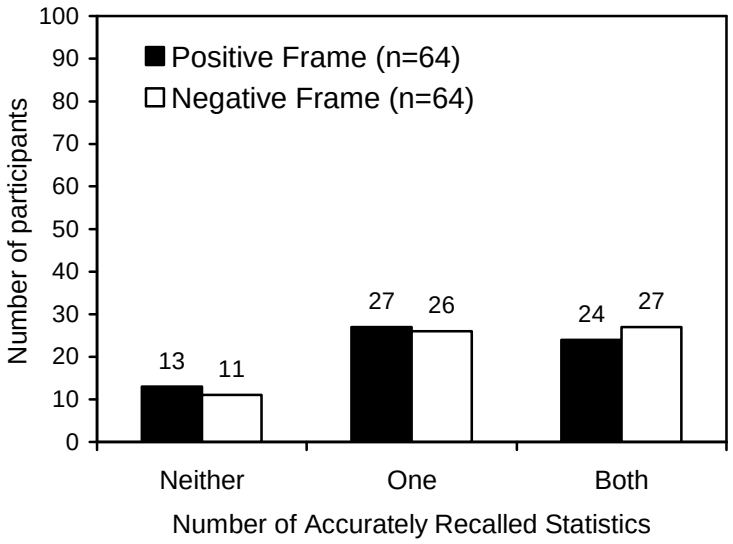

Figure 1. Number of participants in positive and negative framing conditions who accurately recalled the two prognostic statistics

Examining the two prognostic statistics separately produced similar results. The number of people in each of the framing conditions who correctly recalled prognostic statistic 1 and prognostic statistic 2 are shown in Figure 2.

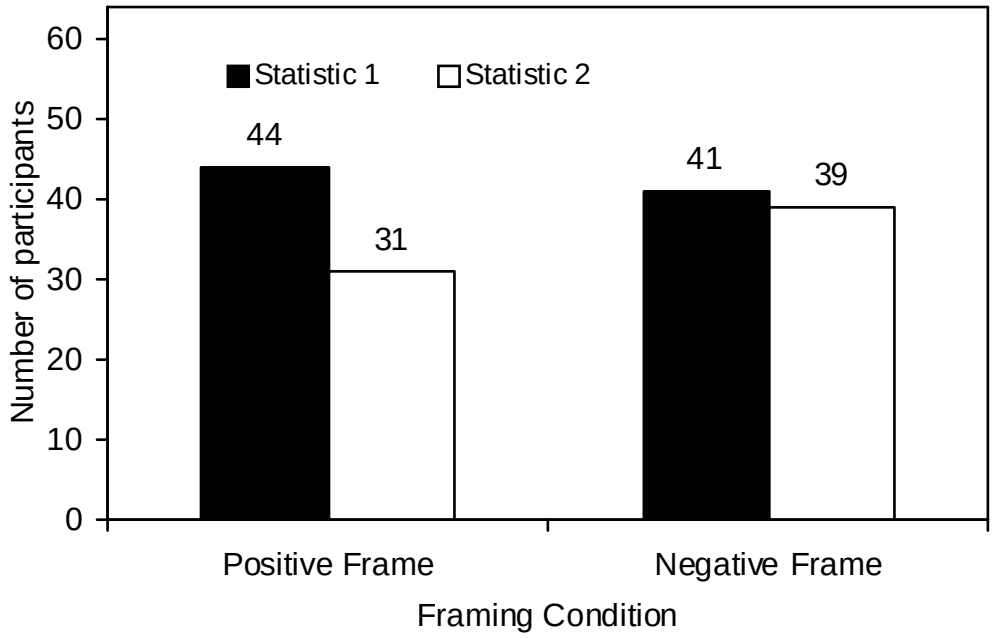

Figure 2. Number of participants in positive and negative framing conditions who correctly recalled the two prognostic statistics. Statistic 1 presented the chances of remaining cancer free after treatment (80%; positive frame) or the chances of the cancer coming back (20%; negative frame). Statistic 2 presented the percentage of patients with colon cancer who are still alive in 5 years (65%; positive frame) or the percentage of patients with this disease who die within 5 years (35%; negative frame).

The number of people who accurately recalled the prognostic statistic and those who did not did not differ significantly between the positive and negative framing groups for the first prognostic statistic (i.e., chances of the cancer coming back vs. chances of remaining cancer free), $\chi^2(1, N = 128) = 0.32$, $p = .58$, or for the second prognostic statistic (i.e., percentage of patients who die within 5 years vs. percentage who are still alive in 5 years), $\chi^2(1, N = 128) = 2.02$, $p = .15$. When, however, recall accuracy for the

first and second statistics was compared within each framing condition using McNemar's exact test for correlated proportions, recall of the first statistic was similar to the second for the negative frame condition (64 vs. 61%; $p = .85$), but recall accuracy for the second statistic was considerably lower than recall of the first statistic in the positive frame condition (69 vs. 48%, $p = .02$).

Additional analyses were conducted to explore any patterns that might help to explain such a drop in accuracy in the positive framing group. The goal of these analyses was to differentiate participants according to how close they were to recalling the prognostic statistics accurately. First, participants were placed into one of five groups based on the absolute value of the difference between the percentage they recalled and the actual percentage that was provided by the physician. For these analyses, participants who responded "don't know" or "can't remember" were placed into a separate category from participants who recalled a statistic but did so inaccurately. The five categories were: (a) accurate recall, (b) 1 to 10 percentage points off, (c) 11 to 20 percentage points off (this category included participants who reversed the two statistics presented by the physician: 20 vs. 35% or 80 vs. 65%), (d) more than 20 percentage points off, and (e) don't know/can't remember. The number of participants who fell into each of the five categories is shown in Figure 3 for each framing condition for the first statistic (top panel) and also for the second statistic (bottom panel).

For the first prognostic statistic (i.e., chances of remaining cancer free vs. chances of the cancer coming back), there was no difference between the positive and negative framing conditions across these five accuracy groups, $\chi^2(4, N = 128) = 3.33$, $p = .51$. Likewise, for the second prognostic statistic there was also no significant difference

between the positive and negative framing conditions (i.e., percentage of patients are still alive in 5 years vs. percentage who patients who die within 5 years), though this effect did approach significance, $\chi^2(4, N = 128) = 8.72$, $p = .07$.

Although recall accuracy did not differ significantly for either statistic based on prognosis framing, inspection of the frequencies presented in the bottom panel of Figure 3 show a greater tendency for those in the positive condition to report statistics that were 1 to 15 percentage points off the second statistic they were given. Notably, 25% of participants in the positive frame were 15 percentage points off, compared with 13% of participants in the negative frame. Further examination of this subset revealed a disproportionate number of participants in the positive condition who paired the first percentage (80%) with the second phrase (percentage of people who are still alive in 5 years). Indeed, 20% *(n* = 13) of participants in the positive condition made this error, compared with only 8% *(n* = 5) of participants in the negative condition who paired the first percentage (20%) with the second phrase (percentage of people who die within 5 years). Participants in the positive condition were also somewhat less likely to respond with “don’t know” or “can’t remember” than participants in the negative condition (3 vs. 11%).

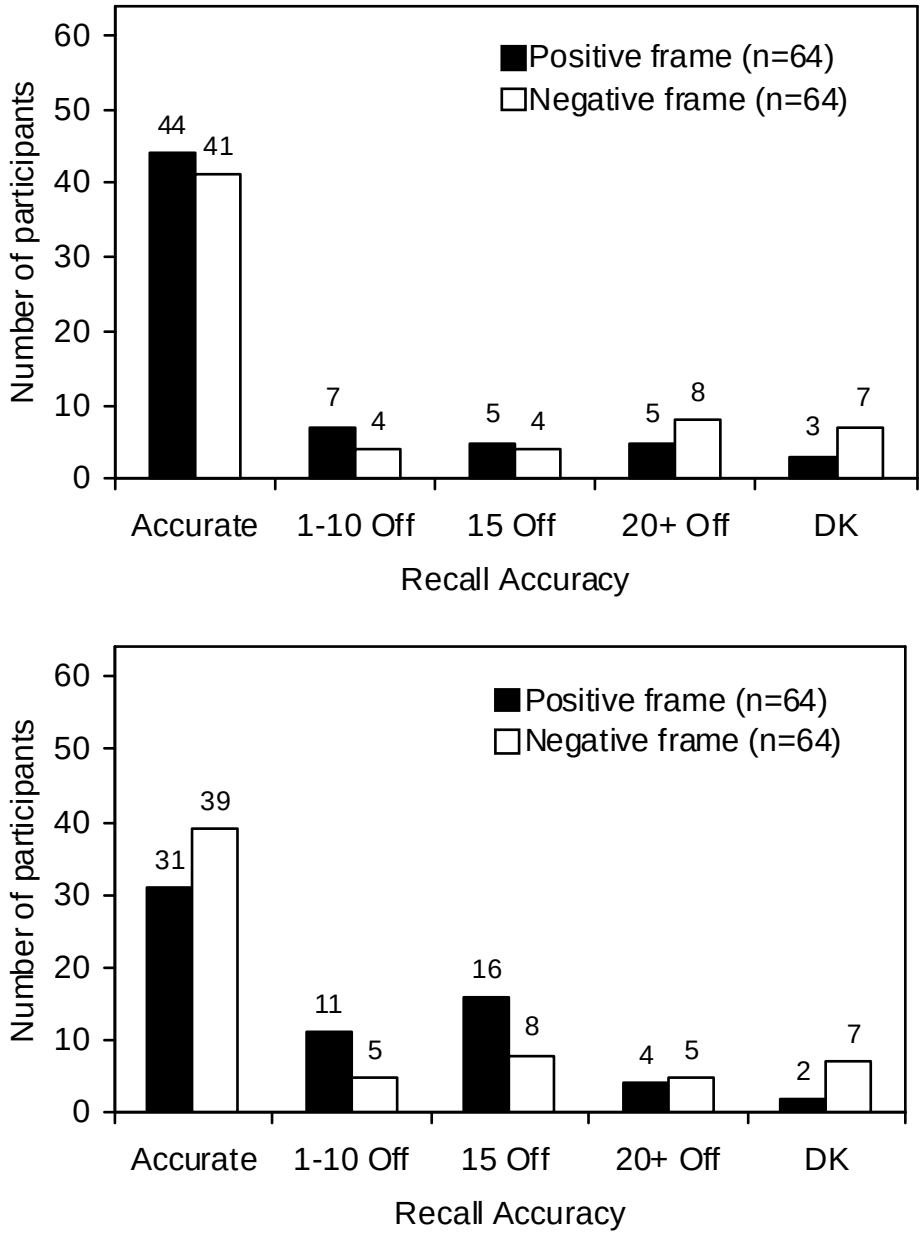

Figure 3. Recall accuracy for the first (top panel) and second (bottom panel) prognostic statistics, by framing condition. "1-10 Off"=1 to 10 percentage points away from the actual statistic presented by the physician' "15 Off"= 15 percentage points away (e.g, reversed the two statistics presented by the physician (80 vs. 65%; 20 vs. 35%); "20+ Off"= 20 percentage points away or more; "DK"=don't know or can't remember.

In a final exploratory analysis, participants were placed into one of three groups according to their recall of the second prognostic statistic: (a) accurate recall, (b) optimistic recall (i.e., overestimated survival rate in the positive frame or underestimated mortality rate in the negative frame), or (c) pessimistic recall (i.e., underestimated survival rate in the positive frame or overestimated mortality rate in the negative frame). For this analysis, participants who responded with "don't know/can't remember" were excluded. A chi-square test comparing the number in each of these three categories in the two framing conditions (Figure 4) was not significant, $\chi^2(2, N = 119) = 4.37$, $p = .11$; however, more individuals in the positive condition provided an optimistic response (33%; $n = 21$), compared with the negative condition (17%; $n = 11$).

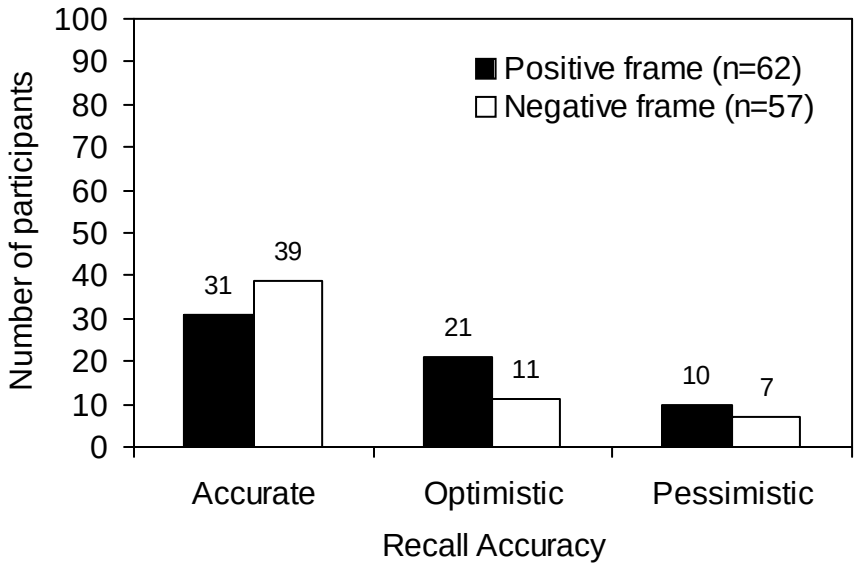

Figure 4. Number of participants in each framing condition whose recall of second prognostic statistic was accurate, optimistic, or pessimistic. "Optimistic = overestimated survival rate (positive frame) or underestimated mortality rate (negative frame). "Pessimistic" = underestimated survival rate (positive frame) or overestimated mortality rate (negative frame). Participants who responded with "don't know/can't remember" were excluded.

Hypothesis 5. Participants who hear a negatively framed prognosis will interpret the news as worse than participants who hear a positively framed prognosis.

Means and standard deviations for participants' ratings of the news after viewing the prognosis video are presented in Table 6.

Table 6

Means and Standard Deviations of Bad News Ratings After Prognosis Video by Condition

	Positive frame		Negative frame	
	M	*SD*	*M*	*SD*
Warning	60.61	24.52	34.84	25.19
No warning	61.56	25.16	41.50	28.10
Total	61.09	24.65	38.17	26.68

Note. Scale ranges from 0 to 100, with lower scores indicating worse news ratings.

These 0 to 100 ratings of bad news were examined as the dependent variable in a two-by-two factorial ANOVA with warning condition (warning vs. no warning) as one independent variable and framing (positive vs. negative) as the other (Table 7). As hypothesized, the ANOVA revealed a significant effect of framing. As illustrated in Figure 5, individuals who heard the prognosis framed in negative terms rated the news as significantly worse than those who heard a positively framed prognosis, $F(1,124) = 25.28$

$p < .001$. There was no significant main effect for warning vs. no warning, nor for the interaction of warning with framing.

Table 7

Analysis of Variance for Bad News Rating of Prognosis

Source of variation	*df*	*F*	η^2	*p*
Warning	1	0.70		.41
Framing	1	25.28*	.96	<.001
Warning x Framing	1	0.39		.53
Error	124	(664.57)		

Note. Value enclosed in parentheses represents mean square error.

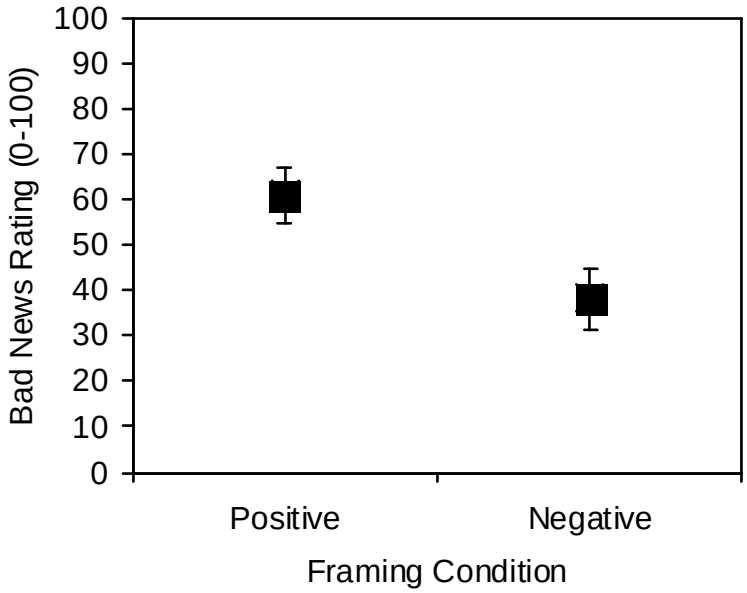

Figure 5. Mean bad news ratings of prognosis (+/- 95% CI) in positive (n = 64) and negative (n = 64) framing conditions. High score indicates good news.

Hypothesis 6. Participants who hear a negatively framed prognosis will report lower positive affect and higher negative affect compared with participants who hear a positively framed prognosis.

Hypothesis 7. Participants who hear a negatively framed prognosis will report higher anxiety than participants who hear a positively framed prognosis.

Means and standard deviations for the affect and measures are presented in Table 8; those for anxiety are in Table 9. Similar to the analyses for anxiety and affect for the warning condition, prevideo variance was partialled out by calculating individual unstandardized residuals for each of the three dependent variables (positive affect, negative affect, anxiety). As before, postvideo scores were regressed on prevideo scores in a linear regression for each of the measures. The estimates produced by each regression equation were then subtracted from the variable's observed postvideo scores. The resultant residualized postvideo scores for positive affect, negative affect, and anxiety were entered as dependent variables in a multivariate analysis of variance (MANOVA). Warning (warning vs. no warning) and framing (positive vs. negative framing) were entered as between-subjects variables. Results of the MANOVA revealed a significant multivariate effect of framing, Pillai's Trace $V = .142$, $F(3, 122) = 6.71$, $p < .001$, but not for warning, Pillai's Trace $V = .01$, $F(3, 122) = 0.30$, $p = .83$, or for the warning by framing interaction, Pillai's Trace $V = .04$, $F(3, 122) = 1.49$, $p = .22$.

Inspection of the univariate tests for framing revealed that, as hypothesized, there was a significant effect of framing on both negative affect, $F(1, 124) = 19.48$, $p < .001$, $\eta^2 = .13$, and anxiety, $F(1, 124) = 7.03$, $p = .009$, $\eta^2 = .05$. Individuals who heard their prognosis framed in a negative way were significantly more distressed after hearing this

news than individuals who heard their prognosis framed in a positive way. This main effect of framing is illustrated in Figure 6. There was no significant effect of framing on positive affect, $F(1, 124) = .01$, $p = .91$.

Table 8

Means and Standard Deviations of Positive and Negative Affect

Framing condition[a]	Warning		No warning	
	M	*SD*	*M*	*SD*
Prevideo positive affect				
Positive frame	14.59	4.94	13.00	4.48
Negative frame	13.44	4.47	14.95	4.17
Postvideo positive affect				
Positive frame	14.56	4.77	13.21	4.13
Negative frame	13.91	3.99	14.09	4.17
Prevideo negative affect				
Positive frame	16.25	5.94	15.63	6.45
Negative frame	14.06	5.91	15.78	5.73
Postvideo negative affect				
Positive frame[b]	17.72	4.39	16.34	6.36
Negative frame[b]	18.13	5.99	20.38	5.27

Note. Positive affect and negative affect scores each range from 5 to 25 with higher scores reflecting greater positive (or negative) affect.

Table 9

Means and Standard Deviations of Anxiety

Framing condition[a]	Warning		No warning	
	M	*SD*	*M*	*SD*
Previdеo anxiety				
Positive frame	16.94	5.27	17.78	5.36
Negative frame	15.59	5.55	17.38	4.32
Postvideo anxiety				
Positive frame	18.28	3.72	17.97	5.32
Negative frame	17.69	5.68	20.12	4.40

Note. Anxiety scores range from 6 to 24 with higher scores indicating greater anxiety.

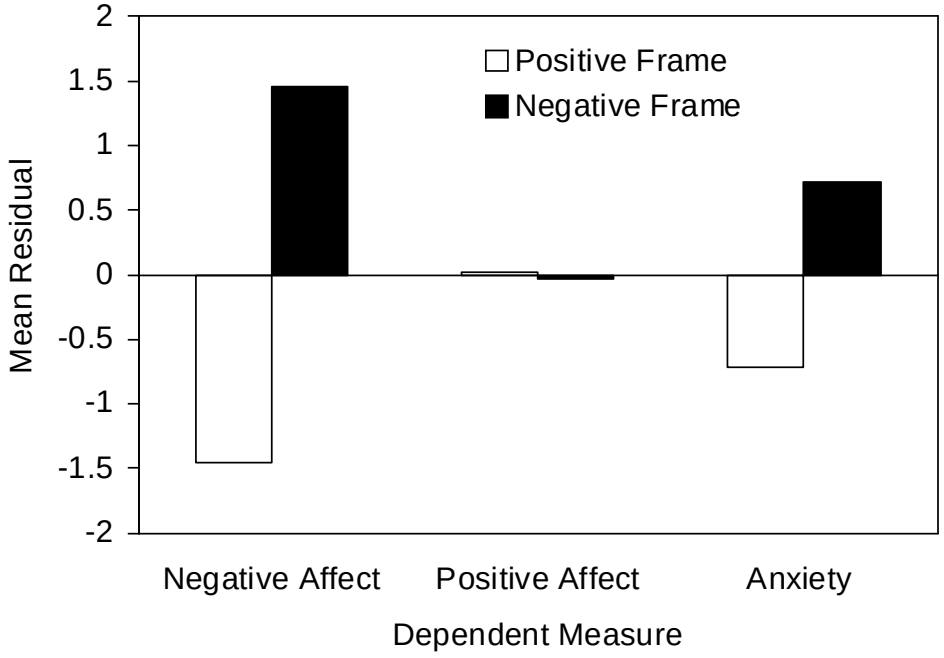

Figure 6. Effect of framing on residualized positive affect, negative affect and anxiety.

Hypothesis 8. Participants who hear a negatively framed prognosis are expected to feel less hopeful for the future than participants who hear a positively framed prognosis.

This hypothesis was tested in two separate analyses. The first analysis assessed group differences in hope as indexed by the Life-Orientation Test-Revised (LOT-R). For this analysis, variance in prevideo LOT-R scores first was partialled out by calculating unstandardized residuals for the postvideo LOT-R scores. Postvideo LOT-R scores were regressed on prevideo LOT-R scores in a linear regression. The estimates produced by this regression equation were then subtracted from the observed postvideo LOT-R scores to calculate residuals. Finally, a univariate ANOVA was conducted, entering the unstandardized residuals for postvideo LOT-R score as the dependent variable. The two between-subjects independent variables were warning (warning vs. no warning) and framing (positive vs. negative). Results from this ANOVA are presented in Table 10. Contrary to hypothesis, the effect of framing was not statistically significant for hopefulness, $F(1, 124) = 1.44$, $p = .23$. There was also no significant main effect of warning, or warning by framing interaction.

Table 10

Analysis of Variance for Ratings of Hopefulness (LOT-R) by Condition

Source of variation	*df*	*F*	*p*
Warning	1	.17	.69
Framing	1	1.44	.23
Warning x Framing	1	.02	.89
Error	124	(5.84)	

Note. Value enclosed in parentheses represents mean square error. LOT-R: Life Orientation Test-Revised.

In addition to this standardized questionnaire, hope was assessed by asking participants to rate their feelings of hopefulness in nine domains as well as their overall hopefulness for the future (Table 11). In a second analysis these 0 to 100 ratings of hope were entered as dependent variables in a MANOVA. Again, the two between-subjects variables were warning (warning vs. no warning) and framing (positive vs. negative framing). Results revealed a significant multivariate effect of framing, Pillai's Trace V = .15, $F(10, 112) = 2.01$, $p = .04$; there was no significant effect of warning, Pillai's Trace $V = .10$, $F(10, 112) = 1.23$, $p = .28$, or interaction of warning by framing, Pillai's Trace $V = .11$, $F(10, 112) = 2.41$, $p = .18$.

Univariate tests revealed a significant effect of framing on four hopefulness items as well as overall hopefulness (Table 12). For all of the statistically significant differences, participants in the negative framing group reported feeling less hopeful than participants in the positive framing group.

Table 11

Means and Standard Deviations of Hopefulness Ratings by Condition

Framing condition	Warning		No warning	
	M	*SD*	*M*	*SD*
Live 1 year				
Positive frame	90.25	20.43	96.45	10.82
Negative frame	92.71	18.01	98.23	3.78
Live 5 years				
Positive frame	84.84	16.49	86.52	17.91
Negative frame	71.77	29.23	68.06	29.60
Live 10 years				
Positive frame	67.03	28.59	66.29	28.28
Negative frame	52.10	28.77	50.48	35.60
Live longer than doctor expects				
Positive frame	72.81	24.13	78.87	22.50
Negative frame	63.06	28.22	64.52	36.84
Receive treatment you need				
Positive frame	89.53	16.48	97.42	5.61
Negative frame	95.29	10.86	83.06	28.33
Cancer never return				
Positive frame	64.87	26.76	77.90	23.87
Negative frame	62.39	28.00	55.32	36.15

Table 11 (continued)

Framing condition	Warning		No warning	
	M	*SD*	*M*	*SD*
Independent after treatment				
Positive frame	77.97	22.43	87.26	16.53
Negative frame	78.39	22.45	75.97	30.29
Pain/symptoms well controlled				
Positive frame	81.03	21.72	85.61	14.67
Negative frame	76.94	23.37	74.68	25.49
Be well cared for and supported				
Positive frame	86.16	16.82	92.42	12.51
Negative frame	84.48	20.93	88.71	21.05
Hopefulness overall				
Positive frame	79.81	20.43	85.81	16.99
Negative frame	72.52	23.27	67.68	29.75

Note. All ratings range from 0 to 100, with higher scores indicating greater hopefulness

Table 12

Univariate Tests for Hopefulness Ratings by Framing Condition

Source of variation	*df*	*F*	*P*
Live 1 year	3	1.86	.14
Live 5 years	3	4.61	.004
Live 10 years	3	2.65	.05
Live longer than doctor expects	3	2.11	.10
Receive treatment you need	3	4.21	.007
Cancer never return	3	3.27	.02
Independent after treatment	3	1.43	.24
Pain/symptoms well controlled	3	1.53	.21
Be well cared for and supported	3	1.12	.34
Hopefulness overall	3	3.72	.01

Additional Research Questions

Personality and Health Information Style

Pearson correlations between the five personality factors (Neuroticism, Extraversion, Intellect/Openness, Conscientiousness, and Agreeableness) and the residualized positive affect, negative affect, and anxiety scores after the warning video are presented in Table 13. Although neuroticism was significantly, although modestly, correlated with all three residualized dependent measures, extraversion was correlated only with positive affect, and the remaining three personality factors were not significantly correlated with any of the dependent measures. Similarly, health information style, as measured by the KHOS-I, was uncorrelated with the three dependent measures.

Table 13

Intercorrelations Among Personality and Residualized Affect and Anxiety Scores after the Warning Video

	Positive affect	Negative affect	Anxiety
Neuroticism	-.28**	.23**	.18*
Extraversion	.18*	-.01	.009
Openness	-.03	-.03	-.02
Agreeableness	.05	.05	.02
Conscientiousness	.16	.07	-.03
KHOS-I	.06	.08	-.01
Warning Condition	.05	.10	.07

Note. KHOS-I= Krantz Health Opnion Scale-Information Subscale

*$p < .05$.**$p < .01$.

Separate hierarchical regression analyses were conducted using residualized positive affect, negative affect, and anxiety as dependent variables. I entered warning condition (warning vs. no warning) in Step 1, the five personality factor scores as a set in Step 2, followed by five two-way interactions (warning condition by each of the five personality factors) in Step 3. In the regressions for positive affect and anxiety, none of the three steps were statistically significant (results not shown). Results of the hierarchical regression for negative affect are summarized in Table 14. Warning condition in Step 1 explained no variance in negative affect, $F(1, 126) = 1.20$, $p = .28$. When the five personality factors were entered in Step 2, the model explained 11% of the variance in residualized negative affect following the warning video, $F(5, 121) = 3.07$, $p = .01$; only Neuroticism was significant ($\beta = .42$, $p < .001$). Finally, the five two-way interactions entered in Step 3 explained no additional variance in residualized negative affect, $F(5,116) = .44$, $p = .82$.

Similar results were revealed when these regression analyses were repeated including health information style as measured by the KHOS-I along with the 5 personality factor scores in Step 2, as well as the interaction of warning condition and health information style in Step 3. In the regressions for positive affect and anxiety, none of the three steps were statistically significant (results not shown). For negative affect, neither Step 1, $F(1, 126) = 1.20$, $p = .28$, nor Step 3 $F(5, 116) = .44$, $p = .82$, explained any variance in residual negative affect. Step 2 explained 12% of the variance in residualized negative affect; again, only Neuroticism was significant ($\beta = .42$, $p < .001$).

Table 14

Summary of Hierarchical Regression Analysis for Variables Predicting Negative Affect for Warning Video

Variable	*B*	*SE B*	β	ΔR^2
Step 1				.01
Warning	.93	.84	.10	
Step 2				.11*
Warning	1.02	.82	.11	
Neuroticism	2.97	.78	.42***	
Extraversion	1.34	.99	.14	
Openness	-.47	.81	-.05	
Agreeableness	.98	.98	.10	
Conscientiousness	1.51	.93	.17	
Step 3				.02
Warning	-19.19	18.11	-2.02	
Neuroticism	2.63	1.03	.37*	
Extraversion	1.95	1.60	.20	
Openness	-.58	1.09	-.06	
Agreeableness	.35	1.39	.03	
Conscientiousness	.72	1.19	.08	
Warning x Neuroticism	1.01	1.67	.23	
Warning x Extraversion	-.84	2.09	-.30	
Warning x Openness	-.02	1.69	-.01	
Warning x Agreeableness	1.25	2.06	.52	
Warning x Conscientiousness	2.06	1.96	1.68	

*$p < .05$. ***$p < .001$.

Another set of hierarchical regression analyses was conducted on the residual affect and anxiety scores obtained after participants viewed the second video giving the prognosis (i.e., the prognosis video). Framing condition was entered into Step 1; warning condition was not included in the model because it yielded no significant main effects or interaction effects in the previous analyses of framing. The five personality factors were entered in Step 2, followed by two-way interactions of personality and framing in Step 3.

Pearson correlations between the five personality factors and the residualized positive affect, negative affect, and anxiety scores from the prognosis video are presented in Table 15. Neuroticism, extraversion, and conscientiousness were significantly correlated with positive affect, but none of the personality factors were correlated with negative affect or anxiety. Framing condition was correlated only with negative affect. Health information style was not correlated with any of the dependent measures.

Table 15

Intercorrelations Among Personality and Residualized Affect and Anxiety Scores for Prognosis Video

	Positive Affect	Negative Affect	Anxiety
Neuroticism	-.21*	.02	.08
Extraversion	.22*	.06	-.07
Openness	.03	-.12	-.01
Agreeableness	-.03	.04	.06
Conscientiousness	.28**	.05	-.09
KHOS-I	.12	.00	-.07
Framing Condition	.01	-.37**	-.23

*$p < .05$. **$p < .01$.

Table 16 presents results for the regression analysis on residual positive affect for the prognosis video. Framing condition in Step 1 did not predict positive affect, $F(1,126) = 0.01$, $p = .91$. The personality factors entered in Step 2 explained 13% of the variance in positive affect, $F(5, 121) = 3.63$, $p = .004$. Agreeableness ($\beta = -.20$, $p = 04$) and Conscientiousness ($\beta = .28$, $p = .006$) were statistically significant. Finally, the interactions of personality by framing entered in Step 3 explained no additional variance in positive affect.

Table 17 presents results for the regression analysis on residual negative affect for the prognosis video. Framing condition explained 13% of the variance in negative affect in Step 1, $F(1, 126) = 19.41$, $p < .001$, but neither the addition of personality in Step 2, $F(5, 121) = 0.74$, $p = .60$, nor the personality by framing interactions in Step 3 explained any additional variance in negative affect, $F(5, 116) = 0.76$, $p = .58$.

Finally, the hierarchical regression analysis on anxiety for the prognosis video (Table 18) produced results similar to those for negative affect. Framing condition in Step 1 explained 5% of the variance in anxiety, $F(1, 126) = 6.93$, $p = .01$. Neither the addition of personality in Step 2, $F(5, 121) = 0.67$, $p = .64$, nor the personality by framing interactions in Step 3 explained any additional variance in anxiety, $F(5, 116) = 0.65$, $p = .66$.

All three of the regression analyses (positive affect, negative affect, and anxiety) were repeated including health information style with the five personality factors in Step 2 as well as the health information style by framing interaction in Step 3. The addition of health information style added nothing to the prediction of any of the dependent measures (results not shown).

Table 16

Summary of Hierarchical Regression Analysis for Predicting Positive Affect after Prognosis Video

Variable	*B*	*SE B*	β	ΔR^2
Step 1				.00
Framing	.05	.46	.01	
Step 2				.13**
Framing	.07	.45	.01	
Neuroticism	-.37	.42	-.10	
Extraversion	.60	.53	.12	
Openness	.16	.44	.03	
Agreeableness	-1.11	.53	-.20*	
Conscientiousness	1.39	.50	.28**	
Step 3				.03
Framing	5.82	.45	.01	
Neuroticism	-1.04	.42	-.10	
Extraversion	.19	.53	.12	
Openness	.83	.64	.17	
Agreeableness	-1.27	.81	-.23	
Conscientiousness	1.56	.70	.32*	
Framing x Neuroticism	.93	.89	.46	
Framing x Extraversion	.24	1.12	.15	
Framing x Openness	-1.28	.90	-.85	
Framing x Agreeableness	.21	1.08	.16	
Framing x Conscientiousness	-.68	1.02	-1.02	

*$p < .05$. **$p < .01$.

Table 17

Summary of Hierarchical Regression Analysis for Variables Predicting Negative Affect for Prognosis Video

Variable	*B*	*SE B*	β	ΔR^2
Step 1	-2.90	.66	-.37***	.13***
Framing				
Step 2				.03
Framing	-2.95	.68	-.37***	
Neuroticism	1.01	.64	.17	
Extraversion	1.02	.81	.13	
Openness	-.66	.66	-.09	
Agreeableness	.12	.81	.01	
Conscientiousness	.46	.76	.06	
Step 3				.03
Framing	-22.04	15.02	-2.78	
Neuroticism	.32	1.08	.05	
Extraversion	-.18	1.15	-.02	
Openness	-.62	.97	-.08	
Agreeableness	-.68	1.23	-.08	
Conscientiousness	.51	1.07	.07	
Framing x Neuroticism	1.06	1.36	.34	
Framing x Extraversion	2.78	1.70	1.18	
Framing x Openness	.33	1.37	.14	
Framing x Agreeableness	1.27	1.64	.62	
Framing x Conscientiousness	.18	1.55	.18	

**p =.01. *** p < .001.

Table 18

Summary of Hierarchical Regression Analysis for Variables Predicting Anxiety for Prognosis Video

Variable	*B*	*SE B*	β	ΔR^2
Step 1				.05*
Framing	-1.42	.54	-.23**	
Step 2				.03
Framing	-1.47	.55	-.24***	
Neuroticism	.43	.52	.09	
Extraversion	-.14	.66	-.02	
Openness	.10	.54	.02	
Agreeableness	.77	.66	.11	
Conscientiousness	-.56	.62	-.09	
Step 3				.03
Framing	-1.18	12.33	-.19	
Neuroticism	.16	.89	.03	
Extraversion	-1.13	.94	-.18	
Openness	.51	.80	.08	
Agreeableness	.47	1.01	.07	
Conscientiousness	-.10	.88	-.02	
Framing x Neuroticism	.28	1.12	.11	
Framing x Extraversion	2.22	1.40	1.21	
Framing x Openness	-.70	1.12	-.40	
Framing x Agreeableness	.36	1.34	.23	
Framing x Conscientiousness	-.96	1.27	-1.19	

* $p < .05$. ** $p = .01$. *** $p < .001$.

Two final hierarchical regression analyses were conducted on the hopefulness ratings obtained after participants viewed the second video giving the prognosis (i.e., the prognosis video). As in the previous regression analyses, framing condition was entered in Step 1, the five personality factors were entered in Step 2, and the personality by framing interactions were entered in Step 3. In the first analysis residualized LOT-R scores served as the dependent variable. The dependent variable in the second analysis was the mean of the ten 0-100 hopefulness ratings.

Pearson correlations between the five personality factors and the residualized LOT-R scores and average hope ratings are presented in Table 19. Neuroticism, extraversion, and agreeableness were significantly correlated with average hope, but none of the personality factors were correlated with LOT-R scores. Framing condition was correlated only with average hope. Health information style was not correlated with any of the dependent measures.

Table 19

Intercorrelations Between Personality, Residualized LOT-R and Hope Ratings for Prognosis *Video*

	LOT-R	Average hope
Neuroticism	.15	-.42***
Extraversion	-.04	.29**
Openness	-.01	.09
Agreeableness	-.03	.18*
Conscientiousness	-.12	.16
KHOS-I	.11	.03
Framing condition	-.11	.26**

*p<.05. **p < .01. ***p<.001.

For the regression on residual LOT-R scores, none of the three steps were statistically significant (results not shown). Table 20 presents results for the regression analysis on average hopefulness ratings (across 10 domains) following the prognosis video. Framing condition in Step 1 explained 7% of the variance in hopefulness, F (1, 126) = 9.41, p = .003. The personality factors entered in Step 2 explained an additional 23% of the variance in hope, F (5, 121) = 7.95, p < .001. Only Neuroticism (β = -.44, p < .001) made a unique contribution. Finally, the personality by framing interactions entered in Step 3 explained no additional variance in hope F (5, 116) = 0.93, p < .46.

When these two regression analyses (for LOT-R and average hope) were repeated including health information style with the five personality factors in Step 2 as well as the health information style by framing interaction in Step 3, the results of these analyses were unchanged. The addition of health information style added nothing to the prediction of either of the dependent measures (results not shown).

Table 20

Summary of Hierarchical Regression Analysis for Variables Predicting Mean Hope for Prognosis Video

Variable	*B*	*SE B*	β	ΔR^2
Step 1				.07**
Framing	8.87	2.89	.26**	
Step 2				.23***
Framing	10.66	2.61	.32***	
Neuroticism	-11.21	2.48	-.44***	
Extraversion	2.51	3.11	.07	
Openness	2.18	2.55	.07	
Agreeableness	2.76	3.11	.08	
Conscientiousness	-2.74	2.92	-.09	
Step 3				.03
Framing	44.27	57.85	1.32	
Neuroticism	-12.29	4.17	-.49**	
Extraversion	5.20	4.42	.15	
Openness	3.92	3.75	.12	
Agreeableness	6.03	4.72	.17	
Conscientiousness	-5.16	4.11	-.16	
Framing x Neuroticism	1.63	5.24	.12	
Framing x Extraversion	-8.46	6.56	-.85	
Framing x Openness	-3.80	5.26	-.39	
Framing x Agreeableness	-5.42	6.31	-.63	
Framing x Conscientiousness	3.16	5.9	.73	

Note. . Dependent variable is mean of ten 0-100 ratings of hopefulness.

**$p < .01$. ***$p<.001$.

CHAPTER 7: DISCUSSION

This dissertation investigated the effects of forecasting bad news and framing prognosis when conveying a life-limiting diagnosis of colon cancer. An experimental videotape paradigm was used to maximize the capacity for discerning differences in individuals' perceptions and affective responses following specific communication behaviors. I hypothesized that warning of impending bad news would reduce subsequent psychological distress but have no effect on recall of consultation content. Similarly, framing prognosis in terms of positive outcomes such as treatment success and survival was expected to produce less distress and greater hope than framing prognosis in terms of negative outcomes such as cancer reoccurrence and death. I also hypothesized that negative framing would negatively bias subjective perceptions of the prognosis but not affect the recall of prognostic statistics.

Effect of Warning of Impending Bad News

Results of this study did not support the hypothesis that warning an individual about upcoming bad news reduced psychological distress. Participants in both warning and no-warning conditions reported similar negative affect and anxiety after watching a video in which a doctor gave them a diagnosis of colon cancer. Thus, receiving a warning immediately prior to the diagnosis had no effect.

Several factors may help explain why warning did not affect psychological distress in this study. The most obvious explanation is that the type of warning recommended in current guidelines (and used in the current study) is ineffective. Although obvious, this explanation is not simple and is composed of several potential contributing factors. For instance, it is possible that the brevity of the warning statement

prevents individuals from detecting the warning. Written in the form recommended by the SPIKES protocol (Baile et al., 2000), the warning used in this study was brief (i.e., "I'm afraid I have bad news"). As a manipulation check, participants were asked whether the doctor had said anything before telling them they had cancer to let them know that bad news was coming. A considerable proportion (29%) of participants did not correctly identify the condition to which they had been randomized. Specifically, 20 participants in the no-warning condition erroneously thought they received a warning, and 17 participants in the warning condition did not realize they had received a warning. Nonetheless, analyses repeated with the subset of participants who *did* correctly identify their condition did not find a significant effect of warning. Furthermore, within each condition, there was no difference in negative affect or anxiety between participants who identified the manipulation and those who did not. This suggests that the nonsignificant effect of warning on psychological distress cannot be attributed to failure to detect the warning.

Though the problem with the warning does not appear to be one of detection, it is still possible that the brevity of the warning limited its effectiveness. A warning so brief may simply not be powerful enough to have an effect on affect or anxiety. This is especially true when one considers that the warning statement was presented immediately before the news itself, with only a momentary pause between the warning and the physician's diagnostic statement. A more potent (i.e., lengthy, explicit) warning might be more effective.

Above and beyond the characteristics of the warning itself, it is possible that other elements of the physician's presentation in the videos contributed to the nonsignificant

findings. For instance, any effect of the warning statement may have been diluted by the identical style and content of the physician's comments in both conditions. In an effort to isolate the effect of the warning phrase, I used the same video for both conditions, with the warning phrase, "I'm afraid I have bad news," simply edited out of the no-warning video. This ensured that the physician used the same tone of voice and words in the no-warning video as he did in the warning video. Although this strategy increased experimental control, in actual clinical settings warning is likely not only about the words being used. Rather, patients may discern (and perhaps even seek out) other cues to detect that bad news is coming, such as a physician's tone of voice, pacing of the conversation, or other aspects of the physician's behavior. Thus, by using the same tone in both videos—a tone that sought to convey a professional sense of caring concern—the effect of warning may have been mitigated.

Similarly, both the warning and no-warning videos began with the doctor reviewing the patient's symptoms and steps taken thus far to identify the cause of those symptoms. Although intended to ensure that doctor and patient had a shared understanding of what had happened thus far, inspection of the qualitative response to the question about whether the physician let them know that bad news was coming suggests that this preface may have been interpreted in other ways. Indeed, several of the participants in the no-warning condition who erroneously thought they had received warning noted that the doctor's detailed review of procedures and symptoms let them know that "the news was not good." In other words, these participants felt that if the news had not been bad, the physician would have come out immediately and said, "I have good news," or "Your test results came back negative." Anecdotally, a few even

mentioned that most physicians have nurses call on the telephone to report when test results are good, so that even being called into the office to receive test results could be interpreted as a warning.

Thus, if many participants in this study perceived the physician's lengthy review of procedures to be a sign that bad news was coming, then this study in essence compared two conditions with almost identical warnings (except for the brief one-sentence warning that was actually being tested). This could explain why no effect of warning was found. These results imply that physicians may want to be aware of the unintentional effect such an opening could have on patients, even in the absence of an explicit warning statement. Future research could address this possibility directly using a videotape paradigm with two conditions: one in which the physician begins with a review of procedures similar to the script in this study, compared with one in which the physician begins with the diagnosis, omitting both the review and the explicit warning statement. Alternatively, to test directly the effect of the warning statement evaluated in this study, it may be advisable to remove the summary of procedures from both conditions, an approach that has not been taken in prior videotape research (Fogarty et al., 1999).

These explanations point to the possibility that warning may indeed have an effect on psychological distress, although not in the form presented in this study. This conclusion seems probable, given previous research showing an effect of warning in other contexts (Dutt-Gupta et al., 2007). For instance, it is reasonable to think that an earlier warning of the *possibility* of bad news, such as telling a patient that the polyp being biopsied *could* be cancerous, may be more likely to affect psychological distress than warning of confirmed bad news immediately before delivering that news

(Friedrichsen & Strang, 2003). This kind of warning of possibility, which was proposed in at least one set of guidelines (Girgis, Sanson-Fisher & Schofield, 1999), would be more consistent with the Bad News Response Model that has been described in previous research (Sweeny & Shepperd, 2007), as it would allow a patient to "brace for the worst." According to this model, individuals will experience less negative affect at the receipt of bad news if they are *expecting* that news. In one study testing this theory, participant expectations of receiving positive test results (i.e., bad news) were manipulated by informing them that people like themselves were either at high risk or low risk for the medical condition being tested. Unlike the current study, a period of approximately 3 minutes elapsed between the receipt of this warning and the provision of bad news, presumably enabling participants in the high-risk condition to consider the warning and mentally prepare themselves for bad news. Results showed that participants who expected the bad news had lower negative affect after receiving the test results than participants who did not expect the bad news (Shepperd & McNulty, 2002). Such mental preparation was not possible with the warning examined in this study due to its immediate proximity to the bad news provision itself, which may help to explain why the warning had no effect. Future research could explore whether a warning consistent with the Bad News Response Model would reduce negative affect within the context of receiving a cancer diagnosis.

A final consideration in explaining the nonsignificant effect of warning on psychological distress is that the term "warning" may be a misnomer when describing the communication strategy recommended in current guidelines and examined in this study. In their SPIKES protocol, which provides recommendations about how to deliver bad

news, Baile and colleagues (2000) claimed that warning "may lessen the shock that can follow the disclosure of bad news and may facilitate information processing" (p. 306). This seems unlikely for the reasons just described, most notably that the warning they recommend is too brief and too close in time to the actual provision of bad news for participants to "prepare for the worst." Nevertheless, expressing that one is "afraid" to say that he has bad news or is "sorry to tell you that…" as the SPIKES protocol specifically recommends may contribute to reduced psychological distress when conveyed with a warm tone of voice and paired with other similar sentiments both before and after the provision of bad news. This potential effect seems more likely to be due to an effect of compassion rather than due to the patient actually feeling warned—that is, notified, alerted, or cautioned prior to the receipt of bad news. Indeed, the warning "I'm afraid I have bad news" is strikingly similar to some of the empathic statements recommended in the SPIKES protocol (e.g., "I'm sorry to have to tell you this," or "I was also hoping for a better result"). Such statements, when offered with a tone of warmth and caring concern, may help the patient to feel supported and reassured (Baile et al., 2000). Hence offering such a brief warning statement may be just one element in a compassionate delivery of bad news, which as a broader construct has been shown to reduce patient anxiety (Fogarty et al., 1999).

Warning also failed to have an effect on recall of consultation content, consistent with predictions. Researchers have suggested that improved recall should be mediated by reduced anxiety (Baile et al., 2000; Fogarty et al., 1999). Since I did not find a reduction in anxiety in the warning condition, this may explain why there was no difference in recall of video content. Fogarty and colleagues (1999) did not find improvements in

recall, despite achieving a significant reduction in anxiety in their videotape study of the effect of empathy when delivering bad news. Indeed, reduced anxiety was actually associated with *worse* recall in that study, perhaps because participants felt more calm and trusting of the empathic physician and therefore were less scrutinizing of the information he provided. This is unlikely the case in the current study because physician empathy was held constant and patient anxiety did not vary across the two conditions; however, it should also be noted that the memory load for the consultation in this study was fairly low compared with an actual doctor's visit. The warning video was only 2 minutes long, and questions that assessed recall were fairly simple and straightforward (e.g., "Did the doctor tell you that have colon cancer?" Yes/No; "Did the doctor recommend that you have chemotherapy?" Yes/No). Consequently, a ceiling effect existed for recall. Seventy-five percent of the sample recalled all 6 items correctly, an additional 23% recalled 5 of 6 items correctly, and the remaining 2% recalled 4 of 6 items correctly. Given that research has shown longer consultations to be associated with worse information recall (Jansen et al., 2008), future research should examine this hypothesis following a consultation that is more representative of the length and memory load of an actual doctor's visit to ensure that warning does, indeed, have no effect on patients' ability to recall the information provided.

Effect of Framing Prognostic Information

After receiving a cancer diagnosis, patients typically are told about what to expect in the future. Information about their prognosis is frequently included in this discussion, and in many cases represents a second dose of bad news. In a second video the effect of framing this prognostic information (i.e., expressing prognosis in terms of positive

outcome vs. negative outcomes) was examined. Several hypotheses regarding the effects of framing were tested. The first examined the effect of framing on accuracy for the statistical percentages given by the physician when explaining prognosis. As hypothesized, there was no difference between participants who heard a positively framed prognosis and those who heard a negatively framed prognosis. In both conditions, approximately 40% of participants recalled both statistics accurately, 40% recalled one statistic accurately, and approximately 20% recalled neither statistic accurately. Although recall has not been addressed in research on prognosis framing in the past, these findings are generally consistent with two studies of the effect of message framing on breast self-examination. Both studies found equivalent recall between framing conditions after reading an information pamphlet (Myerowitz & Chaiken, 1987) and watching an informational video (Brenes, 1998).

Although I predicted no differences in recall between framing conditions, an interesting trend that contradicts my original hypothesis should be noted. The physician in the video explained the patient's prognosis with two statistics. He first presented the patient's chances of remaining cancer free after treatment (80%; positive frame) or chances of the cancer returning (20%; negative frame). He preceded this statement with "fortunately" in the positively framed video, and "unfortunately" in the negatively framed video. Then, in a second statement, he presented the percentage of patients "who are your age and have this disease" who are still alive in 5 years (65%; positive frame), or who die within 5 years (35%; negative frame). Among those who heard the negatively framed prognosis, participants were equally likely to recall the first and second statistics correctly (64.1% vs. 60.9%). In contrast, among participants who heard the positively

framed prognosis, the proportion of accurate recall dropped significantly, from 68.8% for the first statistic to only 48.8% for the second statistic (i.e., the percentage of people who are still alive in 5 years).

Inspection of individually recalled percentages suggests that people in the positive condition were somewhat more likely to pair the first percentage (80%) with the second phrase (percentage of people who are still alive in 5 years). Indeed, only 8% of participants in the negative condition made this error, while 20% in the positive condition did. Notably, participants who made this error unintentionally overestimated their chances of surviving 5 years; that is, they interpreted their prognosis to be more optimistic than it actually was. Consistent with this pattern (though not statistically significant), participants in the positive condition were somewhat more likely to be overly optimistic when recalling the second prognostic statistic: 33% of individuals in the positive condition overestimated the 5-year survival rate, but only 17% in the negative condition underestimated the 5-year mortality rate.

A tendency for patients to overestimate their prognosis in the positive direction has been reported in previous studies (Mackillop et al., 1988) and is concerning because it may lead patients to pursue more aggressive treatment than they would if their understanding of prognosis was more accurate (Weeks et al., 1998). Although the trends in recall observed in this study are only preliminary, the notion that memory for the second statistic might decline after hearing the first positively framed statistic is consistent with research showing that positive mood tends to reduce attention to detail, deferring to more heuristic-type processing (Clore, Schwarz, & Conway, 1994). Thus after hearing the first percentage along with the physician's construal of the news as good

(given his use of the term “fortunately”), participants may have been less scrutinizing of the prognostic information, possibly contributing to the observed decline in recall. As one participant who was unable to recall the second statistic correctly wrote, “80% words were nice to hear.” Though largely conjecture at this stage, this explanation could be strengthened by further research replicating the observed trends at a statistically significant level. To test this proposition, more could be done to cast the positive frame as “good news” and the negative frame as “bad news.” For instance, the physician could use a more enthusiastic or optimistic tone of voice in the positive frame and use a more pessimistic tone in the negative frame. In addition, inserting comments such as “I have great news” or “I have very bad news” could further enhance the manipulation and help to determine whether positive mood is associated with worse prognosis recall.

Although framing was not expected to affect objective recall of the statistical percentages, it was hypothesized to influence subjective interpretations of that prognostic information. Results of the current study provide support for this hypothesis. Despite the fact that the ultimate outcomes presented in the two conditions were identical in meaning, individuals who heard the negatively framed prognosis rated the news as significantly worse than those who heard the same news framed in a positive way. The difference in the 0 to 100 ratings of this news was substantial. Further, if 50, the midpoint of the scale, represents neutral (i.e., the news is viewed as neither good nor bad), then individuals who heard the negative frame rated the news as bad, whereas those who heard the positive frame rated the news as good. This finding is consistent with previous research showing that positive framing increases patients’ willingness to accept medical treatment by manipulating perceptions of risk of developing side effects (e.g., Gurm & Litaker, 2000;

O'Connor, 1989). By prefacing the prognosis with the term "fortunately" and emphasizing positive outcomes such as surviving and remaining cancer free, the physician in the positive video supported an optimistic interpretation of the news. On the other hand, by introducing the prognosis with "unfortunately" and emphasizing negative outcomes, such as the chances of the cancer returning and patients dying, the physician manipulated perceptions of the news to be more pessimistic, even though the negative outcomes were no more likely to occur in the negative condition than in the positive condition. These results suggest that health care professionals would be advised to consider the potential effect subtle changes in their language might have on patient perceptions of what to expect in the future.

Given the substantial difference in subjective ratings of the prognostic information, it is perhaps not surprising that framing also had a significant effect on psychological distress. As hypothesized, after hearing the negatively framed prognosis, individuals reported significantly greater negative affect and significantly higher anxiety compared with individuals who heard the positively framed prognosis. This difference was likely due to the focus on treatment failure and the greater salience of death in the negative frame. However, contrary to hypothesis, individuals in the two groups did not differ in positive affect. Indeed, it appears that positive affect was somewhat elevated in both groups prior to watching the prognosis video and remained unchanged in both groups after hearing the prognostic information. This pattern of results is consistent with prior theory and research and reflects a long-term debate regarding the dimensional structure of affect.

Although one might assume positive affect is synonymous with pleasantness (i.e., content, happy, pleased), and negative affect with unpleasantness (i.e., blue, sad), these common interpretations are not compatible with the constructs supposedly measured by the PANAS (Feldman, 1995). Instead, the PANAS was designed to assess two specific and theoretically orthogonal domains: Negative Affect, which is described as one's level of "subjective distress and unpleasurable engagement" (Watson et al., 1988, p.1063), and Positive Affect, which "reflects the extent to which one feels enthusiastic, active, and alert" (p.1063). Feldman Barrett and Russell (1998) have argued that these specialized definitions reflect the fact that the PANAS subscales each represent a combination of two bipolar constructs: pleasantness (positive vs. negative) and arousal (high vs. low). As such, the negative subscale contains only items that are high in both unpleasant affect and arousal, and therefore may be better labeled *unpleasant activation*. Similarly, the positive subscale contains only items high in pleasantness and arousal, and may therefore be referred to as *unpleasant activation*. Using empirical methods, Feldman Barrett and Russell demonstrated that combining pleasantness and arousal in one subscale and unpleasantness and arousal in a second subscale produces two scales that are almost completely uncorrelated, even though each of the individual constructs (i.e., pleasantness and activation) are bipolar and hence negatively correlated.

If the PANAS subscales do indeed measure orthogonal constructs, then one should not necessarily expect a reduction in positive affect to accompany an increase in negative affect. Consistent with this, previous research has shown that stressful events and unpleasant experiences are generally associated with high negative affect but not associated with positive affect (e.g., Warr, Barter, & Brownbridge, 1983). In the current

study, receiving prognostic information within the context of cancer, at least when the chance of survival is less than 100%, is likely interpreted as an unpleasant event, regardless of how that news is framed. Hence, presenting prognosis using a positive frame may reduce the negativity of the news compared to the negative frame, but does not change the fact that the news is fundamentally bad.

From a behavioral perspective, hearing prognosis in either frame is presumably threatening and therefore activates the Behavioral Inhibition System (BIS; Gray, 1990), which regulates avoidance behavior and is associated with negative affect (Carver & White, 1994). Describing prognosis in terms of the chances of survival (i.e., positive framing) likely enhances the extent to which individuals feel that they will be able to avoid dying, and therefore is associated with less increase in negative affect compared to hearing the chances of death (i.e., negative framing). In contrast, positive framing does not likely activate the reciprocal Behavioral Approach System (BAS; Gray, 1990), which is sensitive to reward signals, regulates approach (i.e., goal-oriented) behavior and is associated with positive affect. Consequently, the differential effect of framing is observed in the change in negative affect, but not in positive affect.

In a final hypothesis the effect of framing on feelings of hopefulness was examined. Although this effect has not been previously investigated, one of the main reasons physicians report employing positive outcome framing is to preserve patient hope in the face of bad news (Lamont & Christakis, 2001; Rodriguez et al., 2008). The hypothesis that positive framing would be associated with greater hopefulness than negative framing was assessed in two separate analyses, producing mixed results. When hopefulness was measured using a modified version of the LOT-R (Scheier et al., 1994),

there was no difference between the two framing conditions. When participants rated their hopefulness in 10 domains with a 0 to 100 scale, individuals who heard the positive prognosis reported significantly greater hope, both overall and with respect to specific aspects of their future.

It appears that the two scales measuring different constructs. The LOT-R was originally designed to measure optimism, a personality disposition that is not thought to be modifiable over time. Due to the absence of any preexisting state measures of hopefulness, this scale was chosen based on the close relationship between the constructs of optimism and hope, as well as the previous use of the LOT-R to track changes in the construct in psychological intervention studies with cancer patients (Antoni et al., 2001). Given its intended use as a trait measure, the LOT-R was composed of general items written in broad terms (e.g., "In uncertain times, I usually expect the best"). In contrast, the hopefulness ratings developed for this study were more specific and related directly to the cancer scenario (e.g., "Based on the news the doctor gave you, how hopeful are you that you will live 10 years?").

Furthermore, there was a subtle discrepancy in the two scales' instructions, which was necessary to make the directions compatible with wording of the items in each scale. Although both measures asked participants to think about what they had just been told, the hope ratings specifically inquired about feelings of hope "based on the news the doctor gave you," whereas the LOT-R instructions stated: "You were diagnosed with colon cancer, have had surgery, and the doctor has just told you about treatment and what you can expect in the future. Putting yourself in that mindset, please indicate how much you agree with each of the statements below." In short, the LOT-R likely captured trait

levels of optimism/hopefulness, which could be expected to remain stable in the face of bad news. In contrast, the items written specifically for this study likely reflected hopefulness in the moment, and this state construct could be expected to change over time, as observed in this study.

Taken together, these results suggest that framing the prognosis may not have an impact on patients' general outlook on life but may influence their hopefulness regarding certain aspects of their future. Yet even among the subjective ratings of hopefulness, framing appeared to sway hopefulness in some domains but not others. For instance, participants who received the negative prognosis were less hopeful than those who heard the positive prognosis about their chances of living 5 years, 10 years, and living longer than the doctor expected. They were also less hopeful that the cancer would never return. On the other hand, framing did not appear to affect hope of living 1 year, receiving needed treatment or good pain and symptom control, regaining independence, or being generally well cared for. These results are consistent with the idea that the framing does not have such a dramatic or all-encompassing effect as to cause individuals to be universally pessimistic (or optimistic) about their future. The negative framing does, however, appear to reduce feelings of hopefulness relative to the positive frame, particularly in domains specifically mentioned in the physician's discussion of prognosis. Whether the effect of a physician's communication approach on hope tends to be transient or enduring is a question that could be explored in future longitudinal studies of patient functioning.

Notably, if the 0 to 100 hopefulness ratings were interpreted as statistical percentages, then individuals in both framing groups tended to be more hopeful than

would be expected if they based their ratings solely on the prognostic information presented by the doctor. For example, the 5-year survival rate according to the physician was 65%, yet participants in the positive condition rated their hopefulness for surviving 5 years at approximately 86, and participants in the negative condition rated their hopefulness at approximately 70. Furthermore, despite tremendous variability in these ratings, participants in both conditions could generally be described as quite hopeful, as the average ratings were above 50 in every domain assessed. Though it is conjectural to interpret hopefulness ratings as statistical percentages, this finding is consistent with previous research showing that individuals generally display an optimistic bias when envisioning the personally relevant future (Taylor & Brown, 1988; Weinstein, 1989). For instance, one study found that individuals tend to rate themselves as less susceptible to developing cancer compared with their peers (Clarke, Lovegrove, Williams & Machperson, 2000).

Individual Differences in Personality and Health Information Style

That feelings of hope were not determined entirely by physician comments highlights the fact that other individual differences may contribute to a patient's response to bad news. Many physicians note that they consider a patient's personality in their decision about how to deliver bad news (Ptacek et al., 2001), and a patient's personality and previous experiences may influence the subjective interpretation of and response to bad news. Yet it remains unclear what personality factors may be relevant in predicting a patient's response. In a preliminary effort to clarify this, possible relationships were explored among the Big Five personality factors, health information style, and psychological distress and hopefulness.

Results from these exploratory analyses produced several significant findings. In the case of testing the effect of warning, the only significant association was between Neuroticism and negative affect. Specifically, people who were more neurotic reported more negative affect after receiving a diagnosis of colon cancer. This finding is consistent with previous research demonstrating a close relationship between these two measures. For instance, Rusting and Larsen (1997) found that Neuroticism predicted negative affect following an unpleasant imagery task similar to the current study, in which participants imagined a series of bad scenarios including a friend dying of cancer. By definition neuroticism "represents the proneness of the individual to experience unpleasant and disturbing emotions" (McCrae & Costa, 2003, p.46), and some researchers have argued that neuroticism should be termed *negative emotionality* based its robust relationship with negative affect (Tellegen, 1985). From a clinical perspective, this finding affirms many health care professionals' inclination to consider a patient's personality when delivering bad news. Knowing that a patient's underlying personality tends to be highly neurotic, a clinician may prepare for the possibility of a more intense negative emotional reaction and thus provide additional support, assist with reframing, or offer psychological services as necessary to help the patient cope. In contrast to the findings for Neuroticism, neither the other four personality factors nor health information style predicted negative affect. Further, there were no significant relationships between any of these variables and positive affect or anxiety.

A slightly different pattern of results emerged when individuals heard news about prognosis. Though Neuroticism was correlated with both negative affect and anxiety in this scenario, it did not uniquely add to the prediction of either outcome after taking into

account the effect of framing. In this scenario, however, positive affect, which was not affected by framing, was predicted by both Agreeableness and Conscientiousness. Thus it appears individuals who were more good-natured, meticulous, and precise felt more enthusiastic following the second consultation, possibly reflecting a preference among these individuals for the type of detailed information about prognosis they had just received.

Although these associations are intriguing, their magnitudes were relatively small, and the findings are preliminary and in need of replication. Furthermore, the NEO yielded relatively few significant associations, and the health information style questionnaire failed to make any significant predictions. The null results associated with the latter questionnaire may be attributed to poor psychometric properties, as the factor structure of the Krantz Health Opinion Survey has been criticized in the past (Robinson-Whelen & Storandt, 1992). Even with this consideration, a large amount of variance in each of the outcome variables is left unexplained. Consequently, a follow-up study with larger samples and additional measures of patient attitudes, preferences, and personalities could provide greater insight into the relationship between individual differences and physician communication styles in predicting responses to bad news. In addition to developing a more psychometrically sound measure of health information style, it may be useful for future research to assess variables such as individual patient communication style, specific preferences for bad news communication (e.g., level of detail, importance of emotional support; Lobb et al., 2001), as well fear of death and dying (e.g., Lester & Abdel-Khalek, 2003). Anecdotally, it may also be prudent for future studies to collect ratings of physician attributes such as empathy, caring, dominance, competence, and

trustworthiness (e.g., Schmid Mast, Hall & Roter, 2008). Despite the fact that the physician presentation style was held constant across the four conditions, numerous participants in this study commented on these traits, conveying a wide variety of intensely held opinions about the physician that could be predictive of affective responses following the consultation.

Limitations

One major limitation of this study is its generalizability. The videotape paradigm permitted a level of experimental control that has been absent in the majority of previous research in this area, but there are obvious differences between this approach and studying communication as it naturally unfolds. Participants in this study were not actually receiving a diagnosis of cancer, and there could be differences in responses to this imaginary scenario and receiving such bad news in real life. Despite this limitation, every effort was taken to make the scenario feel as realistic as possible, including filming the video in an actual physician's office with a real doctor, having the physician speak directly into the camera as if he were talking to the participant, and setting up the testing rooms to look like a doctor's waiting room and examination room. Furthermore, participants generally reported that they felt the study scenario was realistic, that they could imagine themselves in the scenario, and that they believed that they would respond quite similarly if the situation presented in the study were actually happening to them. The fact that there were changes in negative affect and anxiety and differences in hope ratings as a function of the framing manipulation further suggests that participants took the experiment seriously and found it was realistic.

In addition, the videotape paradigm precluded any conversation between the participant and the doctor, which limited the realism of the experience and also prevented participants from asking questions and doctors from tailoring their delivery to each person. These restrictions are notable because patients better remember consultation information when they ask questions and actively engage in discussion with the physician (Brown et al., 2001). Moreover, evidence suggests that tailoring the amount of information provided according to the level of information a patient desires is associated with lower anxiety and better problem-focused coping during a subsequent medical procedure (Kiesler & Auerbach, 2006; Ludwick-Rosenthal & Neufeld, 1993). Such tailoring, however, could not be incorporated into the physician's presentation in the current study.

Related to this limitation, although every effort was made to balance experimental control with realism, it was impossible to include some of the other elements recommended in the SPIKES protocol (Baile et al., 2000). For example, assessing how much the patient wants to know and checking for patient understanding throughout the conversation are likely to be important elements of delivering bad new that could not be incorporated into this study's videotape methodology. Future research could confirm whether these strategies increase comprehension and decrease psychological distress, as they are purported to do.

These limitations also highlight an inherent challenge in conducting research on communicating bad news: the reductive methodology necessary for determining causality with respect to specific communication strategies may oversimplify what takes place in an actual healthcare conversation between a doctor and patient. For instance, although a

simple six-word warning phrase may not affect psychological distress on its own, when used with other communication strategies it may in fact lead to reduced anxiety. This challenge will be best addressed by continuing to conduct research using a range of methodologies—experimental and correlational, lab-based and naturalistic—so that the weaknesses of one approach may be balanced by the strengths of another.

Another limitation to the generalizability of these results is the age range of the participants. Participants were required to be at least 50 years of age because the colon cancer scenario they were asked to imagine was expected to be most salient for this age group. Inclusion of adults of all ages in future research will permit the investigation of age as an independent variable in predicting response to bad news. For instance, one study reported that older cancer patients recalled less information following an initial oncology consultation (Jansen et al., 2008), but age differences in recall of prognostic statistics specifically have yet to be examined.

The current study also held prognosis constant across conditions. It would be interesting to vary prognosis in future experimental studies, because recent research indicates that worse prognosis is associated with poorer recall of prognostic information (Jansen et al., 2008), and information preferences appear to fluctuate at more advanced stages of cancer, compared with early stage cancer (Hagerty et al., 2005). These differences could influence both comprehension and distress following diagnostic and prognostic consultations.

General Discussion and Implications

The results from this study contribute to a growing body of literature exploring optimal approaches for communicating bad news in health care. Specifically, the findings

provide preliminary evidence that subtle communication strategies such as framing prognosis in a certain way contribute to meaningful differences in the response to bad news. Although bad news is by definition unpleasant for physicians to give and patients to hear, these discussions are common in Western healthcare due to the belief that patients have a right to know their own medical information. This ethical and legal principle necessitates physician disclosure and patient understanding of even the most upsetting information about both diagnosis and prognosis so that patients can make informed medical decisions according to their preferences and values (Rodriguez et al., 2008).

As important as honest and precise delivery of bad news is, however, understanding should not be prioritized entirely at the expense of psychological well-being. A person's level of emotional distress following the receipt of bad news should also be considered, and efforts should be made to reduce anxiety and distress to whatever extent possible without sacrificing the provision of truthful and accurate information. Avoiding depression and maintaining good psychological functioning are important treatment goals in and of themselves. Psychological outcomes such as anxiety and depression, however, are also important when considering the long-term physical health of patients. Depression and poor quality of life among patients with cancer have been shown to be associated with worse physical health outcomes (Coates et al., 1992) including greater 5-year risk of death (Watson, Haviland, Greer, Davidson & Bliss, 1999), although this finding is somewhat less clear in far advanced cancer (Cassileth, Lusk, Miller, Brown & Miller, 1985; Glare, 2005). Furthermore, depressed individuals have been shown to be more likely to report dissatisfaction with the doctor-patient

relationship, which is in itself critical to the effective treatment of the patient (Arora, 2003). In short, to balance autonomy and beneficence, two principles highly valued in American healthcare, physicians need more information about how sharing bad news affects patients and whether particular communication strategies can enhance patient understanding while minimizing distress.

Results from this study suggest that identifying such strategies is not a simple task. Indeed, these results indicate that current guidelines based on expert consensus may not achieve their intended effect. Although this does not imply that physicians should abandon warning altogether, these results do call for further investigation of this technique as well as related approaches such as warning of the *possibility* of impending bad news. If the warning strategy truly has no effect—neither beneficial nor harmful—then its use in communicating bad news is largely irrelevant. Physicians should at least be made aware, however, of the evidence behind the strategies they choose to employ, particularly if an alternative strategy exists that may be more effective in attaining the desired result. For instance, the Bad News Response Model (Sweeny & Sheppard, 2007) implies that reducing the shock and minimizing the distress associated with a cancer diagnosis may be best achieved by warning of the *possibility* of bad news some time in advance of the actual delivery that news, because it would allow a patient to mentally "brace for the worst."

The conclusions regarding framing prognostic information are similarly complex. On the one hand, framing prognosis in terms of positive outcomes appears to reduce the anxiety and negative affect individuals experience after hearing their prognosis. Additionally, positive framing appears to support hope, a goal of care that is repeatedly

identified as a priority by both patients and physicians (Baile et al., 2000; Barclay et al., 2007; Clayton et al., 2008). Although these results appear to support describing prognosis using a positive frame, one must keep in mind that the goal of a prognostic discussion is typically to balance accurate knowledge with optimal psychological well-being. Consequently, the trend toward reduced accuracy in recall after positive framing complicates this recommendation. Furthermore, it is important to question whether positive framing could lead to inflated optimism, thereby sacrificing understanding for happiness. Such concerns are typically disregarded in the health behavior literature, where message framing has traditionally been employed. In this field the chief objective is to change health behavior (e.g., increase mammography compliance or encourage smoking cessation) so the message frame that most effectively achieves this single goal can be unconditionally recommended. For instance, because women are much more likely to get a mammogram after hearing the risks of failing to detect cancer early (rather than the benefits doing so), presenting arguments for mammography compliance in loss-framed terms is clearly preferable, regardless of the effect it may have on other outcomes. When conveying prognosis, however, the need to balance two different goals leads one to question whether the elevated hopefulness produced by positive framing represents the achievement of one goal (i.e., optimal well-being) at the expense of another (i.e., accurate comprehension).

Given these considerations, this study seems to support indirectly the guideline that physicians use mixed framing (i.e., explaining prognosis with both positive *and* negative frames; National Breast Cancer Centre and National Cancer Control Initiative of Australia, 2003). Research indicates this approach is used infrequently in practice

(Rodriguez et al., 2008), and further research is needed to examine the effect of mixed framing before it can be endorsed unconditionally. For instance, it remains an empirical question whether mixed framing will mitigate the framing bias observed in this study or whether the provision of opposing frames might actually reduce recall due to the increased memory load (Jansen et al., 2008).

The conclusions and implications described here represent preliminary steps in identifying evidence-based approaches for communicating bad news in health care. Given the knowledge that framing influences perceptions of prognosis and initial responses to bad news, future research could evaluate the effect of this strategy on other, more distal outcomes such as treatment choice and relationship with the physician. It would be good to know, for instance, whether the elevations in negative affect and anxiety observed in the current study harm the rapport between patient and physician or whether this distress would persist over time. Furthermore, would individuals tend to choose more aggressive treatment after hearing their prognosis framed positively? These clinical outcomes are important for the long-term care of the patient. Finally, there are many additional communication strategies beyond warning and framing that have yet to be explored empirically. Though communication is sometimes viewed as an art that cannot be studied empirically, this study contradicts that belief and reinforces the need for such empirical evaluation by showing that expert consensus and commonsense expectations about the consequences of communication are not always correct. Though individual differences in patient preferences and personalities preclude a one-size-fits-all approach, the more evidence available about the effects of various strategies, the better chance doctors will convey bad news in a way that is optimal for each patient.

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Appendix A. Vignettes

Videos A1 and A2 Vignette

Please imagine yourself in the following situation:

You have been feeling constipated and nauseated for the last couple of weeks. You also have been having bad pains in your stomach, and recently, you have started noticing some blood in the toilet after you go to the bathroom. At first you thought that you just had a stomach bug and that it would go away, but after about 3 weeks of the same symptoms, you decided to go to the doctor.

You first saw the doctor last week. After examining you very carefully and asking you a lot of questions about your medical background and your symptoms, the doctor told you that there were a couple of different things that could cause the symptoms you're describing, but that he would not know anything without doing further tests. At the doctor's recommendation, you had a colonoscopy the next day, which is a standard screening test in which doctors look at the inside of your colon to see if anything appeared abnormal. The doctors found a couple of polyps, which are abnormal growths of tissue that people your age often have. He biopsied the polyps, which means he removed some tissue and sent it to the lab to be examined under a microscope.

Today you are here to see the doctor for the second time to find out the results of the biopsy.

Videos B1 and B2 Vignette

Now please imagine the following scenario:

Since your last doctor's appointment, you have had a CAT scan. You also had surgery. The surgeon cut out the cancerous part of your colon, along with segments of normal tissue on either side to be sure that no cancer was left behind. He then reconnected the healthy sections of your colon back together. As part of the surgery, the surgeon also took out several lymph nodes to see if the cancer has spread to them. Lymph nodes help you fight infections. If there's lymph node involvement, it means that your cancer is at a more advanced stage, and you might need chemotherapy. The surgeon told you the he sent the lymph nodes off to be examined with a microscope, and that that all the results would be back in one week.

You are recovering from surgery well, and are not in any pain. You are seeing the doctor today to get results from the CAT scan and the lymph node biopsy.

Appendix B. Video Scripts

Video A1

Good to see you— I'm glad we could get together to discuss your test results today.

Let me review your history a little bit to be sure that we're on the same page… When you came in last week you told me that you had been feeling constipated and nauseated for a couple of weeks. You also complained of stomach pains and said that you had noticed some blood in your stool. Now, as I told you last week, there are a couple of different things that can cause the symptoms you're describing, which is why we arranged for you to have some tests done.

So two days ago you had a colonoscopy, where we looked at the inside of your colon. We did find a couple of polyps, which are those abnormal growths of tissue that many people your age have. We biopsied the polyps, which means we removed some tissue and sent it to the lab to be examined under a microscope.

OK, so it's the results of the biopsy that we're going to be discussing today.

I'm afraid I have bad news. *[Pauses momentarily, making eye contact with patient.]* The biopsy of that tissue shows that you have colon cancer. *[Pauses briefly.]*

I'm sorry to have to tell you this. I want you to know that I'm going to be here to help you through this. *[Pauses again, making eye contact with patient.]*

At this point we don't know the extent, or stage, of your cancer. We need to do some more tests, including a CAT scan, to find out whether the cancer has spread. This will help us decide what treatments are going to be most helpful for you.

However, regardless of whether the cancer has spread, the first thing we'll want to do is schedule you for surgery to remove the part of your colon where the cancer is. As part of the surgery, we'll also look for any spread of the disease, which will involve taking out some lymph nodes and checking them for cancer.

Again, I want you to know that I am here to help you through this. *[Pause]*. We're going to take this one step at a time, and I'm going to help you understand everything that's going on. So let's take a few minutes and then see what questions I can answer for you.

Video A2

Good to see you— I'm glad we could get together to discuss your test results today.

Let me review your history a little bit to be sure that we're on the same page… When you came in last week you told me that you had been feeling constipated and nauseated for a couple of weeks. You also complained of stomach pains and said that you had noticed some blood in your stool. Now, as I told you last week, there are a couple of different things that can cause the symptoms you're describing, which is why we arranged for you to have some tests done.

So two days ago you had a colonoscopy, where we looked at the inside of your colon. We did find a couple of polyps, which are those abnormal growths of tissue that many people your age have. We biopsied the polyps, which means we removed some tissue and sent it to the lab to be examined under a microscope.

OK, so it's the results of the biopsy that we're going to be discussing today.

[*No warning of bad news*.] The biopsy of that tissue shows that you have colon cancer. *[Pauses briefly.]*

I'm sorry to have to tell you this. I want you to know that I'm going to be here to help you through this. *[Pauses again, making eye contact with patient.]*

At this point we don't know the extent, or stage, of your cancer. We need to do some more tests, including a CAT scan, to find out whether the cancer has spread. This will help us decide what treatments are going to be most helpful for you.

However, regardless of whether the cancer has spread, the first thing we'll want to do is schedule you for surgery to remove the part of your colon where the cancer is. As part of the surgery, we'll also look for any spread of the disease, which will involve taking out some lymph nodes and checking them for cancer.

Again, I want you to know that I am here to help you through this. *[Pause]*. We're going to take this one step at a time, and I'm going to help you understand everything that's going on. So let's take a few minutes and then see what questions I can answer for you.

Video B1

Hi, it's good to see you again. I'm glad to see that you're recovering well from your surgery. As I told you before, the surgery went just as planned, and they were able to remove the portion of your colon where the cancer was without a problem.

Now I know you've been waiting to hear the results of the additional tests that we had done, and I'd like to talk to you about those results today.

The CAT scan showed that the cancer has not spread to any other organs in your body, but we did find that the cancer has spread into several of your lymph nodes. *[Pauses again.]*

I'm so sorry to have to tell you this. *[Pauses again, making eye contact with patient.]*

Now, the two main questions that patients usually ask me about this diagnosis are treatment and what to expect in the future. So let me talk a little bit about that.

As far as treatment, I'm going to recommend a course of chemotherapy. In addition to the surgery, chemotherapy is designed to kill the remaining cancer cells. The combination of surgery and chemotherapy is the most effective treatment we have for this type of cancer.

Fortunately, there's about an 80% chance that you will remain cancer free after treatment. In addition, I can tell you that about 65% of people who are your age and have this disease will be alive in 5 years.

I want you to know that I am going to do whatever I can to help you through this. *[Pause]*. Let's take a few minutes and then see what questions you have.

Video B2

Hi, it's good to see you again. I'm glad to see that you're recovering well from your surgery. As I told you before, the surgery went just as planned, and they were able to remove the portion of your colon where the cancer was without a problem.

Now I know you've been waiting to hear the results of the additional tests that we had done, and I'd like to talk to you about those results today.

The CAT scan showed that the cancer has not spread to any other organs in your body, but we did find that the cancer has spread into several of your lymph nodes. *[Pauses again.]*

I'm so sorry to have to tell you this. *[Pauses again, making eye contact with patient.]*

Now, the two main questions that patients usually ask me about this diagnosis are treatment and what to expect in the future. So let me talk a little bit about that.

As far as treatment, I'm going to recommend a course of chemotherapy. In addition to the surgery, chemotherapy is designed to kill the remaining cancer cells. The combination of surgery and chemotherapy is the most effective treatment we have for this type of cancer.

Unfortunately, there's about a 20% chance that your cancer will come back after treatment. In addition, I can tell you that about 35% of people who are your age and have this disease will die within 5 years.

I want you to know that I am going to do whatever I can to help you through this. *[Pause]*. Let's take a few minutes and then see what questions you have.

Appendix C. Information Recall Questionnaire

Information Recall: Diagnosis Video (Video A)

PLEASE CIRCLE YES OR NO.

1. Did the doctor tell you that you have colon cancer?
   YES NO

2. Did the biopsy show the extent, or stage, of your cancer?
   YES **NO**

3. Has the cancer had spread to your lymph nodes?
   YES **NO**

4. Did the doctor recommend that you have some more tests done?
   YES NO

5. Did the doctor recommend that you start chemotherapy?
   YES **NO**

6. Did the doctor recommend that you have surgery to remove the part of your colon where the cancer is?
   YES NO

Appendix D. Hope Ratings Questionnaire

Hope Ratings: Prognosis Video (Video B)

Now we are interested in what you are thinking and feeling about the news you just received from the doctor.

5. Please rate how hopeful you feel about each of the statements below using a number between 0 and 100. (0 is *not at all hopeful*, and 100 is *extremely hopeful*).

Based on the news the doctor gave you, how hopeful are you that…	**Hopefulness (0-100)**
a. You will live 1 year?	_____
b. You will live 5 years?	_____
c. You will live 10 years?	_____
d. You will live longer than the doctor expects?	_____
e. You will receive the treatment you need?	_____
f. The cancer will never return after treatment?	_____
g. You will remain independent after treatment?	_____
h. Any pain or symptoms will be well controlled?	_____
i. You will be well cared for and supported?	_____

6. Overall, how hopeful do you feel about the future? (0 is *not at all hopeful*, and 100 is *extremely hopeful*): _____

7. How would you rate the news you just received about what to expect in the future? (0 is *the worst news you could have possibly received*, and 100 is *the best news you could have possibly received*): _____