

A SOCIAL INTERACTION ANALYSIS OF THE DAILY CONVERSATIONS OF
COUPLES COPING WITH BREAST CANCER

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ABSTRACT

This dissertation used naturalistically-observed snippets of actual conversations of couples coping with breast cancer to understand how often, with whom, and how couples talk about cancer and other topics, and how these conversations relate to both partners' adjustment to the experience. Fifty-six breast cancer patients undergoing treatment and their spouses wore the Electronically Activated Recorder (EAR) for one weekend and completed adjustment questionnaires at baseline and a two-month follow-up. The first study revealed that couples discussed cancer in fewer than 10% of their conversations, and that these conversations occurred more frequently with each other than with friends and family. Cancer conversations tended to be informational and supportive, and spouses', rather than patients', discussion of cancer tended to be more related to adjustment. The second study analyzed the social language used within couples' cancer-related and other topics of conversation. Specifically, it examined the associations between we-talk (first-person plural pronouns), I-talk (first-person singular pronouns), and you-talk (second-person pronouns) and couples' adjustment. Results revealed that, contrary to prediction, both partners' we-talk was associated with concurrent, rather than future, adjustment. Further, both partners' focus on the spouse, indicated by I-talk and you-talk, was related to better adjustment for spouses. The findings in this dissertation indicate that psychosocial factors influence spouses' adjustment at least as much as patients' adjustment to breast cancer, and that couples without an exclusive focus on the patient may fare better overall.

CHAPTER 1: A SOCIAL INTERACTION ANALYSIS OF THE DAILY CONVERSATIONS OF COUPLES COPING WITH BREAST CANCER

This dissertation will examine the daily conversations of couples coping with breast cancer to understand how often, with whom, and how couples talk about cancer and other topics, and how these conversations relate to both partners' adjustment to the experience. It will use a novel naturalistic observation sampling method to capture these conversations directly and unfiltered, rather than through participants' perceptions via self-report.

It is important to naturalistically observe the conversations of couples coping with breast cancer for three main reasons. First, the experience of breast cancer is rarely an isolated one. Both patients and their partners experience significant distress, and also support one another to influence each other's psychological adjustment. Second, the "active ingredients" that make some social interactions effectively supportive remain undiscovered. Identifying them may help inform future coping interventions. Third and finally, studying the daily social interactions of couples coping with breast cancer should be done in their natural context, unobtrusively, in order to understand what comes up in daily life, and which of these interactions matter for couples' psychological adjustment. This will advance theoretical knowledge through understanding mechanisms by which close relationships relate to psychological adjustment, and practical knowledge by informing communication-enhancing support interventions. The Electronically Activated Recorder (EAR; Mehl, Pennebaker, Crow, Dabbs, & Price, 2001), as a naturalistic

observation tool, allows these advances by directly and representatively sampling the acoustic social environments of participants.

The Impact of Breast Cancer on the Daily Life of Couples

Breast cancer patients experience substantial distress following diagnosis, and approximately 40% of them become depressed over the course of their illness (Compas & Luecken, 2002), which is four times higher than the rate of prevalence among women in the general U.S. population (NIMH, 2008). Concerns reported by patients range from disruptions in family, finances, and household function, to fears about death (Compas et al., 2006). This substantial distress tends to happen after diagnosis and throughout the course of adjuvant treatment (Henselmans et al., 2010), and for a minority of women, toward the end of treatment.

In light of the range and duration of problems breast cancer patients face, it is not surprising that they are often not the only member of their household who psychologically struggles over the course of their illness. Partners of breast cancer patients also share these concerns, and accordingly, approximately 25% of them experience depression as well (Segrin, et al., 2006). Segrin and colleagues (2005) found that patients' and partners' quality of life is closely linked. As women become more distressed over time about their treatment and other illness-related concerns, their partners' distress tends to increase concurrently. Furthermore, the depression and stress that both patients and partners experience is linked to their own and each other's physical health (Dorros, Card, Segrin, & Badger, 2010). These crossover effects are evidence of

an interdependent social context that should not be ignored when studying the psychosocial effects of breast cancer.

Distress is, fortunately, not the only psychological state that couples “catch” from each other. Support from each other and other members of their social network can facilitate better adjustment. Researchers consistently find that effective social support reduces psychological distress associated with the experience of stressful events, such as the diagnosis and duration of disease (Taylor, 2007). Specifically, receiving support from one’s partner can sometimes have a stress-buffering effect (Gremore et al., 2011), and may facilitate breast cancer patients’ use of more effective coping strategies (Kim, Han, Shaw, McTavish, & Gustafson, 2010). However, the benefits of support are not a one-way street for patients. A survey of the partners of breast cancer patients revealed that receiving more support from their partners was related to lower distress (Manne, Ostroff, Fox, Grana, & Winkel, 2009). Furthermore, surveyed patients who perceived their relationship as mutually supportive, one in which they were also contributing, were at lower risk for depression (Kayser, Sormanti, & Strainchamps, 1999). Therefore, having a mutually supportive relationship not only benefits both partners through receipt of support, but also through the act of giving support.

Though the positive consequences of effective social support are well-documented, the nature and content of supportive interactions, or the “active ingredients” of what makes them effective, are not well known. For example, in the context of coping with breast cancer, is it important for couples to talk about cancer frequently? Many studies aiming to understand how supportive interactions influence the coping process

ask participants to report on such aspects of cancer-related discussions (e.g. Gremore et al., 2011; Kim et al., 2010), or bring them into a laboratory and ask them to engage in a cancer-related discussion (e.g. Manne et al., 2004). Gremore et al. (2001), for instance, asked breast cancer patients daily for 30 days about their breast cancer concerns, support received, and affect. They found that daily spousal support is most effective when patients have more social concerns about breast cancer. Manne et al. (2004) observed couples coping with breast cancer within a laboratory as they discussed a cancer issue first, and then a marital problem, each selected from a list provided by the experimenter. They found that patients felt most supported when partners responded to self-disclosure with their own disclosure during the cancer-related discussion. Both types of study yield important information about how couples can support each other throughout the cancer experience. However, it is still unknown how often and how these conversations take place in the daily lives of couples coping with breast cancer without an experimenter prompting them to think about or engage in a cancer-related discussion.

In a recent meta-analysis, Hagedoorn, Sanderman, Bolks, Tuinstra, and Coyne (2008) point out that it is unclear “how much cancer intrudes upon and organizes the lives of couples confronted with the disease,” and that there is a need for “direct sampling of their interactions and daily experiences that does not presuppose an answer to that question” (p. 24). In other words, most studies of coping with cancer seem to assume that the most important supportive interactions happen in the context of cancer-related discussions. By exclusively asking participants about their cancer-related discussions, or by asking them to engage in a cancer-related or other problem-focused discussion within

the laboratory, they imply that (a) these interactions happen with substantial frequency in daily life, and (b) they provide the most important social context for adjustment to the cancer experience.

The Necessity of Using a Naturalistic Behavioral Observation Method

Understanding how couples communicate about cancer is undoubtedly important, especially in light of many important findings in this area, such as the importance of emotional expression (Manne et al., 2004), daily support (Gremore et al., 2011), and positive dyadic coping (Badr, Carmack, Kashy, Cristofanilli, & Revenson, 2010) for psychological adjustment. However, exclusively studying cancer-related communication assumes that these are the only relevant social contexts for couples who are coping with breast cancer. This raises the danger of leaving other important contexts in the “shadow” of couple cancer talk and other important coping behaviors undiscovered. Furthermore, relying only on in-lab observation of behavior raises ecological validity concerns that what is observed may not generalize to the “real world.” Laboratories may influence behavior in a number of ways, sometimes by inducing demand characteristics (Reis, 2012). For example, if a couple is asked to engage in a cancer-related discussion in-lab, they may feel that the researcher is looking for a deep and serious conversation about cancer, and engage in a discussion that may or may not have come up in the context of their normal, daily lives. On the other hand, couples may also be subject to social desirability concerns, and perhaps censor their typical unsupportive behaviors while observed in a laboratory. In other words, if cancer coping research is meant to be applied

to people's lives, it is essential to know whether and how the behavior occurs in people's natural setting and social context.

Using exclusively self-report methods raises a separate set of concerns. How can the effects of social interactions on adjustment be studied if the two components cannot be assessed independently, without shared method variance? Clearly, it is possible to ask participants to report on both aspects and often their answers are meaningful and interpretable. For instance, it is sometimes the goal of coping research to understand how supported a patient *feels*, rather than how much support she actually received (Bolger, Zuckerman, & Kessler, 2000). However, if researchers also desire to study the objective, in addition to subjective, aspects of the social environment and how they relate to adjustment, shared method variance can be a problem with using exclusively self-report methods. Shared method variance can arise to the extent that current mood states bias self-reports (Hufford, 2007). For example, if a patient has just had an argument with her partner, she may be less likely to report that she has received the support she needed, regardless of how supportive her partner had been outside of the argument. Likewise, her responses on psychological adjustment questionnaires may also be colored by her current negative mood. Data solely based on participants' own accounts of both their social worlds and psychological adjustment are thus both susceptible to biases that are inherent to self-reports, which leads to ambiguous interpretation of any relationship between them.

Though a momentary approach remedies some problems with retrospective self-reports, even proponents of this method point out that they still exclude reports of subtle and automatic behavior (Piasecki, Hufford, Solhan, & Trull, 2007). Because participants

can only report what they noticed and remembered, subtle and automatic behaviors are very difficult to study using self-report (Hektner, Schmidt, & Csikszentmihalyi, 2007). For example, word use frequency or sighing would be nearly impossible to study with self-report because participants are not able to count the frequency with which they occur. This means that asking participants to report on some behaviors is simply a task that goes beyond what self-report, even in-the-moment, can accomplish. Taken together, these problems with traditional methods necessitate “employing emerging technologies to collect data in ways that minimize bias” (p. ix; Stone et al., 2000). Therefore, using a naturalistic observation method to study the daily conversations of breast cancer patients and their partners, and self-report to study their psychological adjustment, is warranted.

The EAR

In light of the problems with using exclusively self-report or in-lab observation to understand how social relationships influence coping, this dissertation will employ a naturalistic observation method, the EAR (Mehl et al., 2001), to record snippets of the conversations of couples coping with breast cancer as they happen in daily life. The EAR is a handheld computer with software that unobtrusively records snippets of ambient sounds in participants’ immediate environment, alleviating problems with reliance on in-lab observation or self-reports of behavioral frequencies (Mehl, 2007). It yields sound files that can be coded and then converted into a metric that is intuitively meaningful and inherently real-world relevant. For example, if the EAR captures a cancer patient talking about cancer in 12 out of 120 recordings, one can estimate that the person spent about 10% of her time awake talking about cancer. The EAR has been reliably used in

numerous studies across a variety of topics, including behavioral manifestation of personality (Mehl, Gosling, & Pennebaker, 2006), conversational correlates of well-being (Mehl, Vazire, Holleran, & Clark, 2010), the validity of gender stereotypes (Mehl, Vazire, Ramirez-Esparza, Slatcher, & Pennebaker, 2007), diurnal rhythms underlying affect-associated behavior (Hassler, Mehl, Bootzin, & Vazire, 2008) and manifestations of family conflict (Slatcher & Trentacosta, 2011).

Two studies demonstrate the EAR's ability to reveal the psychological implications of subtle and automatic behavior within the specific context of coping. First, Robbins, Mehl, Holleran, and Kastle (2011) tested the degree to which spontaneous sighing is a behavioral indicator of depression among rheumatoid arthritis (RA) patients. Thirteen RA patients wore the EAR for two weekends separated by one month. Depression and physical symptoms were assessed via questionnaires, and sighing was captured by the EAR. Sighing was significantly and strongly related to patients' levels of depression and non-significantly and less strongly to their reported pain and number of flare days. Because of the small sample size, the findings are preliminary in nature. Yet, they suggest that sighing can be an observable marker of depression, and may be more of a depression behavior than a pain behavior among RA patients. In addition, swearing, a less subtle, but automatic behavior, can also be an indicator or precursor to depression (Robbins, Focella, Kastle, Weihs, Lopez, & Mehl, 2011). Thirteen women with RA and 21 women with breast cancer wore the EAR on weekends to track their daily conversations. All sound files were transcribed and submitted to Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2007) to determine their degree of swearing. In

addition, participants completed self-reported measures of depression and emotional support at the start of the EAR weekend and several months later at the follow-up. Consistent with the idea that swearing can repel support at the downstream expense of psychological adjustment, swearing in the presence of others, but not alone, was related to decreases in emotional support and increases in depressive symptoms over the study period. Further, decreases in emotional support mediated the effect of swearing on disease-severity-adjusted changes in depressive symptoms. Again, these effects are preliminary in nature and may well be limited to women in midlife for whom swearing violates gender and age norms. Yet, together with the sighing findings, they highlight the importance of investigating behaviors that play an important role in daily life but are often too subtle or habitual for participants to report retrospectively or in the moment. Together, these studies show the necessity of using a naturalistic observation method like the EAR to understand behaviors that are difficult to study using self-report methods, but can have important implications for coping with illness.

One major source of automatic behavior that the EAR observes is spontaneous language use, and idiosyncrasies such as the frequency of swearing or the degree to which a members of a couple refer to themselves in first person singular (i.e., “I”) versus first person plural (i.e., “we-talk”). In addition to behavioral coding, research assistants transcribe each participant’s utterances. These transcripts can be input into automatic text analysis tools (e.g., Linguistic Inquiry and Word Count or LIWC; Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007) to obtain the frequency of different types of words participants use in daily conversation. In addition to the swearing study, several other

studies examining language use have shown that it can be an important indicator of social processes. For example, personal pronouns are particularly indicative of social processes among couples. More committed couples use more personal pronouns compared to less committed couples when prompted to write relationship relevant thoughts (Agnew, Van Lange, Rusbult, & Langston, 1998). More specifically, “we” was found to be related to more mutually satisfying problem solving within couples, and more “I” was related to overall higher relationship satisfaction. However, use of personal pronouns appears to be related to different outcomes for distressed versus non-distressed couples. Within a laboratory discussion, rates of personal pronoun use distinguished between distressed and non-distressed couples (Williams-Baucom, Atkins, Sevier, Eldridge, & Christensen, 2010), where I-talk was linked to satisfaction among distressed couples, but dissatisfaction among non-distressed couples.

Though there are many other ways to study social processes (e.g. momentary or retrospective self-reports of participants’ experienced emotions and social interactions), this dissertation focuses on language use as a way to include the aspects of those processes that operate on “autopilot,” and may be outside of the participants’ awareness. It is important to study this aspect of social life, in addition to the conscious, reportable aspects, in light of evidence that much of mental life operates outside of our awareness (Bargh & Morsella, 2008; Nisbett & Wilson, 1977). Though language use in some instances can be carefully planned and deliberate (e.g. preparing for an interview; writing a dissertation), in everyday life it is generally an automatic process that can provide a

window into emotional and social information that participants either cannot or would not report (Pennebaker et al., 2003).

Purpose of the Dissertation and Overview of the Studies

This dissertation used naturalistically-observed snippets of actual conversations of couples coping with breast cancer from a large-scale data set to understand how often, with whom, and how couples talk about cancer and other topics, and how these conversations relate to both partners' adjustment to the experience. Couples in which one partner was being treated for breast cancer wore the EAR for one weekend, and completed psychological adjustment questionnaires immediately before and two months after the EAR monitoring. EAR sound files were transcribed and coded for presence of cancer or other topic of conversation, and with whom participants were talking. Transcripts of participants' conversation allowed for analyses of how participants were talking in each of the different types of interactions.

First, I explored how often cancer comes up in the daily lives of these couples, with whom they talk, and about what they talk when they talk about cancer and other topics. Then I examined these conversations more closely by analyzing the social language used within both cancer-related and other topics of conversation. Specifically, the second study built on prior work on relationship-focused or communal coping, exploring whether couples' use of personal pronouns was indicative of healthy social processes both intra- and interpersonally. Finally, the last chapter reflects on the two studies in the broader context of theoretical and methodological aspects of research on couples coping with breast cancer.

CHAPTER 2: FREQUENCY AND SOCIAL CONTEXT OF CANCER CONVERSATIONS

How often does cancer come up in the daily conversations of couples coping with breast cancer? As Hagedoorn and colleagues (2008) point out, the answer to this question is often assumed in cancer coping studies, but has not yet been empirically addressed. Knowing what concerns patients and partners have during the cancer coping process can help tailor interventions to the needs of couples (Shands, Lewis, Sinsheimer, & Cochrane, 2006). In order for researchers to determine what couples *should* do, it is necessary to know how cancer impacts couples' daily lives by examining their naturally-occurring conversations and how they relate to adjustment. Though self-report studies have found that most breast cancer patients do discuss their cancer with most members of their social network (Henderson, Davison, Pennebaker, Gatchel, & Baum, 2002), the frequency and content of these social interactions is still unclear. Furthermore, these studies also acknowledge that recall bias may have influenced their results in an indeterminable way. To-date, no study has directly observed the frequency of cancer conversations in the daily lives of couples coping with breast cancer.

Identifying what topics do and do not come up in daily life, and which ones are most closely linked to adjustment is imperative to ensure that psycho-social interventions are applicable to couples' daily life, which is an important initiative of cancer coping research (Badger, et al., 2005; Kayser, 2005; Manne et al., 2007). However, the findings on the relationship between talking about cancer and adjustment are mixed. One study

found that patients who reported frequently talking about cancer had less depression and greater well-being (Cordova, Cunningham, Carlson, & Andrykowski, 2001). Another study found that patients who reported having more frequent discussions about cancer concerns was related to poorer adjustment among breast cancer patients (Ullrich, Rothrock, Lutgendorf, Jochimsen, & Williams, 2008). The authors concluded that cancer discussions can be helpful, harmful or neutral, depending on gender, treatment history, and time since diagnosis. However, the discrepancy between studies may also be a result of a measurement problem. These studies used self-report to measure talking about cancer, which could have resulted in participants' over- or under-estimation of the frequency of their cancer conversations, due to the fact that participants are likely to respond based on their memory of rare and important events (e.g. an important, emotional cancer conversation), and exclude subtle and automatic behavior (e.g. a mundane, practical cancer conversation) because they can only report what they noticed and remembered (Hektner et al., 2007; Piasecki et al., 2007).

Further, knowing the social context in which cancer discussions occur can help determine when it is most adaptive to engage in a cancer-related conversation. Manne and colleagues (2004) point out that "understanding support-related interaction behaviors may clarify the usefulness of different support responses" (p. 661; Manne et al., 2004), which in turn, can inform the development of communication-based interventions. The cancer coping intervention literature has so far struggled to reconcile the discrepancy between the finding that quality of social relationships matters greatly to adjustment, but that social support interventions based on this knowledge are relatively less effective

(Coyne, Stefanek, & Palmer, 2007; Helgeson & Cohen, 1996). “If we identify the mechanisms by which social interactions influence well-being, we can determine the kind of naturally-occurring support and support intervention that should influence these mechanisms and influence adjustment to cancer” (p. 144; Helgeson & Cohen, 1996).

However, there are certainly notable exceptions. For example, one couple-focused group intervention successfully reduced depressive symptoms among breast cancer patients, particularly those whose partners were unsupportive and whose physical symptoms were above average (Manne et al., 2005). In addition, a recent meta-analysis of studies of couple interventions for serious illness (including 4 breast and 9 other cancer studies) concluded that existing interventions are promising. However, the effects of these interventions on psychological and physical adjustment were small (Martire, Schulz, Helgeson, Small, & Saghafi, 2010). Therefore, it is important to try to understand couple communication within its natural context in order to shed light on how interventions can be more effectively employed for couples coping with breast cancer.

In addition to studying how often couples talk about cancer, it is also important to know what kind of information is revealed in these conversations. When couples discuss cancer, the content can range from heated and emotional (e.g. revealing fears about treatment) to mundane and practical (e.g. oncologist appointment scheduling), and these different types of conversation can have different implications for adjustment to breast cancer. Emotional disclosure, for example, is generally linked to better psychological adjustment for breast cancer patients. One study found that breast cancer patients who reported greater than average emotional expression experienced posttraumatic growth,

whereas those who reported less emotional expression did not (Manne et al., 2004). Similar findings came from another study that found women who reported using emotional expression surrounding the cancer experience as a coping strategy had better mental and physical health outcomes three months later (Stanton et al., 2000). In fact, breast cancer patients who report accepting their emotions and having a confiding marital relationship have less chance of recurrence and mortality over an eight-year study period. Weihs and colleagues (2008) concluded, “It is the way women interact with their spouses, rather than just the presence of a marital relationship, that has salutary effects on health” (p. 122). These beneficial effects may be due to a host of reasons, including helping to create meaning surrounding the experience (Kelly, Klusas, von Weiss, & Kenny, 2001), strengthening social ties (Rimé, 2009), and enhancing intimacy (Reis & Shaver, 1988) and relationship satisfaction (Gottman & Notarius, 2000).

On the other hand, disclosure can be an indicator of psychological distress (Stiles, Shuster, & Harrigan, 1992), or used as a catharsis, which is generally ineffective (Kelly et al., 2001). The Fever Model (Stiles et al., 1992) describes disclosure’s relationship with distress as analogous to the relationship between fever and physical infection. Both disclosure and fever occur as a symptom of and part of the solution to a problem, but neither, the Fever Model posits, is a good predictor of the speed or certainty of recovery. The authors further point out that the distress that may lead to disclosure often perpetuates an inward focus, which can lead to rumination, and consequently more distress. The Fever Model explains why emotional disclosure is sometimes related to neutral or negative, rather than positive, outcomes.

Though emotional disclosure may be related to higher distress, as in the Fever Model, however, research within the laboratory to-date indicates that it tends to benefit couples coping with cancer when it occurs within a supportive context (Manne & Badr, 2008; Manne et al., 2004). However, Manne and colleagues (2004) acknowledged that the couples' discussions were taken out of their natural context, and therefore this process could have been altered in some unknown, important way. Because the benefits of support are so well documented among past in-lab studies (e.g. Gremore et al., 2011; Kayser et al., 1999), it is important to extend this line of research to the observation of naturally-occurring, supportive interactions to understand how this occurs in couples' daily lives. One daily diary study did find that both breast cancer patients and their partners benefitted from their partner's support, and that overall levels of support received, and not just perceptions of support received, predicted greater relationship intimacy (Belcher et al., 2011). This finding highlights the importance of studying objective levels of support within the context of daily life.

Less attention has been paid to conversations of couples coping that do not include emotional disclosure, but substantive conversations that are not emotional might also be an important component of couples' adjustment. One naturalistic observation study using the EAR found that this type of conversation is related to greater well-being among a healthy sample of undergraduate students (Mehl et al., 2010). Conversations in which "meaningful information was exchanged" were related to higher levels of happiness over and beyond measures of participants' personality (p. 539). In the context of conversations about cancer, an informational exchange may be beneficial for

adjustment. Helgeson and colleagues (1999) found that educational group interventions increased psychological and physical functioning in breast cancer patients, and this was particularly effective for women who had fewer personal resources (2000).

Finally, practical conversations are necessary for the maintenance of couples' normal, daily life and living with cancer. However, there is currently no research on this type of conversation and its relationship with adjustment to cancer. Given the family role disruption that breast cancer can introduce (Weihs & Politi, 2005; Weihs & Reiss, 2000), examining how practical conversations about cancer and other topics relate to adjustment might be a worthwhile endeavor. When a woman is diagnosed with breast cancer, her family may move from a "living-centered" to a "cancer-centered" way of life, leaving personal and financial resources dedicated to cancer-related goals, rather than other family goals (Weihs & Politi, 2005). Further, family and couple functioning predict breast cancer patients' mental health better than does physical impairment (Weihs & Reiss, 2000). This implies that practical functioning, and therefore practical conversations, within the couple and with close family/friends, should play a significant role in adjustment to breast cancer, and how these conversations relate to psychological, couple, and physical health adjustment.

Research Questions and Hypotheses

This study will answer basic questions surrounding the context and content of the conversations of couples coping with breast cancer to understand with whom and about what couples talk while coping with breast cancer, and how they relate to adjustment.

1. *How often does cancer come up in daily conversation?* Based on past self-report studies in which participants report discussing their cancer with their social networks (Henderson et al., 2002), I expected breast cancer patients to talk about cancer with their partners and other friends and family members. Because this is the first study to directly observe the conversations of couples coping with breast cancer in their normal, daily lives, the analysis of the frequency with which these conversations occur is exploratory.
2. *About what do couples talk when they talk about cancer?* As evidenced in my coding definition of cancer conversations, very different types of conversations are encompassed under this heading. To better understand how much and in what ways cancer intrudes on couples' daily lives, I will conduct exploratory analyses to determine the frequency of emotionally disclosing, supportive, informational, and practical cancer conversations. Past research has focused on cancer concerns (e.g. Gremore et al., 2011; Shands et al., 2006; Ullrich et al., 2008), but no one has identified how often un-emotional, informational, or simply practical conversations come up in daily life.
3. *Do couples talk about cancer more often to each other, or to their family and friends? Do patients and partners show similar or different patterns of how much and about what they talk to different members of their social networks?* To my knowledge, past literature is mute on the extent to which partners of breast cancer patients also discuss cancer outside the couple. I postulate, though, based on the protective buffering literature (e.g. Coyne & Smith, 1991), that partners will also

discuss cancer with their social networks, possibly at a higher frequency than patients. When partners of breast cancer patients are concerned about caring for the patient, some feel that keeping their own concerns to themselves protects, or buffers, the patient from an extra burden surrounding the experience (Coyne & Smith, 1991; Manne et al., 2007). This may necessitate partners going outside their relationship to discuss the cancer experience with others.

4. *How are cancer-related and other topics of conversation within couples and with friends/family related to adjustment?* Because cancer discussions can be helpful, harmful, or neutral (Ullrich et al., 2008), talking about cancer overall may not be related to adjustment. Overall talking about topics other than cancer should be related to better adjustment, based on Relational Regulation Theory, which posits that social support primarily occurs through ordinary, rather than solely through coping-specific, interactions (Lakey & Orehek, 2011), and that talking in-general in daily life has been found to be related to greater well-being in a healthy sample (Mehl et al., 2010). Due to the lack of past research about differences in conversations within versus outside the couple, I made no specific hypotheses about whether talking about cancer and other topics differs in these two social contexts.
5. *How are different types of conversation about cancer and other topics related to adjustment?* First, I predicted that emotional disclosure would be linked to patients' and their partners' own better psychological adjustment, based on past in-lab (Manne et al., 2004) and self-report (Stanton et al., 2000) findings that

emotional expression is beneficial to patients coping with breast cancer. Second, since a supportive context is important for coping with breast cancer (Belcher et al., 2011), and particularly to facilitate the benefits of disclosure (Manne & Badr, 2008), and foster intimacy in couples (Reis & Shaver, 1988), I predicted that higher frequency of patients' and partners' supportive interactions would be related to their own and particularly to each other's better adjustment. Third, informational conversations about cancer and other topics should both be related to better adjustment among couples coping with breast cancer, based on past findings that conversations in which "meaningful information was exchanged" were related to higher levels of happiness in a healthy sample (Mehl et al., 2010), and that educational group interventions increased psychological and physical functioning in breast cancer patients (Helgeson et al., 1999). Lastly, given the lack of research on practical conversations and adjustment, these analyses will be exploratory.

Method

Participants

Participants were recruited from the Arizona Cancer Center, during their regularly scheduled visits to an oncologist. Patients and their partners were approached by the experimenter and given an overview of the study. Breast cancer patients were eligible if they had primary diagnosis of Stage I, II, or III breast cancer, had definitive surgery, and were receiving adjuvant treatment (chemotherapy or radiation). Couples were eligible if both partners were at least 21 years of age, living together, and spoke English in their

daily conversations. Of the 647 couples approached, 210 (32.5%) were eligible for this study, and 56 (26.7% of eligible couples) agreed to participate. After agreeing to participate in the study, couples gave their written consent, and met with the experimenter three times, typically in their homes or at the Arizona Cancer Center.

Of the 56 couples consented for this study, 52 patients, and 51 partners had data usable for analyses. Two couples withdrew from the study, one just after consenting to participate in the study because the external microphone wire on the EAR was bothersome, and one before the follow-up session for an unknown reason, as we were unable to contact them. Two patients and three partners did not have a sufficient number of sound files for analyses (< 30). Medical information for patients, and demographic information for couples, is in Table 2a. Two patients with Stage 0 and four with Stage 4 disease were allowed to participate despite eligibility criteria due to low accrual rates.

Table 2a. Demographics and Disease Characteristics.

	Mean	SD	Range
Patient Age	56.39	13.95	24.00 – 82.00
Partner Age	59.49	14.46	26.00 – 94.00
Years Married/Partnered	23.04	15.89	0.42 – 61.67
Months Since Diagnosis/Recurrence	10.84	14.34	1.00 – 56.00
	n	%	
Patient Race:			
Caucasian	42	80.8	
Latina	6	11.5	
African American	2	3.8	
Other/Unknown	2	3.8	
Partner Race:			
Caucasian	42	82.4	
Latino	8	15.7	
Asian	1	2.0	
Patient Education:			
≤ Some College/Vocational	18	34.6	
Bachelor's Degree	18	34.6	
Post-graduate Degree	16	30.8	
Partner Education:			
≤ Some College/Vocational	21	40.5	
Bachelor's Degree	10	19.6	
Post-graduate Degree	20	39.2	
Partner Sex:			
Male	44	86.3	
Female	7	13.7	
Stage of Disease:			
0	2	3.8	
I	16	30.8	
II	14	26.9	
III	12	23.1	
IV	4	7.7	
Unknown	4	7.7	
Patients on Medication for:			
Depression	13	25.0	
Thyroid	6	11.5	
Both	3	5.8	

Note. For patients, N = 52; for partners, N = 51.

Procedure

During the first session, typically held on a Friday afternoon, participants completed a packet of psychological adjustment and relationship quality questionnaires. Afterward, they were informed about the EAR component of the study. Specifically, they were instructed to wear the EAR as much as possible over the weekend during their waking hours. They were told that the EAR would record 50 seconds of ambient sound at a time, and that they would not be aware of when the EAR was recording, in order to continue their normal daily life as much as possible. They were also informed that the EAR would only capture approximately 10% of their waking day, with a blackout period at night. Finally, they were told that they would have the opportunity to review and delete any sound files at the end of the study before any study personnel listened to them. After the experimenter made sure that the participants understood this information, they were given the EAR devices to wear.

After the weekend, typically on a Monday, participants met with the experimenter for the second session, during which the experimenter collected the EARs, and administered a second questionnaire packet, assessing demographic and medical information, as well as the participants' experiences wearing the EAR. Participants also completed an event diary to indicate when they were and were not able to wear the EAR.

Two months later, participants met with the experimenter for the final, follow-up session, where they completed the session 1 questionnaires a second time, in order to assess any changes in psychological adjustment and relationship quality. Afterward, participants were debriefed and given a CD with their recordings to review them and

erase any sound files they preferred to remain private. Finally, each couple was paid \$150 for their participation.

Measures

EAR Device. The EAR device was an HP ipaq 100 handheld computer with the EAR software programmed to record 50 seconds every 9 minutes. Both patients and partners wore their EAR device in a protective case clipped to their waistline, with an external microphone clipped to their lapels. The EAR was programmed to record throughout participants' entire waking weekend from the time they received the device until they went to bed on Sunday night, which yielded an average of 176 (SD = 57) valid (i.e. the participant was wearing the device, and there were no technical problems) and waking sound files per participant. The EARs were programmed to blackout for 6 hours every night starting at the time the couple indicated they typically go to sleep.

EAR Compliance and Obtrusiveness. An average of 15.7% (SD = 0.1) of patients' and 15.3% (SD = 0.1) of partners' sound files were coded as "sleeping." Of the waking sound files, 85.9% (SD = 17.2) of patients' and 85.7% (SD = 16.7) of partners' sound files were coded as "valid," meaning that there were no problems with recording quality or participant compliance. Of the sound files that were not valid, 7.7% (SD = 13.2) of patients' and 9.1% (SD = 14.7) of partners' sound files were coded as the participant not wearing the EAR. Participants' reported non-compliance was slightly higher than the behavioral averages. Patients reported not wearing the EAR an average of 10.9% of the time, and their partners reported not wearing it 14.8% of the time. However, self-reported

and behavioral compliance were positively correlated for patients ($r = .52, p < .001$) and partners ($r = .59, p < .001$).

Participants also rated the obtrusiveness of wearing the EAR. Both patients and partners reported an average of 2 on a 5-point scale (1 = “not at all” through 5 = “a great deal”) for the EAR’s obtrusiveness into their lives and behavior (e.g. To what extent did the EAR impede you in your daily activities?), as well as bystanders’ behavior (e.g. To what extent did the EAR influence the behavior of people around you?). The numbers reported here for compliance and obtrusiveness are highly similar to those reported in past EAR studies (e.g. Mehl et al., 2006). Overall, this indicates that despite the sensitive context of this study (i.e. couples coping with breast cancer while the patient was on treatment); patients and their partners wore the EAR during most of their waking hours over the weekend, and were minimally bothered by wearing the device.

EAR-Derived Measures. After participants reviewed their sound files (only 1 participant, a patient, deleted 1 sound file), research assistants extracted information from each sound file about participants’ daily lives by coding the presence or absence of aspects of their social environments (e.g. whether the participant was with his/her partner, or with friends/family). Talking with each other and to friends/family was neither mutually exclusive nor comprehensive. In other words, participants could simultaneously engage in conversation with each other and friends/family, and they could also engage in a conversation with someone other than their partner, a friend, or a family member (e.g. a stranger). Research assistants also coded whether or not the conversations were cancer-related, and whether the conversation was emotionally disclosing, practical, or un-

emotional and substantive (these conversation categories were mutually exclusive). They further coded whether participants were giving support during their interaction, which was not mutually exclusive with the other conversation categories. Cancer-related conversations encompassed all aspects surrounding the cancer experience, including practical matters like scheduling doctor appointments, physical symptoms or concerns like nausea or body disfigurement, and emotional or social concerns like family role disruption. Emotional disclosure conversations were coded if the participant shared his or her personal feelings or emotions about any topic. Supportive interactions were coded if the participant was providing support to another person. The support could be emotional (e.g. expressing sympathy) or practical (e.g. providing tangible help). Practical conversations were coded if the sole purpose of the conversation was to accomplish a task, which included discussing what is for dinner, or scheduling a doctor's appointment. Substantive conversations were coded if the interactants exchanged thoughts, information, values, or ideas about an unemotional topic. This category was also coded if the participant was engaged in an interaction in which someone was emotionally disclosing information to the participant, since the participant was not the discloser, and the sound file therefore could not be counted as emotional disclosure. For this reason, the support-giving category was also used to tease apart the substantive conversation category, clarifying which conversations were supportive, versus purely an informational exchange. All sound files were coded independently by two research assistants. Inter-coder reliability was calculated using one-way random effects intraclass correlations, aggregated across all valid sound files for each participant, and is reported in Table 2b.

Table 2b. Inter-Coder Reliability

Coding Category	Intraclass Correlation	
	Patient	Partner
Talking	.98	.97
To Partner	.88	.80
To Friend	.80	.91
To Family	.51	.86
Talking about Cancer	.98	.97
Emotional Disclosure	.86	.84
Support-Giving Interaction	.48	.49
Informational Conversation	.91	.83
Practical Conversation	.79	.78

Note. Intraclass correlations are average measures from one-way random effects models.

Talking to friends and family were combined into one category for all subsequent analyses, due to the difficulty in identifying the difference between them in the sound files, as evidenced by the lower intraclass correlation (.51) for patients talking to family.

Table 2c displays an example from patients and spouses (who are not from the same couples) of each of these types of conversation.

Table 2c. Examples of different types of cancer-related and other topics of conversation.

Type of Conversation	Example
Emotional Disclosure	
Cancer	<p>Patient: There's definitely some crappy side effects but, you know... Yeah, I mean if it means I will be done with this and hopefully it won't come back again, um fine, you know.</p> <p>Spouse: And then to complicate matters I had hand surgery and could hardly grip the steering wheel, but there was no one else, so it's those kinds of things, yes. Um, you can't ever foresee that, and so that would never of come up during your chemotherapy, you know, because you're so focused on 'ok it's chemo day, we've got to get there.'</p>

Other Topics	<p>Patient: She didn't even respond to my text. She just ignored me. Well, it's just rude. Why not just say, 'I'm super busy today and trying to get my homework done?'</p> <p>Spouse: I was so stressed by the time I got there I got stuck on the freeway in traffic and I knew I was going to be late.</p>
Supportive Interaction	
Cancer	<p>Patient: You don't do, uh, hard manual work anymore. Not much. But oh yes you clean house. You clean house like a mad bandit. Especially since I've been sick.</p> <p>Spouse: I think your hair looks cute, dearest. I noticed that it's changed of course, but we'll go through and get passed that, don't worry about it. And if not we'll live with it the way it is, not a big deal.</p>
Other Topics	<p>Patient: Your stomach calm down? What? No, I just burped... Um, yes, I think three times a day you should take that.</p> <p>Spouse: You could order them yourself. I don't get that. You know where to send it to? You want help? You want some help?</p>
Informational Conversation	
Cancer	<p>Patient: Who? No... Xxxx dies at eighty after a battle with breast cancer. That's not that old.</p> <p>Spouse: They said she was at the cancer center and uh University of Arizona Cancer Center. She'd gone online and checked her out so we knew that she'd had a fellowship at USF.</p>
Other Topics	<p>Patient: Well, yeah, there will be buildings of some kind but we were just wondering if it would be residential or. They wouldn't allow commercial buildings in right there, would they?</p> <p>Spouse: They know that most human thinking isn't linear. So, I can like an apple pie better than a cherry pie, and I can like a cherry pie better than a blueberry pie and mathematically, linearly, you would have to say that I must like apple better than blueberry, but with humans that doesn't necessarily have to be true. I could still like blueberry better than apple.</p>
Practical Conversation	
Cancer	<p>Patient: Because tomorrow I see the doctor. Yes. The radiologist. Radiology doctor. And uh, then the next day we go and, uh have to talk about this stuff.</p> <p>Spouse: We got up to the two pills and nobody ever</p>

	<p>changed the prescription, and we're running out all the time. Ok and that is better. Ok. Two, she does take it two times? Or once? One time? Ok, alright.</p>
Other Topics	<p>Patient: Not much, just some rice and greens and maybe scrambled eggs with the rice. We got that little bit of beans left if you want them. Yeah. Are my keys still in my pocket?</p> <p>Spouse: But they're all okay now? A tire place should know all about it, I was trying to remember what the stuff is they put in it.</p>

After all sound files were coded, they were aggregated across each participant's sound files to yield the mean frequency of cancer-related and non-cancer related conversations, of interacting with the significant other and friends/family during the conversation, and of which type of conversation they were engaged. These mean frequencies were used for analyses.

Self-reported Measures. All self-reported outcome measures were completed by patients and their partners at Time 1 and 3. Follow-up scores, residualized for baseline scores, were used as the outcome measures' change scores. Means and inter-item consistency for all three adjustment measures are reported in Table 2d.

Psychological adjustment. They completed the Center for Epidemiologic Studies Depression Scale (CES-D, Radloff, 1977), a 20-item self-report measure of depressive symptoms. The CES-D is highly reliable and extensively used in cancer research (Spiegel & Giese-Davis, 2003). Higher scores indicate more depressive symptoms.

Relationship adjustment. The Dyadic Adjustment Scale (DAS; Spanier & Thompson, 1982) was used to rate relationship quality. The DAS is a 32-item scale with four subscales: consensus, tension, cohesion, and overall dyadic adjustment. It is a

widely used relationship measure, including breast cancer coping studies (e.g. Badr et al., 2010). Higher scores on the DAS indicate more satisfying relationships.

Physical Health. The 36-item Short Form (SF-36; Ware, et al., 1993), a well-validated questionnaire, was used to assess health-related quality of life. For this study, four subscales, physical ability, energy, pain, and general health, were combined to create a composite measure of physical health (Ware et al., 1995). Higher scores indicate better physical health.

Table 2d. Descriptive Statistics for Adjustment Measures and Partners' Correlations.

	Cronbach's Alpha		T1 Mean (SD)		T3 Mean (SD)	
	T1	T3	Patients	Partners	Patients	Partners
Depressive Symptoms (CES-D)	.86	.92	11.82 (8.84)	10.93 (8.12)	10.10 (9.67)	9.36 (9.57)
Dyadic Adjustment (DAS)	.92	.89	15.15 (1.45)	14.84 (1.66)	15.12 (1.47)	14.81 (1.51)
Physical Health (SF-36)	.94	.94	56.61 (22.12) ^a	69.05 (19.87) ^b	61.65 (23.25) ^a	71.99 (18.46) ^b
			Time 1 (<i>r</i>)	Time 3 (<i>r</i>)	Change (<i>r</i>)	
Depressive Symptoms (CES-D)			.32*	.43**	.19	
Dyadic Adjustment (DAS)			.56**	.61**	.39**	
Physical Health (SF-36)			.17	.40**	.33*	

Note. T1 and T3 represent the first session, before the EAR monitoring weekend, and the follow-up session two months later, respectively. A score of 16 on the CES-D is typically considered depressed, though this is not a diagnostic tool for clinical levels of depression. The highest possible score on the DAS is 18 (the averages within each of the 4 subscales—consensus, satisfaction, cohesion, and affection—were summed). The composite measure of physical health from the SF-36 (the average of 4 subscales: physical ability, energy, pain, and general health) had a maximum value of 100. Superscripts indicate significant differences between patients and partners within Time 1 and Time 3 (p 's < .01). Partners' correlations are Pearson correlations. * $p \leq .05$; ** $p \leq .01$

As shown in Table 2d, patients and partners did not significantly differ in their levels of depressive symptoms or dyadic adjustment, but they did significantly differ in reports of their physical health at Time 1 ($F(1, 51) = 11.47, p = .001$) and Time 3 ($F(1, 51) = 10.81, p = .002$). They did not significantly differ in levels of change (follow-up scores residualized for Time 1 scores) for any of the outcome measures (p 's $> .60$). The correlations between patients' and partners' outcome scores revealed that almost all of their scores on the outcome measures are significantly related, indicating substantial non-independence within couples.

Demographic and medical information. Patients and partners completed a 10-item demographics questionnaire assessing their age, race/ethnicity, socioeconomic status, family (years of marriage, number of children) and employment situation. Patients also completed a 16-item breast cancer questionnaire (Badger et al., 2005) that asks for the day of first and second (if applicable) diagnosis, stage of breast cancer, type of surgery, type and order of treatment, (previous and scheduled) dates of treatment, and current medications (See Table 2a).

Data Analysis. The first set of analyses used descriptive statistics to answer the questions regarding with whom and about what couples talk while coping with breast cancer. Average frequencies of cancer-related versus other topics of conversation, and average frequencies of with whom these conversations occur are reported for patients and partners. Coded cancer conversations were also analyzed by whether they were emotionally disclosing, supportive, informational, or practical to further understand what

types of conversations patients and partners have when they talk about cancer and other topics.

Next, I used within-person contrasts in repeated measures general linear models to examine whether patients and their partners differed in frequency of conversations with friends/family, about cancer and other topics, and of different types (i.e. emotional disclosure, supportive interactions, informational conversations, and practical conversations).

Lastly, Actor-Partner Interdependence Models (APIM; Kenny, Kashy, & Cook, 2006) were used in multi-level models to answer the questions about which types of conversations were related to patients' and partners' psychological adjustment. The APIMs tested not only whether each person's own scores predicted their own outcomes (actor effects), but also whether each person's scores predicted their partner's outcomes (partner effects). The actor effects are tested while controlling for partner effects, and vice versa. In addition, the APIM accounts for the fact that all participants in this study are not independent. It does this by using the couple as the unit of analysis, while allowing to test whether results differ by role (whether the participant is the patient or the partner), and by accounting for the level of non-independence among partners. Non-independence is accounted for in the predictor variables (left-most arrow) and in the variance in the outcome measure that is unexplained from the model (U, right-most arrow). An example of an APIM is shown in Figure 2a, for conversations with the partner that were about cancer. It would test whether the patient talking about cancer with her partner predicted her own or her partner's adjustment, as well as whether the partner

talking about cancer predicted his/her own or the patient's adjustment. Figure 2b shows the same model, among conversations with friends and family members.

Figure 2a. APIM examples.

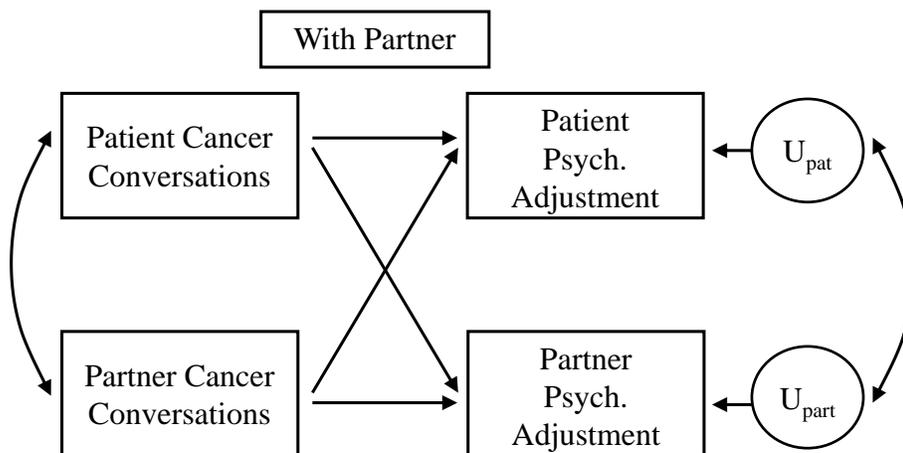
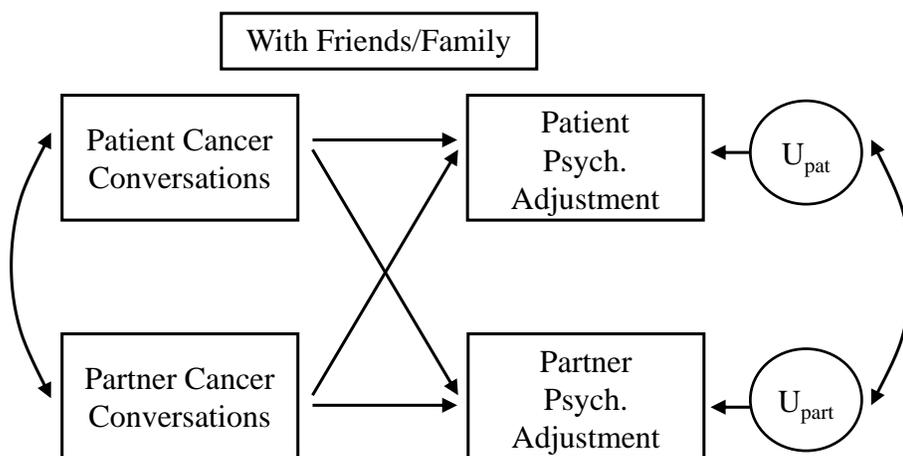


Figure 2b.



Interactions between actor or partner effects and role (i.e. whether or not the participant was the patient) were deconstructed using Case 1 from Preacher's online tool

for HLM 2-way interactions (Preacher, Curran, & Bauer, 2006). A threshold of $p = .10$ was used to determine which interactions would be deconstructed, and report unequal regression coefficients (simple slopes) for patients and spouses. A less conservative approach was used to err on the side of allowing the relationship between the predictors and outcomes to differ between patients and spouses, rather than reporting equality in the effects when it does not actually exist.

Results

Table 2e shows the mean amount of waking time patients and spouses (partners will hereafter be referred to as “spouses” to avoid confusion with the terms “partner” and “partner effect” in the APIMs) spent in conversation with each other, friends and family, and in conversation about cancer and other topics.

Table 2e. Mean % of Waking Time Spent in Conversation

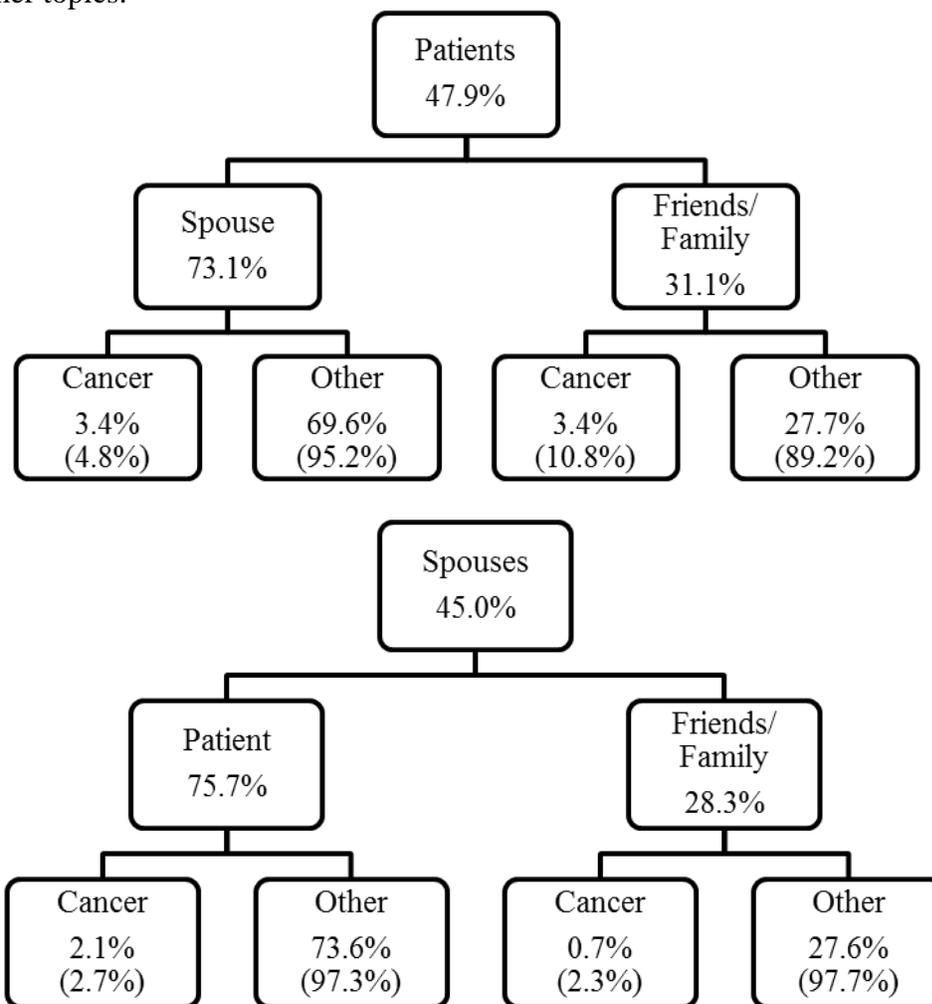
	Mean (SD)	
	Patients	Spouses
All	47.85% (15.20)	44.99% (15.48)
With Partner	34.97% (14.56)	34.05% (15.00)
With Friends/Family	10.52% (10.86)	9.21% (10.66)
About Cancer	3.24% (4.09)	1.13% (1.55)
With Partner	1.76% (2.08)	.94% (1.40)
With Friends/Family	1.19% (2.02)	.25% (.46)
About Other Topics	44.66% (14.13)	43.88% (15.16)
With Partner	33.21% (13.84)	33.11% (14.70)
With Friends/Family	9.33% (9.79)	8.95% (10.57)

Note. For patients, N = 52; for spouses, N = 51. All numbers reflect the percentage of valid and waking sound files that participants spent in these conversational contexts. Talking with each other and to friends/family was neither mutually exclusive (simultaneous conversation with each other and friends/family possible) nor comprehensive (e.g. they could also have a conversation with a stranger).

Patients and spouses talked, on average, 45 – 48% of their waking hours, and did not talk at significantly different rates, $F(1, 50) = 1.05, p = .31$. Interactions about cancer, however, only comprised approximately 3% of patients' and 1% of spouses' waking hours.

Figure 2c shows these numbers in the more intuitive metric of percentage of conversations, rather than percentage of waking time, that took place with each other and friends/family, and that were about cancer or other topics. The values in parentheses reflect the percentage of conversations with each other or friends/family that were about cancer or other topics of conversation.

Figure 2c. Patients' and spouses' percentage of time spent talking, and the percentage of those conversations that were within the couple, with friends/family, and about cancer versus other topics.



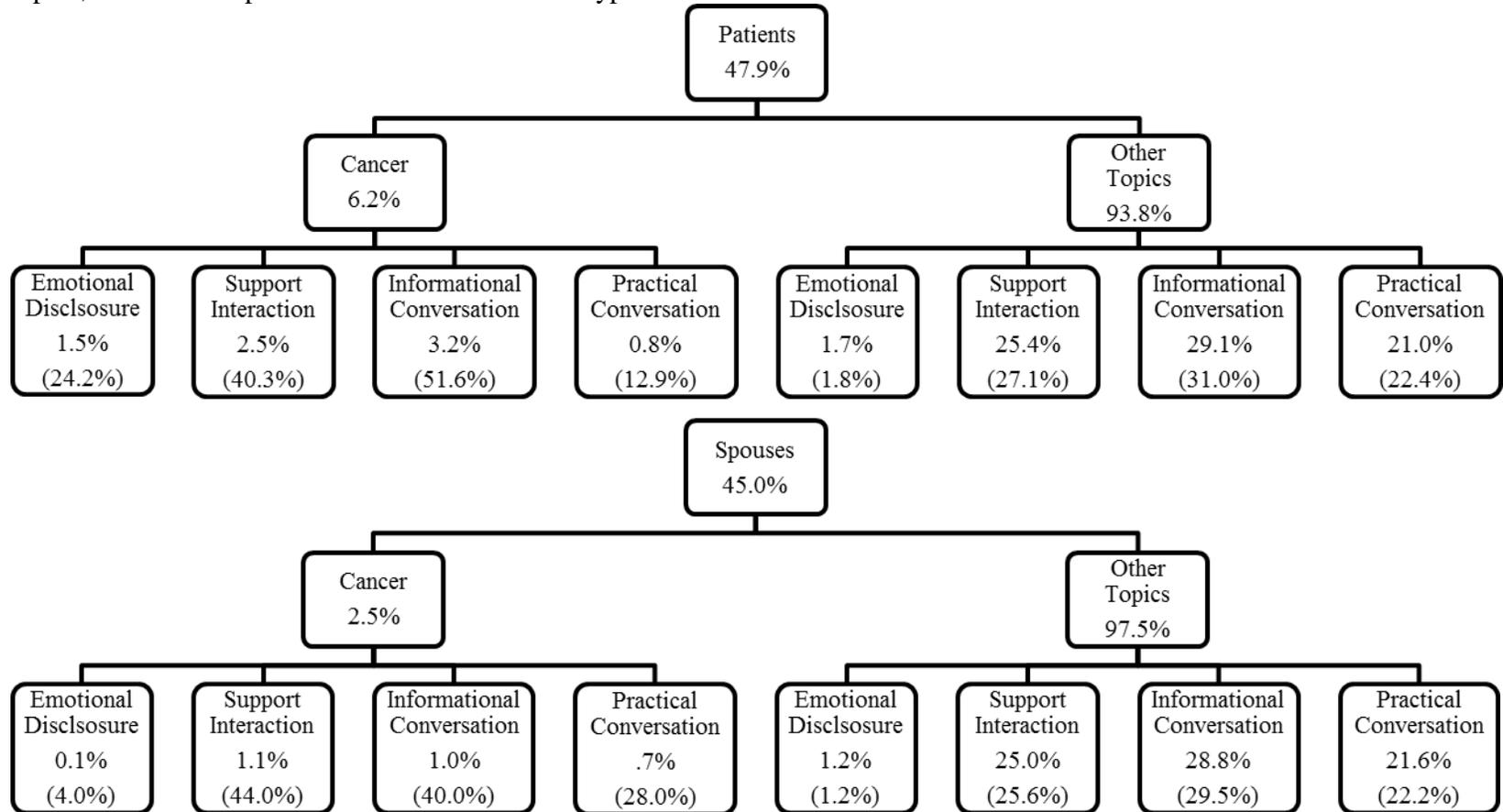
Note. Numbers in parentheses reflect the percentage of conversations with each other or friends/family that were about cancer or other topics of conversation.

Approximately $\frac{3}{4}$ of couples' conversations were with each other, and they spoke to friends and family members during approximately 30% of their conversations, which did not significantly differ between partners, $F(1, 50) = 2.54, p = .12$.

Both patients and spouses talked about topics other than cancer for over 90% of their conversations, and 6 couples, 3 patients, and 8 spouses (23 participants in total) did not speak about cancer at all. Further, 2 patients and 14 spouses spoke fewer than 50 words about cancer, compared to the average of 2800 ($SD = 1834$) sampled words patients spoke and 2090 ($SD = 1228$) sampled words spouses spoke. Patients did talk significantly more often about cancer than did their spouses, $F(1, 50) = 18.92, p < .001$. This difference remained among cancer conversations with friends and family ($F(1, 50) = 17.09, p < .001$), but not among other topics of conversation with friends and family ($F(1, 50) = 0.09, p = .77$).

Figure 2d shows the frequency with which cancer-related and other topics of conversation were emotionally disclosing, supportive, informational, and practical. Supportive and informational conversations were the most common types for both members of the couples. Relative to patients' and spouses' frequency of talking about cancer, patients emotionally disclosed more often than spouses ($F(1, 33) = 27.50, p < .001$), and spouses engaged in practical conversation more often than patients ($F(1, 33) = 7.32, p = .01$). Partners did not differ significantly in their relative rates of supportive or informational interactions about cancer (p 's $> .58$), or their relative rates of any of the different types of conversation about other topics (p 's $> .12$).

Figure 2d. Patients' and spouses' percentage of time talking, percentage of conversations that were about cancer versus other topics, and that comprised different conversation types.



Note. Numbers in parentheses are % of cancer-related or other topics of conversation that comprised the different types.

The unstandardized regression coefficients from APIMs of patients' and spouses' conversations with each other and with friends/family, and their relationship with psychological and couple adjustment and physical health, are in Table 2f. For each APIM, 4 regression coefficients are displayed: an actor effect for the patient (in the upper left cell for each outcome measure), and for the spouse (lower right cell), and a partner effect for the patient (lower left cell) and for the spouse (upper right cell).

A significant main partner ($b = 83.29, p = .02$), but not actor ($b = -64.69, p = .17$), effect emerged for conversations within the couple about cancer and Time 1 depressive symptoms, indicating that patients and spouses who talked more about cancer to each other were more likely to have a partner with higher depressive symptoms. There was also a significant interaction between the actor effect for conversations within the couple about cancer and role with Time 1 dyadic adjustment ($b = -36.38, p = .01$), such that spouses ($b = 25.86, p = .01$), but not patients ($b = -10.52, p = .10$), talking about cancer within the couple was related to their own higher dyadic adjustment at Time 1. The couples talking about cancer with each other also significantly interacted with role to predict changes in their own physical health ($b = -229.23, p = .03$), however, neither simple slope was statistically significant (p 's > .08).

The actor and partner effects for talking to friends and family members about cancer and adjustment both differed significantly by role to predict change in dyadic adjustment, ($b = -35.07, p = .04$; $b = 26.14, p = .03$, respectively). Spouses' conversations with friends and family about cancer were related to increases in their own ($b = 34.73, p = .04$) and patients' ($b = 27.35, p = .02$) dyadic adjustment.

The only association between talking to each other about topics other than cancer and couples' adjustment was a main actor effect for worse Time 1 physical health ($b = -37.79, p = .03$), meaning that for both patients and spouses, talking within the couple was related to their own concurrent worse health. More associations were found between conversations outside the couple, about other topics, and adjustment. First, the interaction between role and both the actor ($b = -4.27, p = .03$) and the partner ($b = 4.21, p = .03$) effects for Time 1 dyadic adjustment were significant, such that patients', but not partners', conversations with friends and family about topics other than cancer were related to lower concurrent dyadic adjustment for patients ($b = -3.56, p = .01$) and spouses ($b = -2.95, p = .02$). Lastly, there was a main actor effect for changes in physical health ($b = 18.27, p = .04$), indicating that both partners' conversations with friends/family about topics other than cancer predicted improvements in their own physical health.

None of the statistically significant results reported in Table 2f were reduced to statistical non-significance when patients' stage of cancer, use of depression medication, and use of thyroid medication were controlled in these models, except for one model. The main partner effect for couples talking about cancer with each other and higher Time 1 depressive symptoms was reduced to marginally significant ($b = 66.20, p = .06$).

Table 2g displays the unstandardized regression coefficients for APIMs of different types of cancer-related and other topics of conversation and adjustment. Contrary to past literature about the beneficial effects of emotional expression about the cancer experience (e.g. Manne et al., 2004; Weihs et al., 2008), there was only one

significant association between emotionally disclosing about cancer and adjustment.

There was an interaction between a partner effect and role on changes in dyadic adjustment ($b = 92.73, p = .003$), such that spouses' emotional disclosure predicted improvement in patients' dyadic adjustment ($b = 93.97, p = .003$), but not vice versa ($b = 1.25, p = .83$).

A marginally significant interaction emerged for an actor effect of emotional disclosure about topics other than cancer and role on Time 1 depressive symptoms ($b = 160.86, p = .07$). Deconstruction of this interaction revealed that patients who disclosed more about other topics tended to have more depressive symptoms at Time 1 ($b = 126.49, p = .04$), and this association did not exist for spouses ($b = -34.37, p = .51$). However, this interaction was reduced to non-significance ($b = 121.37, p = .16$) when controlling for patients' stage of cancer, and use of depression and thyroid medication. Emotional disclosure about other topics was also differentially related to patients' and spouses' Time 1 physical health ($b = -468.81, p = .03$). Disclosure in this context was negatively related to patients' physical health ($b = -439.94, p < .001$), but positively related to spouses' physical health ($b = 28.86, p < .001$), however, this interaction was reduced to marginal significance when accounting for patients' stage and medication use ($b = -400.99, p = .06$).

Support-giving interactions surrounding a conversation about cancer were marginally differentially related to changes in patients' and spouses' own physical health ($b = -275.51, p = .07$). For patients, they were related to a decline in physical health ($b = -49.35, p < .001$), whereas for spouses, they were related to improvement ($b = 226.17, p <$

.001). The only association between supportive interactions surrounding other topics of conversation and adjustment was an interaction between an actor effect and role on changes in depressive symptoms ($b = -48.98, p = .01$). Spouses' supportive interactions were related to their own increases in depression ($b = 27.98, p = .03$), whereas patients' supportive interactions were marginally related to their own decreases in depression ($b = -21.00, p = .07$). There were no significant partner effects for supportive interactions and adjustment.

Among informational conversations about cancer, there was an interaction between a partner effect and role that was marginally significant at Time 1 ($b = 34.77, p = .10$) and significant for changes in ($b = 22.86, p = .05$) dyadic adjustment. More of spouses' informational conversation about cancer was related to better dyadic adjustment for patients both at Time 1 ($b = 34.31, p = .05$) and follow-up ($b = 23.18, p = .01$), but not vice versa (p 's $> .94$). There were no other associations between cancer-related or other topics of informational conversation and adjustment.

Couples' practical conversations about cancer were related to each other's decreases in depression ($b = -204.49, p = .04$). However, this main partner effect was reduced to marginal significance when accounting for patients' stage of cancer and use of depression or thyroid medication ($b = -193.95, p = .08$). Among practical conversations about other topics, there was a significant interaction between an actor effect and role, predicting changes in depressive symptoms ($b = -42.14, p = .02$). Patients' ($b = -21.65, p = .05$), but not spouses' ($b = 20.49, p = .11$), practical conversations were related to their

own decreases in depressive symptoms. This association was unchanged when taking patients' stage and medication use into account.

Table 2f. Percentage of all patients' and spouses' conversations with each other and friends/family and adjustment levels.

	T1 Depressive Symptoms		Depression Change		T1 Dyadic Adjust.		Dyadic Adjust. Change		T1 Physical Health		Physical Health Change	
	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.
Within the Couple about Cancer												
Patient	-64.69	83.29*	-29.74	-26.24	-10.52	-11.77	4.34	1.21	108.16	-104.83	-104.05	-39.98
Spouse	83.29*	-64.69	-26.24	-29.74	15.95	25.86**	1.21	4.34	-104.83	108.16	-39.38	125.18
With Friends/Family about Cancer												
Patient	-22.23	-9.49	-108.28	-18.54	-6.71	7.19	-0.34	1.21	-0.44	55.98	138.56	20.22
Spouse	-9.49	-22.23	-18.54	-108.28	7.19	-6.71	27.35*	34.73*	55.98	-0.44	20.22	138.56
Within the Couple about Other Topics												
Patient	1.01	5.02	8.45	-6.50	-0.48	-0.25	0.52	-0.03	-37.79*	8.71	-13.08	13.57
Spouse	5.02	1.01	-6.50	8.45	-0.25	-0.48	-0.03	0.52	8.71	-37.79*	13.57	-13.08
With Friends/Family about Other Topics												
Patient	2.09	-0.49	-5.43	5.50	-3.56**	-2.95*	-0.37	0.94	2.98	-29.66	18.27*	-13.59
Spouse	-0.49	2.09	5.50	-5.43	1.27	0.71	0.94	-0.37	-29.66	2.98	-13.59	18.27*

Note. N = 52 couples. Numbers are unstandardized regression coefficients from Actor-Partner Interdependence Models, using multi-level modeling. A threshold of $p = .10$ was used to deconstruct interactions between role (patient or spouse) and main effects, and display unequal coefficients for patients and spouses. "Change" in outcome measures are two-month follow-up scores residualized for baseline scores. * $p \leq .05$; ** $p \leq .01$

Table 2g. Different types of conversation about cancer and other topics, and adjustment levels.

	T1 Depressive Symptoms		Depression Change		T1 Dyadic Adjust.		Dyadic Adjust. Change		T1 Physical Health		Physical Health Change	
	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.
Emotional Disclosure about Cancer												
Patient	-189.39	51.83	-350.83	-8.99	108.46	1.77	41.27	1.25	-773.80	8.37	634.64	6.63
Spouse	51.83	-189.39	-8.99	-350.83	1.77	108.46	93.97**	41.27	8.37	-773.80	6.63	634.64
Emotional Disclosure about Other Topics												
Patient	126.49*	54.86	56.15	-0.90	4.98	-3.55	-0.55	-2.68	-439.94**	5.88	-41.91	37.42
Spouse	54.86	-34.37	-0.90	56.15	-3.55	4.98	-2.68	-0.55	5.88	28.86**	37.42	-41.91
Supportive Interactions about Cancer												
Patient	72.15	39.58	-70.87	-26.05	24.82	0.42	4.96	1.40	-206.99	43.97	-49.35**	-26.36
Spouse	39.58	72.15	-26.05	-70.87	0.42	24.82	1.40	4.96	43.97	-206.99	-26.36	226.17**
Supportive Interactions about Other Topics												
Patient	0.03	3.96	-21.00	-20.15	-2.18	1.55	-3.58	2.41	-24.18	28.30	-27.37	24.11
Spouse	3.96	0.03	19.09	27.98*	1.55	-2.18	2.41	-3.58	28.30	-24.18	24.11	-27.37
Informational Conversation about Cancer												
Patient	-99.44	8.74	-123.88	19.27	25.44	-0.46	3.35	0.32	392.58	-59.95	148.77	-10.56
Spouse	8.74	-99.44	19.27	-123.88	34.31*	25.44	23.18**	3.35	-59.95	392.58	-10.56	148.77
Informational Conversation about Other Topics												
Patient	3.51	-5.76	-6.06	-2.40	0.67	-1.23	0.63	0.61	11.27	-12.29	17.54	5.92
Spouse	-5.76	3.51	-2.40	-6.06	-1.23	0.67	0.61	0.63	-12.29	11.27	5.92	17.54

Practical Conversation about Cancer

Patient	76.99	75.01	37.48	-204.49*	14.76	-2.68	6.15	6.95	-113.11	85.39	152.62	-91.38
Spouse	75.01	76.99	-204.49*	37.48	-2.68	14.76	6.95	6.15	85.39	-113.11	-91.38	152.62

Practical Conversation about Other Topics

Patient	1.99	0.92	-21.65*	-20.54	4.21	1.77	-2.43	1.65	-29.46	23.36	-20.95	18.27
Spouse	0.92	1.99	21.27	20.49	1.77	-2.93	1.65	-2.43	23.36	29.46	18.27	-20.95

Note. N = 52 couples. Numbers are unstandardized regression coefficients from Actor-Partner Interdependence Models, using multi-level modeling. A threshold of $p = .10$ was used to deconstruct interactions between role (patient or spouse) and main effects, and display unequal coefficients for patients and spouses. "Change" in outcome measures are two-month follow-up scores residualized for baseline scores. * $p \leq .05$; ** $p \leq .01$

Discussion

This study explored the daily conversations of couples coping with breast cancer to determine with whom and about what patients and their spouses talk, and associations with both partners' adjustment. It is the first study to naturalistically observe these conversations as they happen over the course of normal, daily life. Overall, this study yielded important descriptive findings about the conversations of couples coping with breast cancer, and somewhat unclear associations between these conversations and adjustment.

First, the couples in this study talked about cancer infrequently, relative to other topics of conversation. Over 90% of their conversations were about topics other than cancer, and 6 couples, 3 patients, and 8 spouses did not talk about cancer at all in their sampled conversations. On the surface, this finding supports the notion that mundane interactions might be more important in the coping process than past research has implied (Lakey & Orehek, 2011). By only focusing on cancer conversations, researchers leave approximately 90% of interactions among couples unexamined.

This study did, however, reveal some associations between talking about cancer and adjustment. The pattern of results that emerged revealed that spouses talking about cancer, whether within or outside the couple, was related to better dyadic adjustment. Talking to patients about cancer was related to spouses' better concurrent dyadic adjustment, which possibly reflects less protective buffering on the part of spouses. This would be consistent with past findings that protective buffering, hiding worries and concerns, is related to greater distress for the person who engages in it (Manne et al.,

2007). Further, spouses talking to friends and family about cancer predicted improvements in dyadic adjustment for both members of the couple, which is consistent with past work that has suggested that it may be more beneficial for patients if their partners discussed cancer outside the couple (Hagedoorn et al., 2011). This appears to present a problem: spouses discussing cancer within the couple is related to positive outcomes for the spouse, but not for the patient. However, it is important to note that spouses discussing cancer outside the couple was related to both members of couples' improvements in dyadic adjustment. Though an experimental replication clarifying causal pathways is necessary, this does lend support to Hagedoorn and colleagues' (2011) suggestion that spouses discuss cancer outside the couple.

Conversations about topics other than cancer showed fewer positive associations with adjustment than one would predict based on Relational Regulation Theory (Lakey & Orehek, 2011). Though talking to friends and family about other topics was related to improvements in each partner's own physical health, this was the only significant positive association with adjustment. Talking to each other, and patients talking to friends and family, about topics other than cancer was related to poorer initial physical health and dyadic adjustment for both partners. It was somewhat surprising that talking to each other about other topics was not related to better concurrent or improved adjustment, however, it is possible that the quality of these interactions, and not simply talking to each other, matters most for adjustment (Weihs et al., 2008) and well-being (Mehl et al., 2010).

Unfortunately, examining the type of interactions in this study shed little light on associations between couples' conversations and adjustment to breast cancer. One of the only patterns to emerge was the relationship between spouses' emotional disclosure about cancer and improvement in patients', but not their own, dyadic adjustment. No associations were found between patients' emotional disclosure about cancer and adjustment, despite the fact that patients disclosed more about cancer than their spouses. However, both patients discussing cancer more frequently and the lack of association between cancer disclosure and adjustment are consistent with Hagedoorn and colleagues' (2011) study that found overall levels of colorectal cancer patients' and partners' disclosure were not related to changes in depressive symptoms, and another study that did not find an effect of disclosure on emotional recovery (Zech & Rimé, 2005).

The associations with disclosure about topics other than cancer and adjustment were also fewer than one would predict based on past work that shows the benefits of emotional disclosure (e.g. Pennebaker, 2004). For patients, disclosing about other topics was related to their own higher depressive symptoms and worse health at Time 1, but for spouses, disclosing was related to better health at Time 1. Patients' disclosure findings can be interpreted in light of the Fever Model (Stiles et al. 1992), which posits that disclosure happens as a symptom of a problem. Spouses' disclosure might be related to their concurrent better health because it is the opposite of protective buffering, which is more common among partners of patients and related to greater distress (Manne et al., 2007).

Though the general lack of association between emotional expression and better adjustment is largely inconsistent with past work on emotional disclosure among couples coping with cancer (e.g. Manne et al., 2004; Stanton et al., 2000), it is possible that induced emotional disclosure, as in in-lab discussions in which couples are instructed to discuss an emotional topic (e.g. Manne et al., 2004) and Expressive Writing (Pennebaker, 2004), often facilitates better coping and health outcomes, but naturally-occurring disclosure does not have the same effect. Indeed, Zech and Rimé (2005) concluded that, based on several lines of research that, “the widespread belief that talking about emotions *per se* leads to recovery needs reconsideration” (p. 284).

Naturally-occurring emotional disclosure may be unrelated to better outcomes for several reasons. First, the Fever Model (Stiles et al. 1992) posits that disclosure happens as a symptom of a problem, and therefore, if there were any benefits to disclosure in daily life, it is possible that the association was cancelled out by disclosers’ worse status. Second, disclosure that is not induced in an experiment or laboratory observation may be participants venting their emotions, as in catharsis, which is generally not effective as a coping strategy (Kelly et al., 2001). Finally, observed, naturally-occurring disclosure has no method overlap with measures of adjustment, which is a problem in some past research on disclosure (Stanton et al., 2000), and may be the cause of the lack of association. If this is the case, then it is likely that emotional disclosure that naturally occurs has no “real” association with adjustment to stressful events.

It was less surprising to find so few associations between supportive interactions and adjustment, in light of the low inter-coder reliability for this coding category (Table

2b). For patients, giving cancer-related support was related to their own worsened health, but for spouses, it was related to improved health. Patient and spouse role in the couple might be responsible for the supportive interaction findings that did emerge. It is possible that if patients need to give a lot of cancer-related support to others, they cannot care for themselves. These findings, however, were not predicted, and it was surprising that there were actor, rather than partner, effects for supportive interactions. Taken together with the low inter-coder reliability, these findings should be interpreted cautiously.

More spousal engagement in informational conversation about cancer was related to better dyadic adjustment for patients both at Time 1 and follow-up. This is interesting in light of Mehl and colleagues' (2010) finding that substantive conversations are related to better well-being among healthy samples. This is evidence that, among couples, the partner effect for informational, or substantive, conversations may be stronger than the actor effect for this link. This finding should also be interpreted cautiously, however, as there were no other significant links between informational conversation and adjustment.

Patients', but not spouses', practical conversations about other topics were related to decreases in their own depressive symptoms, indicating that those conversations reflect some beneficial process during which maintaining some normalcy may benefit patients, when it is possible. As patients struggle with the necessary role shift from partner and/or mother to patient (Weihs & Politi, 2005; Weihs & Reiss, 2000), perhaps being able to carry out some normal, practical interactions eases this transition. Couples' practical conversations about cancer were related to each other's decreases in depression.

However, this main partner effect was reduced to marginal significance when accounting for patients' stage of cancer and use of depression or thyroid medication.

This study had several limitations. First, the lack of predicted associations between different types of conversations and adjustment in this study may not be due to the lack of a real association between these constructs. It is possible that more context is necessary to further distinguish how these conversations take place, and how they might relate to adjustment. For example, in addition to the different types of support (emotional, informational, and instrumental), Coyne & Smith (1991) outline three different ways support can be given: active engagement (involving the patient in discussions and problem-solving), protective buffering (hiding concerns and worries), and overprotection (excessive help). These different ways of giving support have been found to be differentially related to adjustment among patients with cancer (Kuijer et al., 2000), so future studies taking this into account might better capture the relationship between supportive interactions and adjustment to cancer.

More context is also likely a necessary component of studying emotional disclosure. It is not universally beneficial, and tends to be related to better psychological and health outcomes within a supportive context. The Process Model of Intimacy (Reiss & Shaver, 1988) outlines how disclosure and support within couples benefits partners by fostering intimacy within a transactional process, and this idea has been supported among studies of couples coping with breast cancer (Manne et al., 2004). Therefore, understanding how disclosure and support relate to adjustment likely requires samples of interactions that are longer than 50 seconds, in order to understand the context in which

these interactions occur, which may also improve accuracy and agreement among coders for supportive interactions. It may not be sufficient to simply know the frequency with which these conversations take place, despite evidence that it is sufficient to capture other important, but more discrete, behaviors during the coping process like sighing (Robbins et al., 2011) or swearing (Robbins et al., 2011). For this reason, future studies of the interactions of couples coping with breast cancer should include more extensive coding of the context of the interactions (e.g. active engagement, protective buffering), perhaps within longer recording periods.

CHAPTER 3: LANGUAGE USE AS AN INDEX OF SOCIAL PROCESSES

The way couples construe their relationship through language use relates both to coping (Rohrbaugh, Mehl, Shoham, Reilly, & Ewy, 2008; Rohrbaugh et al., in press) and relationship (Ireland et al., 2011; Slatcher, Vazire, & Pennebaker, 2008; Williams-Baucom et al., 2010) outcomes. Of the many types of words people use, we-talk (i.e. the use of first-person plural pronouns) has been of focal interest because it may reflect communal coping (Lyons, Mickelson, Sullivan, & Coyne, 1998), or a broader sense of interdependence (Agnew et al., 1998) or self-other overlap (Aron, Aron, Tudor, & Nelson, 1991; Aron, Aron, & Smollen, 1992). For example, Rohrbaugh et al. (2008) found that more partner we-talk, relative to the frequency of I-talk (i.e. the use of first-person singular pronouns) within an in-lab discussion of the patient's health problems predicted improved health for heart failure patients. This pattern of findings was also replicated among families coping with breast cancer who engaged in an in-lab discussion of how they have coped. Spouses', but not patients', we-talk was related to better dyadic adjustment (Robbins, Mehl, Smith, & Weihs, 2012), which is also consistent with a qualitative study that found breast cancer patients felt supported when their partners referred to cancer as a "we-disease" (Kayser, Watson, & Andrade, 2007). We-talk seems to reflect a process that, in this illness-related context, may give patients the feeling that their experiences are shared in-general, as in an interdependent self-construal, or in the specific context of their illness, as in communal coping. Feeling that the experience is shared can both reduce the practical and emotional burden of illness.

We-talk in marital relationships occurs at a greater frequency among non-distressed than distressed couples (Williams-Baucom et al., 2010), and among more interdependent couples (Sillars, Shellen, McIntosh, & Pomegranate, 1997). It has also been linked to positive problem-solving during a conflict-resolution discussion (Simmons, Gordon, & Chambless, 2005). Despite promising findings, however, the we-talk literature does not consistently conclude its beneficial effects. For example, one study that examined language use in instant message conversations within couples did not find an association between we-talk and relationship satisfaction or stability (Slatcher et al., 2008). It is still unclear a) whether or not we-talk in couples' natural, rather than in-lab, context is predictive of adjustment and health, and b) in which social settings (i.e. in conversation with each other or friends/family) we-talk is most related to adjustment and health. The customary method in which couples are brought into a lab and prompted to discuss a relationship or illness-related problem takes couples out of their natural context, and guides the selection of the topic of conversation (e.g. how the couple has coped with cancer). Using the EAR to identify in what contexts we-talk is adaptive, may help clarify why we-talk is only sometimes related to better health and relationship quality.

In contrast to we-talk, use of I-talk (first person singular pronouns) and you-talk (second person pronouns) distinguish the self from others (Pennebaker, 2011), which can be both productive and destructive in relationships. While use of I-talk can signify more personal communication (Pennebaker & Lay, 2002), too much self-reference can indicate higher levels of depression (Mehl, 2006; Rude, Gortner, & Pennebaker, 2004). The self-awareness theory of reactive depression theorizes that depressed individuals engage in

nearly constant self-focus, except following positive events (Pyszczynski & Greenberg, 1987). Further, induced external focus reduced depressive symptoms among depressed, but not non-depressed, participants, and reduced anxiety among all participants (Nix, Watson, Pyszczynski, & Greenberg, 1995), indicating that a switch from self- to other-focus is related to better mental health.

In romantic relationships, the association between use of I-talk and satisfaction reflects a similar complexity. While Slatcher and colleagues (2008) found that women's use of I-talk was related to couples' greater satisfaction, another study found that I-talk was related to more satisfaction in distressed, but less satisfaction in non-distressed, couples (Williams-Baucom et al., 2010).

You-talk is less ambiguously related to relationship outcomes than I-talk in the psychological literature on pronouns. According to Pennebaker (2011), it is "the equivalent of pointing your finger at the other person while talking" (p. 175). Indeed, use of "you" during in-lab marital interactions has been predictive of blaming (Georgiou, Black, & Narayanan, 2011), more negativity (Simmons, Gordon, & Chambless, 2005), less marital satisfaction (Sillars et al., 1997; Slatcher et al., 2008), and higher depression among breast cancer patients (Robbins et al., 2012).

However, in a coping context, moving from a "living-centered" to a "cancer-centered" way of life can leave few resources dedicated to relationships (Weihs et al., 2005), rendering them less balanced than they might be under more normal circumstances (Ybema, Kuijer, Hagedoorn, & Buunk, 2002). Because personal pronoun use indicates to whom a person is attending (Pennebaker, 2011), it is possible that

patients' you-talk in conversations with their spouses might reflect maintenance of healthy relationship processes while they cope with the cancer. Past research has found that the partners of cancer patients can suffer when they feel that their own needs are not attended (Ybema, Kuijer, Hagedoorn, & Buunk, 2002), and that this inequality in division of labor and relationship maintenance is also related to more distress among patients (Ybema, Kuijer, Buunk, DeJong, & Sanderman, 2001). In these studies, spouses tended to be distressed when they underbenefitted from the relationship, and patients tended to be more distressed when they overbenefitted, but not vice versa. This line of research is consistent with other studies showing that poor marital quality is related to more caregiver distress (Braun, Mikulincer, Rydall, Walsh, & Rodin, 2007; Pitceathly & Maguire, 2003).

Research Questions and Hypotheses

This study sought to understand whether social processes, manifested in couples' language use, predict their adjustment to the breast cancer experience. Specifically, this study examined whether the amount of we-talk, I-talk, and you-talk patients and spouses use relate to their own and each other's adjustment. Answering these questions will help clarify whether, and in which social settings, we-talk associations with adjustment and health extend outside the laboratory context.

1. *Is patients' and spouses' use of we-talk, I-talk, and you-talk related to their own and each other's adjustment?* Based on past research on we-talk as an indicator of communal or relationship-focused coping (Robbins et al., 2012; Rohrbaugh et al., 2008; Rohrbaugh et al., in press; Williams-Baucom et al.,

2010), I expected we-talk to be related to both partners' own and each other's better psychological and relationship adjustment, and better health outcomes.

I-talk and more self-focus are generally related to higher levels of depression (Mehl, 2006; Pyszczynski & Greenberg, 1987; Rude, Gortner, & Pennebaker, 2004), so I predicted that it would be related to couples' own, and not each other's, higher levels of depressive symptoms. However, I-talk within couples has been related to greater relationship satisfaction (Slatcher et al., 2008; Williams-Baucom et al., 2010), therefore, it also may be related to each other's, rather than their own, better dyadic adjustment.

Past research on you-talk in couples suggests that it reflects poorer psychological and relationship adjustment (Georgiou et al., 2011; Robbins et al., 2012; Sillars et al., 1997; Simmons et al., 2005; Slatcher et al., 2008), however, in a coping context in which one partner is the patient (Ybema et al., 2001; Ybema et al., 2002), focus on the spouse, rather than the patient, may reflect attention necessary for relationship maintenance. This study will test the competing ideas from past research on you-talk within couples' conversations and more negativity, and research on inequality in patient-spouse relationship maintenance that suggests patients' you-talk might be related to better adjustment for spouses, or the couple. If you-talk reflects generally negative relationship outcomes, I expect it to be related to each partner's own and each other's poorer adjustment to breast cancer. However, if focus on the spouse reflects less imbalance in the patient-spouse

relationship, I expect patient, but not spouse, you-talk to be related to both partners' better adjustment.

2. *Is personal pronoun use more predictive of adjustment and relationship quality when partners talk to each other versus when partners talk to friends and family?* There is support for we-talk as a reflection of beneficial relationship processes both within and outside the couple. First, Rohrbaugh et al. (2008) found a positive relationship between spouses' we-talk and better patient adjustment within a conjoint interview of patients and their spouses, and Robbins et al. (2012) found that spouses' we-talk in a family discussion of coping with breast cancer predicted better dyadic adjustment. Further, Agnew et al. (1998) found that more we-talk within writing about one's romantic relationship (i.e. presenting the relationship to the experimenters) was related to greater commitment and satisfaction in the relationship. Therefore, I hypothesize that we-talk both within and outside the relationship will predict better relationship satisfaction and psychological adjustment.

Because studies that have found an association between I-talk and relationship satisfaction have only examined conversations within the couple (Slatcher et al., 2008; Williams-Baucom et al., 2010), it is unknown whether there are differences between I-talk in conversations within the couple versus with friends/family. Furthermore, in these studies, I-talk is only sometimes related to greater relationship satisfaction. However, there is no evidence that the implications of self-reference differ between conversations within couples

versus with friends and family. Given the lack of past research, these analyses were exploratory.

Studies of you-talk and relationship satisfaction have only used conversations couples have with each other (Sillars et al., 1997; Simmons et al., 2005; Slatcher et al., 2008), probably because in conversations with people other than one's significant other, you-talk does not have a meaning relevant to the couples' relationship. Therefore, you-talk will only be analyzed in the context of conversations within the couple, and may be related to negative relationship outcomes (Georgiou et al., 2011; Sillars et al., 1997; Simmons et al., 2005; Slatcher et al., 2008). However, patients' you-talk may be related to positive relationship outcomes because it signifies that patients still have some focus on the spouse, which is related to less distress among both partners in patient-spouse dyads (Ybema et al., 2001; 2002).

Method

Participants and procedures were the same as those in Chapter 2. The measures unique to the present study are described below.

EAR-Derived Measures. Participants' interactions were separated into conversations with their spouses versus friends or family members based on coding of with whom participants were talking. As reported in Chapter 2, approximately 34.51% of couples' waking time was spent interacting with each other, and 10.52% of patients' and 9.21% of spouses' time was spent interacting with friends/family. For interactions within the couple, this translates into approximately 61 of the average 176 valid and waking sound

files for analysis, and for interactions with friends/family, this translates into approximately 19 of patients' and 16 of spouses' sound files for analysis. Once those transcripts were identified, they were input into LIWC to yield the percentage of words within the couple, and with friends/family, that fell into the first-person plural, first-person singular, second-person pronoun categories.

While it would be interesting to examine personal pronoun use in cancer-related versus other topics of conversation, this study did not observe a sufficient number of cancer conversations to make such a comparison. As reported in Chapter 2, on average, we observed that 3.24% of patients' and 1.13% of spouses' waking time was spent engaged in cancer conversations. This means that of the average 176 valid and waking sound files per participant, approximately 6 sound files from the patient and 2 sound files from the spouse were cancer-related. Furthermore, 23 participants did not talk about cancer at all in their sampled conversations, and 16 participants used fewer than 50 total words in their cancer conversations, invalidating a language use analysis of cancer conversations separately from conversations about other topics.

Self-Reported Outcome Measures. The same outcome measures used in Chapter 2 were used for analyses in this chapter. Descriptive statistics and inter-item consistency is reported in Table 2d in Chapter 2.

Data Analysis. I used within-person contrasts in repeated measures general linear models to examine whether patients and their partners differed in frequency of use of first- and second-person pronouns in their total conversations, and with each other and friends/family.

Then I used the APIM (Kenny et al., 2006) in multi-level models to determine whether we-talk (first-person plural pronouns), I-talk (first-person singular pronouns), and you-talk (second-person pronouns) within couples' conversations with each other and friends/family was related to their own and each other's adjustment. Interactions between actor or partner effects and role (i.e. whether or not the participant was the patient) were deconstructed using Case 1 from Preacher's online tool for HLM 2-way interactions (Preacher, Curran, & Bauer, 2006). A threshold of $p = .10$ was used to determine which interactions would be deconstructed, and report unequal regression coefficients for patients and spouses.

Results

Descriptive statistics for we-talk, I-talk, and you-talk are in Table 3a, and are comparable to rates of pronoun use among patients and spouses from past studies (e.g. Rohrbaugh et al., 2008). Because not all participants spoke with friends/family over the EAR-monitored weekend, the N's for talking to friends/family are slightly smaller than those for conversations within the couple.

Table 3a. Mean % of use of “We”, “I”, and “You” in conversations

	Mean (SD)	
	Patients	Spouses
“We”		
All	1.18 (.56)	1.16 (.52)
With Partner	1.14 (.58)	1.12 (.58)
With Friends/Family	1.38 (.72)	1.23 (.88)
“I”		
All	5.51 (1.10) ^a	4.77 (1.15) ^b
With Partner	5.46 (1.23) ^a	4.83 (1.27) ^b
With Friends/Family	5.38 (1.83) ^a	4.07 (1.71) ^b
“You”		
All	3.27 (.98)	3.52 (1.03)
With Partner	3.24 (.97) ^a	3.69 (1.25) ^b
With Friends/Family	2.77 (1.18) ^a	3.34 (2.03) ^b

Note. For all of patients’ conversations, N = 52, except with friends/family, N = 50. For all of spouses’ conversations, N = 51, except with friends/family, N = 47. Superscripts indicate significant differences between patients and partners within each type of pronoun use (p 's < .03).

Table 3b displays the unstandardized regression coefficients from APIMs in multi-level models to determine the relationships between patient and spouse use of personal pronouns and adjustment. For each APIM, 4 regression coefficients are displayed: an actor effect for the patient (in the upper left cell for each outcome measure), and for the spouse (lower right cell), and a partner effect for the patient (lower left cell) and for the spouse (upper right cell).

Contrary to prediction, spouses’ we-talk in conversations within the couple did not predict decreases in patient depressive symptoms, $b = -2.36$, $p = .23$, nor did we-talk in conversations with friends and family, $b = 2.00$, $p = .21$. It also did not predict improvement in patients’ reported physical health (within couple, $b = .20$, $p = .95$; with

friends/family, $b = -4.20$, $p = .11$). Significant actor effects did emerge between we-talk in conversations with friends/family and concurrent dyadic adjustment and physical health. The actor effect for dyadic adjustment significantly differed for patients and spouses, $b = -1.48$, $p = .001$, such that spouses' ($b = 1.06$, $p < .001$), but not patients' ($b = -.42$, $p = .20$), we-talk was related to their own higher dyadic adjustment at time 1. There was also a main actor effect for we-talk with friends/family and better concurrent physical health, $b = 6.79$, $p = .05$, meaning this relationship was present for both patients and spouses.

The relationship between I-talk in conversations within the couple and changes in each other's depression marginally differed by role in the couple, $b = -1.96$, $p = .06$. While spouses' I-talk was unrelated to patients' changes in depression ($b = -.67$, $p = .38$), patients' I-talk was related to increases in spouses' depression ($b = 1.29$, $p = .05$). Patients' and spouses' I-talk in conversations with each other also differentially related to their own ($b = -.59$, $p = .01$) and marginally with each other's ($b = .37$, $p = .08$) time 1 reports of dyadic adjustment. Spouses' I-talk was related to their own higher dyadic adjustment ($b = .54$, $p = .002$), while patients' I-talk was unrelated to their own dyadic adjustment ($b = -.05$, $p = .73$). Patient I-talk was, however, related to lower spouse reports of dyadic adjustment ($b = -.26$, $p = .05$), whereas spouse I-talk was unrelated to patient dyadic adjustment ($b = .12$, $p = .50$). There were no significant associations between I-talk in conversations with friends/family and adjustment.

An actor effect of use of you-talk in conversations within the couple significantly interacted with role to predict changes in depression ($b = -4.04$, $p = .004$), such that

patients' use of you-talk was unrelated ($b = -1.47, p = .71$), but spouses' you-talk was related to increases in their own depression ($b = 2.57, p = .005$). Patients' and spouses' use of you-talk was also significantly different in its relationship with their own ($b = .67, p = .03$) and each other's ($b = -.81, p = .01$) time 1 reports of dyadic adjustment. Spouses' you-talk was related to their own lower dyadic adjustment ($b = -.41, p = .02$), whereas patients' you-talk was not ($b = .26, p = .25$). Patient you-talk was, however, related to spouses' higher dyadic adjustment ($b = .58, p = .01$), and spouse you-talk was unrelated to patient time 1 dyadic adjustment ($b = -.24, p = .17$). There was a significant main actor effect for you-talk and decreases in dyadic adjustment over the study period ($b = -.29, p = .03$). An actor ($b = 4.70, p = .07$) and partner ($b = -4.47, p = .06$) effect of you-talk marginally interacted with role to predict changes in physical health. However, when deconstructed, neither actor effect was significant (p 's $> .12$), but patients' you-talk was related to improvement in spouses' reported physical health ($b = 4.32, p = .01$).

None of the statistically significant results reported were rendered statistically non-significant when patients' stage of cancer, use of depression medication, and use of thyroid medication were controlled for in these models, except for patient I-talk in conversations within the couple predicting spouse increases in depression, $b = 1.37, p = .06$. In some cases, the relationships reported here were strengthened after controlling for these variables. Spouses' we-talk within conversations with friends/family ($b = 1.16, p < .001$) and patients' use of you-talk in conversations within the couple ($b = .72, p = .001$) were both slightly more strongly related to spouses' higher time 1 dyadic adjustment.

Table 3b. Patients' and spouses' personal pronoun use in conversations with each other and friends/family

	T1 Depression		Depression Change		T1 Dyadic Adjust.		Dyadic Adjust. Change		T1 Physical Health		Physical Health Change	
	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.	Pt.	Sp.
We-talk in conversations within the couple												
Patient	-2.27	3.13	2.40	-2.36	.80	-.19	.27	-.10	8.79	-8.14	3.36	.20
Spouse	3.13	-2.27	-2.36	-3.29	-.19	.80+	-.10	.27	-8.14	8.79	.20	3.36
We-talk in conversations with friends/family												
Patient	-2.25	1.88	2.33	2.00	-.42	-.39	-.31	-.44	6.79*	-1.60	2.27	-4.20
Spouse	1.88	-2.25	2.00	-1.93	-.39	1.06**	-.44	-.31	-1.60	6.79*	-4.20	2.27
I-talk in conversations within the couple												
Patient	1.36	.44	.64	1.29*	-.05	-.26*	-.15	.05	-4.65	-1.04	2.22	-.88
Spouse	.44	-1.53	-.67	.64	.12	.54**	.05	-.15	-1.04	2.26	-.88	2.22
I-talk in conversations with friends/family												
Patient	.16	-.22	-.12	-.76	.10	.07	.01	.16	-1.08	1.26	.07	1.70
Spouse	-.22	.16	-.76	-.12	.07	.10	.16	.01	1.26	-1.08	-.86	.07
You-talk in conversations within the couple												
Patient	.78	-.57	-1.47	-1.05	.26	.58**	-.29*	.08	-.77	3.02	2.56	4.32**
Spouse	-.57	.78	-1.05	2.57**	-.24	-.41*	.08	-.29*	3.02	-.77	-.15	-2.15

Note. Numbers are unstandardized regression coefficients from Actor-Partner Interdependence Models. For conversations within the couple, N = 52; conversations with friends/family, N = 47. A threshold of $p = .10$ was used to deconstruct interactions between role (patient or spouse) and main effects, and display unequal coefficients for patients and spouses. "Change" in outcome measures are two-month follow-up scores residualized for baseline scores. * $p \leq .05$; ** $p \leq .01$

Discussion

This study examined the associations between the use of first- and second-person pronouns over the course of the normal, daily lives of couples, and adjustment to breast cancer. It extended past work by examining these associations in different social contexts (i.e. when talking to each other or friends/family), unprompted and outside of a laboratory setting using the EAR.

First, results revealed that we-talk when talking to friends and family was indicative of better concurrent, but not future, relationship adjustment for spouses and physical health for both members of the couple. This is inconsistent with past research that has found an asymmetrical association between spouses' we-talk and improved patient outcomes (Rohrbaugh et al., 2008; in press). Rather, we found that participants' own we-talk in this study was reflective of concurrent satisfaction and health, but not predictive of future outcomes for patients or their spouses. The difference in results may be due to the broad range of everyday contexts of couples' conversations in this study, compared to the prompted, topic-focused conversations that took place in the laboratory, of those that found we-talk associations with adjustment.

One major difference between in-lab studies and this one is the specificity of the problem- or illness-focused conversations couples were instructed to have in the lab versus the naturally-occurring conversations captured over the course of the EAR-monitored weekend. In laboratory studies finding the we-talk and adjustment association, couples were asked to identify issues surrounding the illness (breast cancer; Robbins et al., 2012; heart failure; Rohrbaugh et al., 2008) or a problem (smoking cessation,

Rohrbaugh et al., in press; an area of marital dissatisfaction, Simmons et al., 2005; Williams-Baucom et al., 2010), and were instructed to engage in a problem-focused interaction. Also consistent with the notion that the problem- or illness-focused conversations are the necessary context in which we-talk predicts improved outcomes, Slatcher and colleagues (2008) did not find any links between we-talk and relationship outcomes when they examined couples' natural language use in instant messages to each other.

There may be several reasons why we-talk in problem- or illness-focused discussions, but not any conversation, is related to improved outcomes. First, we-talk can have different meanings in different contexts. According to Pennebaker (2011), "we" can mean "my friends and not you," "you," "I," "every like-minded person on earth," or "you and I." In all cases but the last, "we" actually creates a barrier, rather than a bond between people. The "you and I" version of "we" is the version that most likely reflects those interdependent facets of romantic relationships that are linked to better relationship and coping outcomes. For example, self-other overlap is implied in the "you and I" version, but not other versions, of "we", and has been linked to better relationship (Aron et al., 1992) and coping (Badr et al., 2007) outcomes.

Over the course of normal, daily life, we-talk can take on various forms because of the heterogeneity of types of conversations that take place. For example, the "you" version of "we" can be used during task-oriented conversations, as in this statement by a patient in our study, who was talking to her spouse while he was driving, "Here we can pull in over here just so you don't block traffic." The "my friends and not you" version of

“we” can be used while relaying the day’s events, as in this statement by another patient, to her spouse, in our study, “We had her music going in her room today with a fun play CD and she was dancing up a storm.” During the EAR-monitored weekends of this study, as in the study using sampled instant messages (Slatcher et al., 2008), couples likely used multiple types of we-talk in their conversations, thus clouding the association between the “you and I” version of “we” and improved adjustment.

In couples’ laboratory discussions, we-talk may be less diverse, and perhaps more constrained to the bonding, “you and I” version. This allows for a “purer” analysis of the “you and I” version of we-talk and its relation to adjustment. We-talk would be more constrained in this context, primarily because the topic and type of conversation is vastly restricted by researchers’ prompts to engage in a discussion of a marital or health problem. Indeed, the problem-focused context within couples has been most fruitful for predicting relationship outcomes in a large body of research (Gottman & Notarius, 2000).

One cannot, however, yet draw the conclusion that a problem-focused context is necessary to elicit the relationship between we-talk and changes in adjustment or health. The problem-focused context (Robbins et al., 2012; Rohrbaugh et al., 2008; Rohrbaugh et al., in press; Simmons et al., 2005; Williams-Baucom et al., 2010), and all other conversational contexts analyzed together (Slatcher et al., 2008), have been the only published settings for we-talk studies to-date. In order to fully understand the link between couples’ we-talk and health, future studies should examine it in several different conversational contexts. For example, the categories from the Marital Interaction Coding System (Heyman, Eddy, Weiss, & Vivian, 1995) could be adapted to a coding system for

EAR data, and we-talk could be examined within hostility, humor, and responsibility discussions, in addition to problem solving discussions. Furthermore, use of we-talk could be hand-coded, rather than counted by LIWC, in order to distinguish the various meanings of “we” (Pennebaker, 2011), and determine the “true” relationship between the “you and I” version of “we” and health in these different conversational contexts.

In contrast to “we,” I-talk and you-talk have clearer referents in conversation. I-talk almost always unambiguously refers to the self. “Filler” uses of “you,” as in “you know” were resolved before analyses by transcribers eliminating them from the transcripts before they were processed with LIWC.

Overall, analyses of I-talk and you-talk revealed that both partners’ focus on the spouse was related to better spouse outcomes. This does not appear to be due to better outcomes for couples in which the patient has less severe disease, as controlling for patients’ stage of cancer and use of depression and thyroid medication did not significantly diminish these results, and in some cases, bolstered them.

Patients’ use of you-talk was predictive of their own decreases in relationship adjustment, and was related to spouses’ better concurrent dyadic adjustment and improvements in physical health. Furthermore, spouses’ use of you-talk was related to their own increases in depression, and decreases in dyadic adjustment. Patient I-talk was related to spouses’ increases in depression and worse concurrent relationship adjustment. In the same vein, spouse I-talk was related to their own better concurrent relationship adjustment. Though some of these findings were contrary to hypotheses, they are more consistent with past caregiving research, rather than past research on pronoun use in

couples. Past research on couples' pronoun use indicates that you-talk is a blaming word (Georgiou, Black, Narayanan, 2011; Pennebaker, 2011) or indicative of more negative relationship processes (Sillars et al., 1997; Simmons et al., 2005). However, our results suggest that rather than I-talk and you-talk being generally negative or positive, they represented patient or spouse focus, and that focus on the spouse was generally best for spouses.

Focus on the spouse may indicate more balance within the relationship, rather than an exclusive focus on the patient. Past research has found that the spouses of cancer patients can suffer when they feel that their own needs are not attended (Ybema et al., 2002) and that this inequality in division of labor and relationship maintenance is also related to more distress among patients (Ybema et al., 2001). Though this study did not find evidence that patients fared better when focus in the couple was on the spouse, our results also did not indicate that more focus on the patient was better for them.

These findings should be interpreted very cautiously, due to the fact that this study did not measure inequality in couples' division of labor and relationship maintenance directly. However, it is possible that such an imbalance accounts for our findings that spouses benefit when patients use more you-talk and less I-talk in their conversations with each other. With only one exception, patient you-talk and their own decreases in dyadic adjustment, spouse-focused conversations within the couple were generally unrelated to patient outcomes. In conjunction with past research (Ybema et al., 2001; Ybema et al., 2002), these results suggest that couples without an exclusive focus on the patient may fare better overall. Future research should determine whether focus on

the spouse is really to patients' detriment, and how much of a balance in focus on the patient and spouse is optimal for couples coping with serious illness.

CHAPTER 4: GENERAL DISCUSSION

This dissertation used naturalistically-observed snippets of actual conversations of couples coping with breast cancer to understand how often, with whom, and how couples talk about cancer and other topics, and how these conversations relate to both partners' adjustment to the experience. The first study was the first to naturalistically observe these conversations as they happen over the course of normal, daily life. Overall, this study yielded important descriptive findings about the conversations of couples coping with breast cancer, and some interesting associations between these conversations and adjustment. The second study examined these conversations more closely by analyzing the social language used within both cancer-related and other topics of conversation. Specifically, the second study built on prior work on communal coping by examining the associations between the use of first- and second-person pronouns over the course of the daily lives of couples, and adjustment to breast cancer. It extended past work by examining these associations in different social contexts (i.e. when talking to each other or friends/family), unprompted and outside of a laboratory setting using the EAR.

Perhaps the most striking finding was that the couples in this study talked about cancer during less than 10% of their conversations, and that 23 participants did not mention cancer at all during their sampled conversations. On the surface, this finding supports the notion that mundane interactions might be more important in the coping process than past research has implied (Lahey & Orehek, 2011), however, this study did reveal some associations between talking about cancer and adjustment. Further, it yielded fewer significant associations between conversations about topics other than cancer than

one would predict based on their relatively higher frequency and Relational Regulation Theory, even when taking the conversational context (with the partner or friends/family) and type (emotional disclosure, supportive interactions, informational conversations, and practical conversations) into consideration. These results may have been different had we assessed frequency of cancer talk at different points in the cancer experience.

Specifically, couples may discuss cancer more frequently immediately after diagnosis, in light of the greater magnitude of distress patients tend to experience then, compared to post-treatment (Carver et al., 2005; Henselmans et al., 2010). Henselmans and colleagues (2010) also found that some coping strategies are differentially related to adjustment at different points in the breast cancer experience, lending some support to the idea that cancer discussions might also relate to adjustment in different ways throughout the coping experience.

The pattern of results that emerged revealed that spouses talking about cancer, whether within or outside the couple, was related to better dyadic adjustment. Talking to patients about cancer was related to spouses' better concurrent dyadic adjustment, and talking to friends and family about cancer predicted improvements in dyadic adjustment for both members of the couple. Further, spouses' emotional disclosure about cancer was related to improvement in patients', but not their own, dyadic adjustment. These results fit with past research on protective buffering that shows that hiding worries and concerns is related to greater distress for the one who does the buffering (Manne et al., 2007), and with past research that suggests that partners should discuss the cancer outside the couple (Hagedoorn et al., 2011).

The importance of spouses is somewhat congruent with the findings from the second study that revealed that both partners' focus on the spouse was related to better spouse outcomes. Patients' use of you-talk was predictive of their own decreases in relationship adjustment, and was related to spouses' better concurrent dyadic adjustment and improvements in physical health. Furthermore, spouses' use of you-talk was related to their own increases in depression, and decreases in dyadic adjustment. Patient I-talk was related to spouses' increases in depression and worse concurrent relationship adjustment. In the same vein, spouse I-talk was related to their own better concurrent relationship adjustment. These findings were unaltered and, in some cases, bolstered when taking patients' stage of cancer and use of depression and thyroid medication, indicating that these findings are not a result of some couples' ability to focus on the due to patients' less severe disease.

Together, these results form a pattern that supports the idea that spouses discussing cancer and their concerns surrounding it, and that maintaining some focus on the spouse, indicates more balance within the relationship, and in some cases, is related to better adjustment for both partners. Past research has found that the spouses of cancer patients can suffer when they feel that their own needs are not attended (Ybema et al., 2002) and that this inequality in division of labor and relationship maintenance is also related to more distress among patients (Ybema et al., 2001). This is also consistent with studies that have shown that partners of breast cancer patients also frequently experience depression (Segrin, et al., 2006), and that patients' and partners' quality of life is closely linked (Segrin et al., 2005).

Methodological Discussion

The greatest methodological advantage of using the EAR to study the conversations of couples coping with breast cancer is the ability to observe the unprompted, naturally-occurring conversations as they happen in daily life. A methodological deficit has led to past cancer coping research has relying too heavily on using self-reported methods and in-lab observations to study the association between couples' communication and adjustment to cancer, leaving unanswered important questions such as how often cancer comes up in daily life (Hagedoorn et al., 2008). The first study in this dissertation was the first to yield an estimate that cancer comes up in conversation during approximately 3% of patients' and 1% of spouses' waking hours.

Relying exclusively on self-report methods raises concerns surrounding shared method variance between predictors and outcomes, which can arise to the extent that current mood states bias self-reports, resulting in stronger associations between them than what actually might exist (Hufford, 2007). Even momentary assessment approaches still exclude reports of subtle and automatic behavior (Piasecki et al., 2007) because participants can only report what they noticed and remembered (Hektner et al., 2007). For example, frequency of word use or sighing would be nearly impossible to study with self-report because participants are not able to count the frequency with which they occur, and several studies have shown that they can have important coping implications (e.g. Robbins et al., 2011).

In-lab observational studies of behavior raise ecological validity concerns that what is observed may not generalize to the "real world." Demand characteristics and

social desirability may influence participants' behavior in a number of ways (Reis, 2012). Furthermore, since all past in-lab observational studies of couples coping with cancer guide the selection of the topic of conversation in some way (e.g. discuss the cancer experience; Manne et al., 2004; Robbins et al., 2012), there was previously no evidence for how and if these conversations occur naturally. If cancer coping research is meant to be applied to people's lives, it is essential to know whether and how the behavior occurs in people's natural setting and social context.

The heterogeneity of the conversations of couples over the course of normal, daily life is likely a major reason why the results from these studies were not entirely consistent with past research. In couples' laboratory discussions, conversations are less diverse, and are generally constrained to discussing or solving a relationship problem (Simmons et al., 2005; Williams-Baucom et al., 2010), or discussing coping with illness (Robbins et al., 2012; Rohrbaugh et al., 2008; Rohrbaugh et al., in press). This allows for a "purer" analysis of couples' conversations and the personal pronouns within them. Couples' problem-focused discussions have been most fruitful for predicting relationship outcomes in a large body of research (Gottman & Notarius, 2000), so it is possible that this is one of the most important contexts for couples' psychological, dyadic, and health outcomes.

The lack of associations with adjustment for some constructs, like emotional disclosure, warrants reconsideration in light of findings from this dissertation and other studies (Zech & Rimé, 2005). It is possible that the lack of shared method variance with

naturalistically-observed emotional disclosure and adjustment revealed no “real” association between naturally-occurring disclosure and adjustment.

Limitations and Future Directions

The findings from these studies should be interpreted cautiously for several reasons. First, the relatively small number of significant effects compared to significance tests run warrants caution. It is possible that more context is necessary to further distinguish how these conversations take place, and how they might relate to adjustment. The lack of many predicted associations between couples’ conversations and adjustment may be due to this lack of, perhaps necessary, context. Just as it might be important to know *how* support is given (Coyne & Smith, 1991; Kuijer et al., 2000) or in what context emotional disclosure takes place (Manne et al., 2004; Reis & Shaver, 1988), it may also be necessary to know what type of “we” is used (Pennebaker, 2011) in order to determine how it relates to couples’ adjustment to breast cancer. Future studies should use longer recordings to sample more context from couples’ daily conversations, and code for these contextual factors that have been important in past laboratory studies.

Another major limitation in this study is the sample of breast cancer patients and partners who were willing to participate tended to be doing fairly well compared to those who refused to participate. Though we did not obtain empirical data on this, couples that were experiencing severe distress generally did not participate because they could not add “one more thing” to their lives. However, while some couples refused to participate because they were too distressed, others refused because they felt that they were not

distressed enough. Several couples told me that they never really talk about cancer, and despite efforts to convince them that we were still interested in their daily lives, declined participation. One patient told me that having breast cancer was like “having a cold.” She, along with several others, had other serious health and family problems that “outweighed” coping with her breast cancer. It is likely that this limitation cannot be remedied in future studies because couples that are too distressed to participate in a study should not be coerced, however, this should be taken into consideration when interpreting this dissertation’s findings. They may not apply to couples that are severely distressed.

Further, because all of the patients in this study had completed surgery and were undergoing treatment for breast cancer at the time of their participation, it is possible that the frequency of cancer as a topic of couples’ conversations would be higher or lower at different points throughout the cancer experience (e.g. immediately after diagnosis or after completion of treatment). Therefore, future studies should assess the frequency of cancer conversations among couples and its relationship to adjustment to determine how this differs at varying stages of the cancer experience.

Lastly, the homogeneity of this sample of breast cancer patients and partners warrants replication of this dissertation’s findings in more diverse samples. The lack of associations between we-talk and adjustment, for example, might not have occurred in a more ethnically diverse sample. People within more interdependent cultures, such as Latina culture, tend to view themselves more as part of a group than individuals, compared to independent cultures like Caucasian Americans (Markus & Kitayama, 1991). This cultural difference may lead to partners’ use of we-talk more integral during

the coping process than we found in the present sample. Further, though the present sample contained 7 same-sex couples, the majority of them were opposite-sex couples, invalidating the potential for any quantitative analyses of the differences between the two types of couples. This comparison is important to clarify whether any differences found between patients and partners were due to their patient or partner role in the couple, or gender (Hagedoorn et al., 2008). Future studies should collect data from male and female same sex couples coping with cancer to resolve this long-standing question in cancer coping research.

Conclusions

In sum, this dissertation, in conjunction with past evidence, indicates that psychosocial factors influence partners' adjustment at least as much as patients' adjustment to breast cancer. Couples without an exclusive focus on the patient may fare better overall. Future research should determine whether focus on the spouse is to patients' detriment, and how much of a balance in focus on the patient and spouse is optimal for couples coping with serious illness. By only focusing on cancer conversations, researchers leave approximately 90% of presumably emotionally relevant, but not coping-focused, interactions among couples unexamined. However, future naturalistic observation studies should determine whether cancer conversations truly are the most important conversational context for adjustment to breast cancer.

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