

## ABSTRACT

Title of thesis: FACTORS CONTRIBUTING TO THE DEVELOPMENT OF  
POSTTRAUMATIC GROWTH IN SPOUSES OF BREAST CANCER SURVIVORS

Holly M. Costar, Master of Arts in Counseling, 2005

Thesis directed by: Professor Mary Ann Hoffman, Counseling Psychology

Factors related to the posttraumatic growth experiences of spouses of breast cancer survivors, including optimism, self-mastery, coping styles, marital satisfaction, and social support, were examined. Results indicated the existence of a positive relationship between posttraumatic growth and optimism, social support, and several coping styles, including problem-solving, reframing, seeking support, and New Directions. Posttraumatic growth was negatively related to avoidance coping. A curvilinear relationship existed between self-mastery and posttraumatic growth. The New Directions coping style and the interaction between social support and time since wife's diagnosis were also found to significantly predict posttraumatic growth. These findings contribute to a growing body of knowledge about positive growth after trauma and may have implications for future research and practice.

FACTORS CONTRIBUTING TO THE DEVELOPMENT OF POSTTRAUMATIC  
GROWTH IN SPOUSES OF BREAST CANCER SURVIVORS

By

Holly M. Costar

Thesis submitted to the Faculty of the Graduate School of the  
University of Maryland, College Park, in partial fulfillment  
of the requirements for the degree of  
Master of Arts  
2005

Advisory Committee:

Professor Mary Ann Hoffman, Ph.D. (Chair)

Professor Dennis Kivlighan, Ph.D.

Professor Clara Hill, Ph.D.

## Acknowledgements

With thanks to Mom and Dad, my advisor Mary Ann Hoffman, Dennis Kivlighan for the statistics advice, Marshall Jones for the web work, my three research assistants, and all the people who helped me to spread word of my study including: The American Cancer Society's regional leaders Donna Bradburn, Virginia Baza, Susan McLaughlin, and Teresa Putscher; New Jersey's Speak Easy Breast Cancer Support; Mary Kelton Smith, Charisse Cossey, Joyce Hudson, Antionette Greer, Jean Austin, and Valerie Worthy of the Sisters Network; Marc Heyison of Men Against Breast Cancer; Donna Doneski of the National Coalition of Cancer; Denise O'Neil of Anne Arundel Medical Center; Trisha Shaw and Patricia Wagman of Carroll County General Hospital; Holly Siegal of George Washington; Patricia Bango of Susan Komen Foundation's Race for the Cure; Phoenix AZ's Bosom Buddies; Northwest Arkansas Cancer Support Home; Carolyn Nessner of CancerCare; Susan Jacobson and Judy Macon of Suburban Hospital; Bobbi Pierson; Miriam Ratner; Lorraine Hancock; Laurie at Lerner Mid-Atlantic Lymphedema Centers; Corinne Cook of Inova Alexandria Hospital; Caroline Peyrone of Kessler Rehabilitation in Rockville, MD.; Sandy Rigsby of Prince William's Hospital; Mary Capano of St. Agnes Hospital Cancer Center; Lillian Ingram of Harbor Hospital; Richard Ogden of Sibley Hospital; Marsha Komandt of Life with Cancer at Inova Fairfax Hospital; Ginger Bowen of Cancer Support Home; Margaret Stolnacke of Lower Cape Cod Cancer Support; Karen Rodman of Polly's Place; Marylu Manning of Union Memorial Hospital; the Inflammatory Breast Cancer listserv; Willow Breast Cancer newsletter; MSN's Friends in Need online breast cancer support group; and the online support group at [bcsupport.org](http://bcsupport.org).

## Table of Contents

Chapter One: Introduction.....	1
Chapter Two: Review of the Literature.....	5
Posttraumatic Growth: Coping Process of Outcome ?.....	5
Posttraumatic Growth: Theory and Contributing Factors.....	8
A Model of Posttraumatic Growth.....	10
The Positive Outcomes of Breast Cancer.....	11
Posttraumatic Growth Versus Adjustment.....	14
The Breast Cancer Experience: From Diagnosis to Treatment.....	16
Disease Characteristics and Their Effects on Breast Cancer Husbands..	21
Psychological and Social Factors Effecting Growth and Adjustment.....	24
Overview of Optimism.....	24
Overview of Self-Mastery.....	26
Self-Mastery and Optimism.....	29
Overview of Coping.....	30
Coping and Couples: Co-Experiencing Breast Cancer.....	33
Coping and Optimism.....	34
Coping, Optimism, and Posttraumatic Growth.....	36
Overview of Marital Satisfaction.....	37
Marital Satisfaction and Illness Factors.....	40
Overview of Social Support.....	41
Social Support and Posttraumatic Growth.....	45
Chapter Three: Statement of the Problem.....	48
Hypotheses.....	49
Chapter Four: Methodology.....	56
Research Design.....	56
Participants.....	56
Measures.....	57
Procedure.....	62
Chapter Five: Results.....	64

Descriptive Statistics.....	72
Primary Analyses .....	72
Chapter Six: Discussion .....	88
Limitations .....	107
Implications and Recommendations for Research and Practice.....	110
Appendices: Appendix A.....	114
Appendix B.....	115
Appendix C.....	116
Appendix D.....	117
Appendix E.....	119
Appendix F.....	120
Appendix G.....	121
Appendix H.....	122
Appendix I.....	124
Appendix J.....	125
Appendix K .....	127
References.....	129

List of Tables

Table 1.....	65
Table 2.....	66
Table 3.....	67
Table 4.....	69
Table 5.....	73
Table 6.....	80
Table 7.....	85

## Chapter One: Introduction

A diagnosis of breast cancer can be a devastating blow, not only for a woman with the disease, but for those closest to her. Among those most deeply affected is the husband of the breast cancer patient. Husbands are often highly involved in their wives' diagnostic and treatment process. Moreover, there are physical and emotional repercussions of breast cancer on the couple's daily life. Husbands of women with breast cancer are likely to experience physical reactions, such as fatigue and tension, as well as psychological responses similar to those of their wives (O'Mahoney & Carroll, 1997). Furthermore, husbands' behavior during their wives' treatment seems to both influence, and be influenced by, that of their wives (Northouse, Templin, & Mood, 2001; Hoskins, Baker, Budin, Ekstrom, Maislin, Sherman, Steelman-Bohlander, Bookbinder, & Knauer, 1996).

Due to findings such as these, studies focused on the couple's experience with breast cancer have encouraged clinicians and researchers to view breast cancer patients and their partners as an interdependent system, with each partner reinforcing the other's behavior (Northouse, Templin, & Mood, 2001; O'Mahoney & Carroll, 1997). However, less attention has been given to understanding the unique experience of the husband in dealing with his wife's cancer. Considering the prevalence of this disease, and the importance of the spousal role in providing support, such research is sorely needed.

Breast cancer is the most common form of cancer in women. Over 200,000 cases are diagnosed each year in the United States and these numbers are on the rise. For the year of 2003 statisticians predict 211,300 new cases of female invasive breast cancer (cancer which has spread from the breast to other parts of the body) and 55,700 cases of in situ (cancer contained within the breast) breast cancer (National Alliance of Breast

Cancer Organizations, 2003). Caucasian, African-American, and Hawaiian women are most at risk, with African-American women especially vulnerable to death by the disease due to frequent late diagnoses (NABCO, 2003).

Currently, there are over 2 million breast cancer survivors living in the United States (NABCO, 2003). The experience of living with a breast cancer diagnosis and/or ongoing treatment is understandably stressful. Women treated for breast cancer are likely to face body-altering surgeries, treatments with unpleasant side effects, and the constant threat of recurrence or metastasis in other parts of the body. Furthermore, a breast cancer survivor is never truly considered “cured,” although living five years after diagnosis without recurrence is generally thought to be a good indicator of survival (Susan LoveMD.org, 2003). Thus, the distress evoked by a diagnosis may not only be intense, but long-lived. Cordova, Andrykowski, Kenady, McGrath, Sloan, and Redd (1995) suggest that symptoms connected to posttraumatic stress disorder (PTSD) may be quite common amongst breast cancer survivors, exceeding the base rate of these symptoms in the general population.

The breast cancer experience can have similarly strong repercussions upon their spouses (Hilton, Crawford & Tarko, 2000; Maguire, 1981; Northouse & Swain, 1987). During treatment, the spouses of breast cancer survivors may increasingly find themselves assuming a caregiver role, including additional household and family responsibilities as well as direct physical care of their partner. Spouses are also utilized as a main source of social support throughout the diagnosis and treatment process (Northouse, 1988).



The negative effects of these emotional and physical stressors on spouses of breast cancer survivors have been examined in a few studies. One of these, focused on couples' adjustment to the initial impact of breast cancer (Northouse & Swain, 1987), found that husbands experienced levels of distress similar to that of their wives following their partner's mastectomy. This distress can last well beyond the initial phase of diagnosis and surgery (Zahlis & Shands, 1993) and can be compounded by spousal demands and levels of symptom distress (Hilton, 1993). Husbands may experience this distress through feelings of depression, anxiety, denial, anger, and shock (Hilton, 1993; Northouse & Peters-Golden, 1993).

Husbands may experience particular difficulty in dealing with the cancer experience due to various social factors. First, spouses have reported receiving less social support from external sources such as friends, medical personnel, and extended family when compared to that experienced by their wives (Northouse, 1988). The internalization of traditional gender roles which depict male partners as strong, unemotional protectors may prevent partners from seeking out additional help or from communicating their feelings to their wives (Witkins, 1979).

With the field of psychology's recent interest in positive mental health (Seligman, 1998), a growing amount of research has focused on possible beneficial effects which may arise from the life-changing experience of a cancer diagnosis. Tedeschi and Calhoun (1995) have theorized that breast cancer survivors may, like other survivors of trauma, report personal growth in the areas of relationships, spirituality, and overall life meaning after being diagnosed with breast cancer. Spouses, too, have reported a growing understanding of what is important in life and a deepening in their relationships post-

diagnosis (O'Mahoney & Carroll, 1997; Weiss, 2001). However, little has been done to ascertain the extent to which the spouses of breast cancer survivors experience posttraumatic growth or which psychological and social variables might contribute to this phenomenon.

The present study explored the correlation between several psychological and social factors and posttraumatic growth in the spouses of breast cancer survivors. Among the psychological variables explored were optimism, personal mastery over one's environment, and ways in which one copes with troubling situations. Marital quality was examined, as well as overall social support. It was predicted that each of these variables would be strongly related to whether or not the partner experienced the effects of posttraumatic growth.

Furthermore, little is known about the permanence of posttraumatic growth effects. Are growth effects most noticeable directly after diagnosis and likely to wane over time? Or do relationships and existential beliefs made stronger by trauma continue to deepen? These questions were also explored within the course of this study.

## Chapter Two: Review of the Literature

This review discusses literature and research focused on the spouses of breast cancer survivors, posttraumatic growth, and several psychological and social constructs that will be explored in the present study. First, an introduction to the theory surrounding the construct of posttraumatic growth and its accompanying empirical evidence will be discussed. Next, diagnostic and treatment factors pertaining to breast cancer will be described, followed by an exploration of the possible effects of illness variables on a patient's spouse. Finally, research centered on the constructs of coping, optimism, self-mastery, marital satisfaction, and social support will be outlined and discussed with regard to their interrelationships as well as their association with posttraumatic growth.

### Posttraumatic Growth: Coping Process or Outcome?

Research examining reactions to life-threatening illness and other traumatic events has typically focused on the coping process. Successful coping strategies are described as keeping the traumatized person from experiencing excessive psychological distress and helping him or her to adjust to life in the wake of a stressful encounter. Coping strategies are typically viewed as helping the individual return to his or her previous level of functioning. If psychological growth is mentioned, it is seen as occurring in the form of positive reinterpretation, a coping style in which negative events are reframed in a more meaningful or constructive fashion (Lazarus & Folkman, 1984; Scheier, Weintraub, & Carver, 1986).

In such a light, posttraumatic growth (PTG) is depicted as merely a useful, perhaps distorted, perception employed by the individual in order to make his or her threatening situation more acceptable and/or understandable. Recently, researchers have

begun to question whether such claims of growth are merely indicators of a successful coping strategy at work, or are actual outcomes resulting from strengths gained by the coping experience (Tedeschi & Calhoun, 1995).

Two studies have examined positive growth as both an inwardly felt and outwardly observable outcome in the lives of trauma or stress survivors. Park, Cohen, and Murch (1996) surveyed a sample of college students who had experienced a stressful event in the past year. Examples of stressful events ranged from personal problems, such as the break-up of a relationship, to physical injuries to the self or significant others due to accidents. The students were asked whether or not they had experienced any personal growth as a consequence of their stressful situations, to what extent this was true, and whether or not they primarily experienced these changes as inner occurrences or observable behaviors. Intersubjective validation was achieved through corroboration by the students' friends and families. Correlations between self descriptions of growth and others' descriptions were significant, but somewhat low ( $r = .21, p < .05$ ). Level of correlation, however, rose accompanying an increase in the closeness of the student's relationship with the reporting observer and when the behavior was easier to observe.

A recent study (Weiss, 2002) further explored this phenomenon with a sample of breast cancer survivors and their husbands. This study also used intersubjective validation to ascertain whether posttraumatic growth is indeed an outwardly observable process of change. On a quantitative measure, Tedeschi and Calhoun's (1995) Posttraumatic Growth Inventory (to be described later), the relationship between spouses' self reports and the reports of their partners was significant for the measure's total score, with similar significant matches for each of the Inventory's five subscales. The author attributed these

higher correlations than those found by Park et al. to the fact that the participants were involved in a closer relationship. A lower (but significant) correlation on the Personal Strength subscale was taken as evidence that more private, personal changes are simply less observable than other changes, such as relating to others or taking advantage of new possibilities.

Control groups have also been used to contrast the personal growth experience of cancer survivors to non-survivors. In this way, the effects of posttraumatic growth can be better separated from the effects of time or socially desirable responses. Cordova, Cunningham, Carlson, & Andrykowski (2001), in a study of breast cancer survivors and age/education matched healthy counterparts, found a pattern of greater PTG among the cancer survivors, despite a lack of difference in the two groups with regard to depression and well-being. However, significant differences between the groups were only found in the areas of relating to others, spirituality, and appreciation of life. The authors described these findings as being congruent with existential theory, in which confrontation with one's mortality results in greater appreciation of one's present life and relationships (Frankl, 1963). The other two areas of growth, increased personal strength and taking a new direction in life, may be more prone to being confounded by the passage of time or other factors.

With these findings in mind, the present study will proceed using the following definition for posttraumatic growth: positive changes in an individual's life which occur in response to trauma, including shifts in perception of the self, relationships with others, and worldview in general. Coping responses will be considered an integral part of the process of growth, the gears that either allow or prevent the wheels of change from

moving. However, PTG (as the construct will henceforth be called) will be conceptualized as an actual, often observable outcome of coping and not simply a form of denial or positive reframing (Tedeschi & Calhoun, 1995).

### Posttraumatic Growth: Theory and Contributing Factors

The abovementioned findings suggest that posttraumatic growth is not merely a defensive coping reaction used by trauma survivors, but a noticeable transformation in the survivor's thinking, feeling, and/or behaving. Upon this line of thought Tedeschi and Calhoun (1995) have created a theory which describes not only how people cope with trauma, but the factors contributing to the emergence of personal growth in reaction to a stressful life event. This theory is based upon a cognitive (Kelly, 1955) model of reality as being personally constructed and represented by a number of schemas, which attempt to explain the workings of the world in a useful, organized manner. Traumatic events can cause significant damage to a carefully balanced system of schemas, forcing the individual to challenge existing schemas or invent new ones in order to explain and cope with new and frightening experiences. Such events are especially upsetting in the way they disturb schemas of invulnerability, which serve a protective role. Attempts to understand why a traumatic event occurred, compounded by great emotional turmoil, may result in a change in personal schemas. These changes, when positive in nature, have been termed posttraumatic growth (Tedeschi & Calhoun, 1995).

Several different factors may contribute to whether or not posttraumatic growth occurs in response to a traumatic situation. Tedeschi and Calhoun (1995) mention the importance of experiencing a period of rumination directly after the event, during which the meaning and implications of this event can be fully digested. The word rumination,

here, should not be interpreted as having a solely negative connotation, but simply as a period of cognitive processing that may include both positive and negative thinking. Rumination is theorized to be helpful in fostering posttraumatic growth in that it provides time for the individual to make sense out of what has happened and decide what to do about it. This period of cognitive processing may also strengthen one's social connections, in that it often involves talking about the event with supportive others.

One study examined the connection between rumination and the development of posttraumatic growth. Calhoun, Cann, Tedeschi and McMillan (2000) looked at correlations between the two in a sample of 54 university students who had experienced a significant trauma within the last three years. Participants were presented with a variety of items representing ruminative behavior (ranging from the presence of unwanted intrusive thoughts to deliberately trying to see benefits in the event) and asked to rate them both retrospectively (thinking back to directly after the event happened) and presently. The Posttraumatic Growth Inventory was also administered to assess positive outcome.

A relationship was found between ruminative behavior and posttraumatic growth. More specifically, the more directly after the event that cognitive processing was experienced, the more positive growth ensued up to three years later. Recent rumination was also associated with posttraumatic growth, although not as highly, suggesting that thinking about traumatic events sooner may be best, but dealing with it later may also be helpful. Long term rumination that is focused primarily on negative or intrusive thoughts, however, may be detrimental to the development of positive growth (Tedeschi & Calhoun, 1995).

Certain personality characteristics may provide a fertile soil from which growth most easily emerges. Tedeschi and Calhoun (1995) describe the ideal candidate as possessing both flexibility and tenacity, with a creative, extraverted personality that is able to view a situation in a variety of ways. Optimists certainly seem to have an advantage, having the tendency to see and expect good from most situations. A sense of control over one's environment and usage of helpful coping strategies also seem beneficial. Some of the personality and social factors that contribute to the development of posttraumatic growth will be explored in greater depth in the latter half of this chapter.

#### A Model of Posttraumatic Growth

Tedeschi and Calhoun's (1995) model of Posttraumatic Growth is described as a self-regulatory system of feedback loops involving the aforementioned factors. The authors state that in response to a traumatic situation, personality characteristics contribute to how an individual attempts to cope with stress. However, in the case of an unusually stressful event, the coping strategies upon which the individual usually relies may prove unsatisfactory. The resulting emotional distress presents a challenge to existing schemas, leading the individual to engage in a period of constructive rumination during which these schemas are revised. A variety of different coping strategies may then be employed, including emotion-focused coping and seeking support from others. Growth occurs in response to the formation of new schemas and the helpfulness of coping strategies.

The loop is completed as newly attained personal growth interacts with the individual's personality, as well as the members of his or her support system, positively affecting the self and/or relationships with others. Over time, and if the necessary



personality and social elements are present, additional cognitive processing of the event may lead to additional growth. This “wisdom” is according to Tedeschi and Calhoun (1995) a state of “emotional serenity together with an acute appreciation for life and an exhilaration that can come from a recognition that the self is vulnerable, yet strong.”

Various components of this model have recently received empirical support. As previously mentioned, Calhoun et al. (2000) found a relationship between rumination and PTG, with ruminating behavior that occurred soon after the event being most likely to predict growth, as postulated by theory. Posttraumatic growth has also been found to be related to severity of life event (Cordova et al, 2001), optimism and extraversion (Tedeschi & Calhoun, 1995), positive reinterpretation and acceptance coping, and social support (Park, Cohen & Murch, 1996), as theorized.

#### The Positive Outcomes of Breast Cancer:

##### Posttraumatic Growth and Spouses of Cancer Survivors

Very little research has contemplated the possibility of posttraumatic growth in husbands of breast cancer patients. The only study to do so, the previously discussed Weiss (2002) study, reviewed the experience of 41 couples with Stage 0, I, or II breast cancer (stages range in severity from 0, being the least advanced, to 4, being the most advanced, as will be discussed later) in a study focused on providing intersubjective validation of posttraumatic growth among spouses. Both qualitative and quantitative measures were used to assess personal posttraumatic growth, with each spouse also rating perceptions of his or her partner’s growth.

Two open-ended questions were asked, inquiring about significant long-term negative and positive changes following the diagnosis. Ninety-eight percent of wives and

88% of husbands reported significant positive changes in their lives in response to open-ended questions, with positive changes often coexisting with negative changes (88% of wives and 83% of husbands). Positive changes expressed by the husbands included feeling more compassionate for other people, feeling stronger, experiencing a renewed sense of spirituality, and gaining a new appreciation and zest for living. The mean scores of PTG reported by husbands, furthermore, were not significantly different from how the wives rated their husbands' level of positive growth from the experience.

These findings suggest that husbands do indeed experience PTG, although, understandably, not to as extreme a degree as do their sick spouses. The next logical question would be what factors are associated with the development of PTG in cancer patients' husbands? This is a question the literature has not yet addressed. Due to the joint quality of the married unit's cancer experience, however, some clues can be drawn from breast cancer patients themselves. A study by Cordova et al. (2001) provides insight into the development of positive growth following breast cancer.

A sample of 70 healthy women was matched with 70 women being treated for breast cancer, stages 0-III-B. Both sets of participants were administered measures assessing personal demographics, social support, depression, well-being, and posttraumatic growth, with breast cancer survivors also rating levels of intrusive ideation and avoidance behavior. Cancer survivors also rated how often they talked about their breast cancer experience with others and how closely that experience matched the criteria for posttraumatic stress disorder in the DSM-IV.

As previously mentioned, breast cancer survivors and their healthy counterparts showed similar levels of depression and well-being, yet differed significantly on several

aspects of posttraumatic growth. In this area, breast cancer patients exhibited more overall personal growth, a tendency that was itself related to several different factors. Namely, PTG was found to be significantly related to talking about cancer, having breast cancer meeting the criteria for PTSD, time since diagnosis, and income.

Although the cross-sectional design of the study did not allow for definitive causal relationships to be made, these findings fit well with various components of posttraumatic theory. First, the fact that more dialogue about cancer is related to more growth could be representative of the rumination stage, in which the impact of the event is thoroughly explored with members of one's social network in order to uncover meaning and invent new schemas. Second, the more distress evoked by the cancer diagnosis and/or treatment, the more growth was experienced. According to Tedeschi and Calhoun (1995), in order for an individual to build a new set of schemas, the old ones must first be vigorously shaken by a powerfully moving event.

Third, the more time that passed since diagnosis, the more growth was reported. This finding raises further questions regarding the nature of posttraumatic growth. Newly diagnosed individuals may be too shocked or stressed with the fast-paced decision-making regarding surgeries and treatments to fully appraise (or ruminate over) their situation. Thus posttraumatic growth seems to evolve with time, although the extent to which it continues to grow, and which factors precipitate quicker growth, is unknown.

Finally, higher income was related to more growth. A patient with a comfortable living situation may therefore possess a less stressful arena for self-exploration than a woman with less than abundant financial resources. This suggests the importance of socioeconomic factors in attaining personal growth following cancer.

While these studies have gathered much interesting data about PTG and people dealing with cancer, there are clearly many factors that have yet to be explored. This is especially true with regard to husbands of breast cancer patients. There are several variables that seem likely to be of special import to the occurrence of PTG in this population. Since severity of trauma is related to growth, the degree to which a wife's illness is considered life-threatening or the extent to which her disease affects both her and her husband's daily lives may be relevant to the development of PTG. Verbally processing the experienced challenge to one's preexisting schemas with another person is also important: therefore, strong marital and social relationships may facilitate growth. Finally, personality factors, such as optimism, may also effect husbands' reactions to trauma. These elements will all be described in the following sections.

#### Posttraumatic Growth Versus Adjustment

Considering that little research has been done with reference to personality, illness, and social variables and their connection to posttraumatic growth, much of the following literature review will focus on what is known about these variables' relationships with psychosocial adjustment, which may range from adjustment to illness to mood and distress levels. Therefore, an exploration of the relationship between posttraumatic growth and adjustment seems necessary before proceeding further. This brief overview will attempt to outline the present literature's views of the relationship between these two constructs.

Much of the literature suggests that PTG is an independent phenomenon that coexists alongside adjustment. In the Cordova et al. (2001) study mentioned in previous passages, adjustment was assessed by measuring breast cancer patients' levels of

depression, stress response symptoms, and well being. Posttraumatic growth was unrelated to these measures of adjustment. A study on positive and negative changes in response to bone marrow transplantation (Fromm, Andrykowski, & Hunt, 1996) had similar findings. Adjustment, measured by how well the patient functions in daily life, impact of sickness upon various life dimensions, distress, self-esteem, and mood, was correlated with qualitative data citing positive and negative changes since the transplant. Reports of positive change were unrelated to adjustment variables, whereas negative change was significantly correlated with all but one of these measures (mood).

Other studies have found positive growth to be related to both current (Thompson & Coll, 1985; Updegraff, Taylor, Kemery, & Wyatt, 2002) and subsequent well-being (Curbow, Somerfield, Baker, Wingard, & Legro, 1993; Davis, Nolen-Hoeksema, & Larson, 1998). These studies looked at subjects who had experienced a variety of traumatic situations, including losing their homes to fire, HIV infection, bone marrow transplant, and losing a loved one, and the effects of these situations on measures of adjustment such as successful coping, depression, and anxiety.

A longitudinal study focused on loss (Davis et al, 1998) suggested the importance of time and type of growth in relation to adjustment. The study found that making sense of the loss was related to less distress after a year had passed, but that finding benefits in the experience was connected to adjustment at 13 and 18 months after the loss. Thus, additional variables, such as time, might mediate the relationship between PTG and certain measures of adjustment.

These findings suggest that positive growth may exist regardless of how an individual is adjusting to trauma and that the relationship between the two might be

moderated by other factors. Furthermore, the lack of a consistent correlation between posttraumatic growth and adjustment indicates that a multidimensional model of adjustment may be needed to capture both positive and negative aspects of the adjustment process.

With regard to the present study, a lack of consensus on the connection between adjustment outcomes and PTG only emphasizes the need for exploration between positive growth and thus far unexamined variables such as self-mastery and marital satisfaction. By learning how such personality and social factors relate to PTG, links between growth and adjustment can be constructed and further explored. Until then, findings cited below which focus upon adjustment should be reviewed in light of the previously mentioned differences.

### The Breast Cancer Experience: From Diagnosis to Treatment

The following brief summaries attempt to provide an overview of the breast cancer experience, including information about diagnosis, prognosis, treatment options, side effects, and the possibility of cancer recurrence. Literature describing the effects of disease-related variables on the husbands of breast cancer patients will also be outlined.

#### Diagnosis and Prognosis

Suspicious lumps in the breast are generally discovered in one of two ways: through a mammogram or a self-administered breast exam. Once found, tests can be conducted on the tissue through a needle biopsy, which can ascertain whether or not cancer is present. Over 80% of lumps do not indicate the presence of a cancerous growth (Susan G. Komen Breast Cancer Foundation, 2003).

When cancer is detected, however, the lump is likely to be assessed with regards to the type of cancer found, as well as various other factors such as size of tumor, extent of spread into the lymph nodes, and presence or absence of metastasis to other parts of the body. This evaluation is generally done by a pathologist, who studies a patient's removed tumor and/or lymph nodes after surgery. The pathologist takes the aforementioned factors into account when ascertaining the stage of the breast cancer.

Breast cancer staging is used in making a disease prognosis and is based on three categories: tumor size, number of cancerous nodes, and metastasis, or spread. Stages range from 0-4, with better prognoses at the lower stages. For instance, Stage 1 may describe a small tumor that has not spread to any lymph nodes, while Stage 4 describes a cancer which has spread, or metastasized, to other body parts via the nodes.

Also effecting prognosis is the type of cancer with which a woman is diagnosed. The Susan G. Komen Breast Cancer Foundation (2003) lists the various types of invasive breast cancers and their percentages of occurrence as follows: ductal carcinoma (80%), lobular carcinoma (5-10%), medullary carcinoma (<5%), mucinous (colloid) carcinoma (<2%), papillary carcinoma (<2%), tubular carcinoma (1%), and inflammatory carcinoma (.5%). Each cancer type possesses unique tumor characteristics and some, such as mucinous, papillary, and tubular, have notably better prognoses than others.

### Surgeries

There are two types of surgery which are most commonly used to remove tumors in women with early stage breast cancer:

Breast conserving surgery (lumpectomy): Surgeons performing a lumpectomy aim to remove the cancerous tumor while conserving as much normal tissue as possible.

Benefits of this type of surgery include maintaining much of the patient's original breast and a comparatively speedy surgery. However, fears of local recurrence sometimes steer patients away from choosing to have a lumpectomy instead of a full mastectomy. Recent studies have challenged this reasoning, finding that lumpectomy along with radiation therapy is just as effective as a total mastectomy in early stage breast cancer (Fisher et al., 2002).

Total mastectomy: Used 50% more often than lumpectomy, the total mastectomy removes the entire breast, including the nipple and surrounding area. Women undergoing a mastectomy often have the option of breast reconstruction immediately after tumor removal. However, not all women are able, or choose to, have reconstructive surgery. Mastectomy patients don't as often receive radiation treatments, although chemotherapy is more common (Susan G. Komen Foundation, 2003). Patients often return home with a drainage tube placed in the wound: this allows fluid to drain from the healing wound and will be removed about a week after surgery.

Reconstruction: Patients undergoing mastectomy may elect to have reconstructive surgery on the affected breast. Breast reconstruction may occur directly after the mastectomy, increasing surgery time considerably, or can be done any time later. Several reconstructive options exist. The insertion of implants or expanders is a popular option. Expanders are hollow silicone sacks that are gradually (over a period of 3-6 months) filled with saline by a doctor. In this way, the skin and muscles of the breast are slowly stretched to accommodate the implant. Downsides to this option include enduring a long, uncomfortable process, a less natural look and feel to the breast, and risk of infection due to the presence of a foreign substance in the body (Susan LoveMD.org, 2003)



Another frequently used option is flap reconstruction. This form of reconstruction involves taking skin, muscle, and fat from another part of the body (usually the abdomen or back) and using it to reconstruct the breast. The result is often more natural and, unlike with implants, the breast may experience some sensation. However, pain will be experienced in not only the breast, but also in the removal site post-surgery. Muscular control may never be as strong in the removal site as it was pre-surgery (Susan LoveMD.org, 2003).

#### Common Treatments and Their Side Effects

Chemotherapy: Chemotherapy may be administered four to six weeks after the surgical removal of the tumor or breast in order to destroy any lingering cancer cells in the body. Chemotherapy drugs may be given in pill form or injected intravenously in a hospital. Hospital visits commonly last from two to six hours, as the drugs are slowly released into the patient's bloodstream. The patient usually will undergo chemotherapy treatment once or twice a month for three to six months, with longer treatment dependent on specific cancer diagnosis (Susan G. Komen Foundation, 2003).

Although there are a variety of drugs available to comfort the chemotherapy patient, a number of unpleasant side effects are commonly associated with treatment. These include nausea and vomiting, hair loss, early menopause, fatigue, infections, mouth and throat sores, and weight gain (Susan G. Komen Foundation, 2003). Some side effects, such as vomiting, are most severe during treatment and will often disappear once chemotherapy has ended. Others, such as early menopause, may be permanent.

Radiation Therapy: Radiation therapy may be administered alone or along with chemotherapy. This type of therapy involves the use of high energy X rays to prevent the

growth and division of cancer cells. Radiation sessions are administered in the hospital by a radiation oncologist and are localized to the effected breast area. An individual session commonly lasts twenty minutes; patients are likely to receive one session a day, five days a week, for five to six weeks after surgery (Susan G. Komen Foundation, 2003).

Side effects include skin irritation and redness in the treatment area, breast changes or swelling, fatigue, dry cough or difficulty swallowing, and lymphedema. Lymphedema involves a build-up of lymphatic fluid in the underarm area adjacent to the effected breast and can result in permanent swelling of the patient's arm. 15-20% of women treated for breast cancer may develop lymphedema and the possibility of developing symptoms persists for years after treatment has ended (Susan G. Komen Foundation, 2003).

Hormone Therapies: The most widely prescribed hormone therapy, Tamoxifen, is an antiestrogen drug designed to prevent cancer cells' access to estrogen. The drug can be used to treat both early and advanced breast cancer, and is most often taken by patients after chemotherapy and continued for a five year long period. Common side effects include hot flashes and vaginal discharge and irritation, with about 10% of women also reporting nausea, vomiting, fatigue, or depression (American Cancer Society, 2003). In very rare cases, blood clotting or endometrial cancer may occur in response to Tamoxifen.

Recurrence A breast cancer recurrence is less likely to happen if the cancer is caught at an early stage. Of those women who are diagnosed and treated for Stage I breast cancer, 95% survive for five years; 90% survive for ten years (Susan G. Komen Foundation,

2003). Higher stages are connected with lower survival rates: for instance, 65% of women diagnosed with Stage II are still alive ten years later.

Breast cancer recurrences take two forms. Local recurrences reappear in the originally treated breast, chest wall, or lymph nodes. The chances of experiencing a local recurrence seems to rise depending on the number of lymph nodes effected by one's breast cancer. 5-10% of women experience a local recurrence of cancer after their original treatment, however, this type of recurrence is quite survivable. 60-75% of women who undergo a total mastectomy and radiation therapy in response to a recurrence are disease free five years later.

Recurrences that appear in places other than the breast, which are called distant recurrences, may be harder, or impossible, to handle. In this case, the breast cancer spreads to the patient's bones, lungs, liver, or central nervous system. Cancer which has spread to other organs is not considered curable, but can be treated with chemotherapy and/or hormone therapy, providing relief which may last for months or years. Surgery may be used to remove tumors that cause pain or pressure; this surgery is referred to as palliative surgery as it aims to provide relief of symptoms rather than cure the cancer (American Cancer Society, 2003).

#### Disease Characteristics and Their Effects on BC Husbands

Medical procedures and treatments associated with breast cancer are likely to have a negative impact on the patient's daily physical functioning. Even after the newly diagnosed patient has recovered from surgery, she may suffer from the fatigue and illness symptoms commonly experienced alongside chemotherapy or radiation treatments. Women in the later stages of the disease may require more constant medical attention

and, eventually, palliative care. The extent to which such physical challenges affect the patient's ability to function is likely to affect her interactions with significant others in many ways.

Disease factors have been found to be related to adjustment in not only breast cancer patients but their husbands as well (Hoskins et al., 1996; Northouse, Templin, and Mood, 2001). For example, in a study by Maguire (1981) husbands of women diagnosed with a malignancy reported more emotional distress than husbands whose wives were diagnosed with benign breast disease. Similar findings have been found for breast cancer patients themselves, suggesting a commonality of reaction to a potentially life-threatening diagnosis by both patient and spouse (Northouse, Templin, Mood, & Oberst, 1998).

Severity of cancer can have direct effects on spousal adjustment. Northouse, Templin, and Mood (2001) examined how adjustment differed among breast cancer patients and their husbands on the basis of severity of illness. Severity was assessed by breaking down participants into three groups: those with benign breast disease, those with malignancy and no lymph node involvement, and those with malignancy that had spread to the lymph nodes. They found that severity of wife's illness had a direct effect on psychosocial adjustment for the husbands and wives, with both reporting greater role problems when the illness was more severe. Thus a wife's serious illness is likely to cause an imbalance in marital roles, with husbands taking over roles previously carried out by their wives prior to the start of cancer treatment.

Hoskins et al. (1996) found husbands to be susceptible to surgical, as well as severity, factors. In this study, focused solely on breast cancer patients' husbands, a

diagnosis involving malignancy in the lymph nodes was related to more distress and physical symptoms in husbands. Furthermore, men married to women who underwent non-breast conserving surgery were more distressed than men whose wives received breast reconstruction or no surgery.

The Hoskins et al. study also presented a view of the progression of husbands' reactions to illness variables over time. The husbands in this study were asked to complete measures pertaining to their adjustment at 6 points in time: 7-10 days postsurgery, and 1 month, 2 months, 3 months, 6 months, and 12 months after surgery. Negative emotion was highest at the 7-10 day and 1 month period among husbands whose wives' had undergone non-breast conserving surgery. This is understandable, due not only to the inherently stressful nature of this early time period, but because of the couple's need to adjust to changes in the wife's body (e.g. the mastectomy scar). Levels of distress among husbands whose wives had positive lymph nodes were significantly higher at every point in time than those with wives whose lymph nodes were clear of cancer.

Not all studies have found a link between illness variables and adjustment. Northouse et al. (1988), in a study on social support among breast cancer survivors and their spouses, found no significant effects for type of surgery or treatment used, number of breasts removed, nor for disease severity. In their study on posttraumatic growth and breast cancer patients, Cordova et al. (2001) also found that disease characteristics and treatment variables, such as stage of cancer at diagnosis, type of surgery, and type of treatment undergone, were unrelated to posttraumatic growth.

Interestingly, the same study found that perceived threat, measured as whether or not one's reaction to cancer met the DSM-IV's criteria for Posttraumatic Stress Disorder, was positively related to posttraumatic growth. This suggests that how one appraises cancer may be more important than objective measures of one's disease. Since the Cordova et al. study was the only one to have used posttraumatic growth as an outcome variable, further research should attempt to identify other useful appraisal variables that may affect positive change.

#### Breast Cancer and Spouses of Breast Cancer Survivors: Psychological and Social Factors Effecting Growth and Adjustment

The breast cancer experience can permeate many aspects of the lives of the spouses of patients. However, certain psychological and social variables have been found to play an important role in how well a husband adjusts to the diagnosis and, consequently, is able to garner a sense of personal growth from the experience. Described below are some personality and social characteristics that are documented as facilitating adjustment to stressful situations such as the diagnosis of a life-threatening illness. These variables are also hypothesized to be related to posttraumatic growth in people exposed to such stress (Tedeschi & Calhoun, 1995). It is believed that each will serve a vital function in the promotion of posttraumatic growth in the husbands of breast cancer patients.

#### Overview of Optimism

Dispositional optimism, defined as a stable, attitudinal tendency to expect positive future outcomes, has been examined in caregivers of cancer patients in several studies. Given, Stommel, Given, Osuch, Kurtz, and Kurtz (1993) highlighted optimism as a significant predictor of depression, physical health, and perceived impact of caregiving

on the daily schedule of caregivers. Likewise, Kurtz, Kurtz, Given, & Given (1995) found that optimism predicted caregiver reactions to the burdens of caring for cancer patients, including depression, symptomatology and feelings of burden. Other research has outlined the bolstering effect of an optimistic attitude on patients with life-threatening illnesses, with high levels of optimism being related to less pre-surgery distress (Montgomery, David, Goldfarb, Silverstein, Wertz, Birk & Bovbjerg, 2003; Scheier, Macgovern, Abbott, Matthews, Owens, Lefebvre, & Carver, 1989), better adjustment post-surgery (Schnoll, Knowles, & Harlow, 2002; Scheier et al., 1989) and reduced likelihood of rehospitalization (in patients recovering from heart surgery, Scheier et al., 1989).

Recent debate has focused on whether or not the construct of optimism differs significantly from similar constructs, namely neuroticism (Scheier, Carver, & Bridges, 1994), self mastery (Marshall & Lang, 1990), and trait anxiety (Smith, Pope, Rhodewalt, & Poulton, 1989). While other researchers have proposed that the effects of optimism on various outcomes are overly dependent upon shared variance with the aforementioned predictors, Scheier, Carver and Bridges (1994) have argued otherwise. In a large study, these researchers observed the effects of trait anxiety, neuroticism, self-mastery, self-esteem, and optimism on depression, physical symptoms, and coping. Correlations between optimism and the other predictors were in the moderate range, suggesting that variance between them is also moderate. Furthermore, zero-order correlations between optimism and outcomes remained significant when the influence of other predictors was partialled out.

Optimism shared a special relationship with coping, being the only variable related to every coping strategy assessed, although the predictor's relationship with symptom intensity was the lowest of all the predictors. Conclusions from this study include the supposition that optimism may simply have a stronger effect on some outcomes than others. Contrary to research that has questioned the construct's independence, however, optimism does appear to add its own unique variance to outcomes like depression despite some overlap with multifaceted constructs such as neuroticism.

A recent longitudinal study by Updegraff and Marshall (in press) researched the connection between both dispositional and context-specific optimism and posttraumatic growth. This study of 258 victims of community violence, which drew from a mainly Latino population in which the majority of participants had not finished college, surveyed its sample directly after they had been hospitalized and then three months later. Both dispositional and context-specific optimism were found to be predictors of posttraumatic growth, even when trauma-related distress was controlled for. These findings suggest that optimism is indeed connected to PTG and, fortunately for those without an optimistic temperament, that context-specific optimism (which could be more possibly developed through clinical work) is also a useful predictor of growth across time.

#### Overview of Self-Mastery

Self-mastery, defined as one's sense of personal control over life circumstances, is primarily described in the literature as a positive personality characteristic that protects against psychological distress and physical symptoms. Control over some aspects of daily life seems to promote better adjustment among those living with cancer. In one study of



71 cancer patients, greater perceptions of control were related to lower levels of depression, even when physical functioning, negative affectivity, and marital satisfaction were controlled (Thompson, Sobolew-Shubin, Galbraith, & Schwankovsky, 1993). Thus perceptions of mastery over one's situation proved to be influential to one's distress level, regardless of how progressive a disease or unstable a marriage had become. Cancer patients in this study seemed to maintain a sense of control by focusing on controlling daily emotional reactions and physical symptoms; needing to control the less controllable disease progression in the future was not cited as equally important. Several other studies have found direct links between self-mastery and depression (Carver & Gaines, 1987; Marshall & Lang, 1990).

Other studies, however, have suggested that high levels of self-mastery may lead to negative outcomes in certain situations. A study by Lightsey (1997) explored whether or not the interaction between several prospective stress-buffers (self-mastery, self-efficacy and optimism) and negative life events were associated with depression in a sample of college students. Contrary to expectations, subjects with high levels of self-mastery, when exposed to stressful life events, were found to experience higher levels of dysphoria.

This interpretation of self-mastery as a "stress exacerbator (Lightsey, 1997)" may be better understood through examination of the types of control people may use to cope with stress. Astin et al (1999) found that breast cancer patients who possessed a balance of accepting (yielding to events beyond one's control) and assertive (working to make changes in one's environment) modes of control showed the best adjustment to their disease. These results indicate that while a sense of mastery over one's health outcome is

useful, the need to overly control one's circumstances may result in psychological maladjustment. A balanced sense of control may be of particular importance to husbands enduring the experience of breast cancer, a disease that is highly unpredictable and likely to frustrate the overly control-assertive individual.

Feelings of low control may persist long after diagnosis and treatment are finished. In a study focused on well-being three years post-treatment (Schmale, Morrow, Schmitt, Adler, Enelow, Murawski, & Gates, 1983) it was found that cancer survivors possessed significantly lower levels of self-control than did a matched sample, even as anxiety, depression and several well-being measures appeared the same between the two groups. Conceptualizing patient and husband as a marital unit, husbands may likewise be slow to regain feelings of mastery, even after distress has waned. This difference seems to indicate a change in perception among survivors, either regarding their personal ability to impact their environment or the uncontrollable nature of life circumstances. Interestingly, no negative outcome was associated with this new perspective, suggesting that perhaps the cancer patients had reached a feeling of acceptance about this viewpoint.

In conclusion, a close examination of the role of self-mastery in a stressful situation seems to yield equivocal findings. While some degree of control appears to be helpful in dealing with illness, the need to assert great amounts of control may be more hindering than helpful. For example, a study on locus of control (Seeman & Evans, 1962), a similar construct in which outcomes of events are attributed either to the self (internal) or beyond one's control (external), found that people with internal locus of control were more likely to seek information about their own health status and be assertive about their medical care. Other studies, however, suggest that individuals with

extreme beliefs about their capacity to control their lives have been found to experience more trouble coping with a traumatic event than those with less extreme views (Perloff, 1983; Swindle, Heller, & Lakey, 1988).

The relationship between self-mastery and posttraumatic growth, meanwhile, remains unknown. The present study aims to explore how one's appraisal of control affects positive growth. Self-mastery's relationship with other variables, such as optimism, is also of interest.

### Self-Mastery and Optimism

The constructs of self-mastery and optimism are somewhat closely related, with both centered upon a positive belief in future outcomes. The difference between the two is causal: self-mastery places positive outcome in the hands of the individual, whereas optimism does not necessarily attribute a sunny future to any personal factors. Still, as mentioned earlier, the independent ability of each construct to predict various outcomes has been questioned.

The relationship between the two was explored in great detail in a study by Marshall and Lang (1990). The authors wished to better understand how optimism and self-mastery, both independently and together, relate and contribute variance to depression. Expectations were based on Scheier and Carver's (1985) theory that optimism, the generalized expectation of future positive outcome, would be a better predictor of adjustment than a causal attribution such as self-mastery and that optimism would mediate the relationship between causal attributions and adjustment.

Optimism and self-mastery were indeed discovered to be empirically distinct, although they share considerable overlap. However, contrary to the aforementioned

theory, a regression model in which depression was regressed onto both optimism and self-mastery showed that self-mastery had a significant and unique effect on depression, beyond that of optimism; optimism, however, did not contribute significantly to the prediction of depression. Furthermore, the two constructs did not interact to influence depression.

Scheier, Carver and Bridges (1994) later challenged these conclusions, finding that the relationship between optimism and depressive symptom intensity in their sample remained significant even when self-mastery and other causal variables had been controlled. Marshall and Lang offered several reasons for their unexpected discoveries. First, their sample consisted of 192 professional women, whereas Scheier and Carver (1985) suggested evidence that optimism and mastery might be more correlated for women than for men. Thus an all male sample, as in the present study, might show considerably less overlap between the constructs. Second, and most importantly to the current study, the effects of optimism and self-mastery are likely to be different in situations that are commonly seen as uncontrollable. When facing an unpredictable life-threatening illness, or that of your spouse, it seems more likely that optimism would play an important role in determining one's overall sense of control over the situation.

### Overview of Coping

A number of studies have examined the breast cancer experience through the lens of the cognitive model of stress and coping as defined by Lazarus and Folkman (1984). This model posits that one's experience of stress is effected by the way in which one appraises the significance of the situation (primary appraisal) and how able one feels in meeting the challenges posed by the stressful situation (secondary appraisal). Coping,

here, is described as the behavioral and cognitive efforts used to deal with the internal and external demands of a stressful situation and can be divided into various categories.

Persons using problem focused coping actively attempt to evoke change in the stressful situation through the use of problem solving skills. Emotion focused coping, on the other hand, concentrates on changing the internal reactions that result from the stressful situation. Other coping strategies include avoidance, which may include refusal to deal with or think about the problem, and using a combination of coping styles (Collins, Taylor, & Skokan, 1990). In general, avoidance strategies have been found to have detrimental effects on cancer patients' adjustment (Friedman, Nelson, Baer, Lane, Smith, & Dworkin, 1990), rehabilitation, and well-being (Carver & Scheier, 1993), while more active responses (such as problem focused approaches) have the opposite effects.

The benefits of emotion-focused coping are less clearly defined. Relief of emotional distress through emotion-focused coping seems necessary in paving the way for the more active, problem-solving behavior associated with healthy adaptation. Likewise, this type of coping seems most closely tied to the PTG-inducing ruminative behavior described by Tedeschi and Calhoun (1995). However, a prolonged focus on emotion and emotional expression (venting) can result in negative effects, especially if the rumination seems beyond one's control (Tait & Silver, 1989). Posttraumatic Growth Theory suggests that this type of coping can be helpful in the immediate period after a stressful event, but may become hurtful if employed for too long afterwards (Tedeschi & Calhoun, 1995).

Some evidence suggests that emotion-focused coping can be very useful in situations over which the individual perceives little or no control. For example, one study

examined the comparative helpfulness of problem-focused and emotion-focused coping in a sample of 57 flight attendants and pilots during a simulated abduction and four day captivity (Strenz & Auerbach, 1988). Prior to the exercise, participants were split into two groups. One group received training in problem-focused coping, the other in emotion-focused coping strategies. The abduction was conducted in as realistic a fashion as possible and participants' anxiety was monitored throughout, the results of which suggested that the experience was significantly stressful. The group of participants instructed in emotion-focused coping strategies reported the lowest levels of anxiety and distress, as opposed to those in the problem-solving group, who scored high on these measures. Thus emotional coping in response to trauma may be the better response when the individual cannot control the course of events.

Utilizing a variety of coping strategies may also be a useful way to recover, and possibly grow from, a stressful event. A study by Collins, Taylor, and Skokan (1990) explored associations between various coping styles and both positive and negative changes in cancer patients. Five factors of coping were identified using a factor analysis, these being: problem-focused (making use of information or social support), cognitive-escape/avoidance (using wishful thinking and fantasy), distancing (removing oneself from the problem by refusing to think about it), positive focus (positively reappraising the event), behavioral-escape/avoidance (tension-relief and impulsive behaviors). Each of these was significantly related to positive changes, with the exception of distancing.

Furthermore, the percentage of each individual's total coping effort was calculated, with those using any one coping method at least 5% more than any other being labeled as using a primary coping style. Those participants using a primary coping

strategy were found to have made slightly more positive than negative changes post-diagnosis (Means= 37.2 and 29.8, respectively). However, those who had used a variety of coping strategies experienced many more positive than negative changes (Means 89.6 and 49.8, respectively). This suggests that multiple efforts at coping might result in a mix that is amenable to the formation of PTG.

#### Coping and Couples: Co-Experiencing Breast Cancer

The coping styles of husbands of breast cancer patients have mostly been examined in the context of how wives' perceptions of those styles interact with wives' coping and the resulting distress (Ben-Zur, 2001; Hannum, Giese-Davis, Harding, & Hatfield, 1991), adjustment levels, or marital satisfaction (Hannum et al., 1991; Ptacek, Ptacek, & Dodge, 1994) of each spouse. These studies, while providing limited information about personality variables associated with spousal coping, reiterate how strong an influence a marital partner's reactions can have on his or her spouse. Furthermore, they give insight into the types of strategies generally employed by spouses and how successful these strategies appear to be.

Most of these studies depict the reciprocal effect of husbands' and wives' coping styles on each other's reaction to the disease. Ben-Zur (2001) looked at spousal perceptions of each other's coping styles and the effects of such on psychological distress and psychosocial adjustment in 73 breast cancer patients and their husbands. Husbands who perceived their wives as using emotion focused strategies such as ventilation or avoidance strategies like disengagement were more likely to experience psychological distress. In contrast, husbands who perceived their wives as using active, problem-

focused coping approaches were less likely to be distressed and more likely to experience a positive adjustment.

In contrast, patients' distress and adjustment was based on the wives' self-reports of their own coping and not connected to their perceptions of their husbands' coping. The author suggests that these results stem from the patient's personal emotional involvement with her illness as opposed to her husband's attending to her reactions.

Ptacek, Ptacek, and Dodge (1994) paint a similar picture, with husbands whose wives employed more problem-focused coping and less avoidance experiencing greater marital satisfaction and higher levels of mental health and wives with husbands preferring problem-focused approaches over wishful thinking experiencing similar results. This study also captured the coping experience of husbands in greater detail. Of the five categories of coping explored (problem-focused, social support, self-blame, wishful thinking, and avoidance) it was found that husbands used fewer strategies and to a lesser extent than did their wives. Simultaneous use of strategies was also apparent, with significant associations found for husbands' usage of self-blame, wishful thinking and avoidance as well as problem-focused coping and avoidance. Furthermore, husbands seemed to employ more effective coping styles over time, with greater spans of time since treatment being associated with more problem-focused coping, less wishful thinking, and less avoidance.

### Coping and Optimism

Optimists seem more likely than pessimists to experience positive changes in response to stress. This may be due in large part to the coping styles they use. Optimists lean toward the usage of problem-focused, active coping styles, as opposed to excessively



emotion-focused or avoidance approaches (Carver & Scheier, 1986), even when faced with a cancer diagnosis (Friedman et al., 1992). These more active coping styles seem to result in a more focused and successful treatment of the problem.

Carver et al. (1993) conducted a longitudinal study that looked at how coping mediates the effect of optimism on distress in a sample of breast cancer patients. The patients, who had been diagnosed with early stage breast cancer, were assessed at four points in time (around the time of their surgery, 3 months postsurgery, 6 months postsurgery, and 12 months postsurgery) regarding the coping methods used and levels of distress experienced. Optimism, being dispositional, was also assessed only in the initial survey. The COPE (Carver et al., 1989) measure of coping was used: this measure captures a variety of coping styles including use of humor, suppression of attention to competing activities, denial, behavioral disengagement, use of religion, acceptance, social support, and active coping.

Findings from the study generally supported those of prior studies on optimism and coping, while reinforcing Tedeschi and Calhoun's (1995) description of the role of coping in promoting posttraumatic growth. Optimism was inversely related to distress at every point in time. This positive mindset was also linked positively to active coping during the pre-surgery period, acceptance at every point in time, and inversely to denial and suppression of other activities at 12 months. Coping styles were relied upon more heavily in the time immediately following diagnosis than later. Active coping, for example, was the most often utilized tactic during the pre-surgery time, but fell off sharply afterward, as did planning. Acceptance, a more emotion-focused state, did the opposite, slowly arcing upward over time by a marginally significant amount.

Thus the optimistic breast cancer patients in the sample seemed to react to their initial crisis with active approaches to coping with their diagnoses. As time went on, however, and the uncontrollable nature of the disease was processed (the rumination phase), coping began to turn to accepting the situation instead of trying to change it. These results point to a flexibility in coping possessed by optimists and an ability to adapt to new coping styles when the severity of the situation is beyond that of previous events and thus not amenable to previously helpful coping strategies.

Path analyses conducted with the coping reactions of acceptance, denial, and behavioral disengagement verified the role of these variables as mediators between dispositional optimism and distress, though only in the first couple of months following surgery. These findings fit well with the model of posttraumatic growth. Low significant correlations between optimism and posttraumatic growth suggest that optimism alone does not engender growth (Park, Cohen, & Murch, 1996; Tedeschi & Calhoun, 1995). The effects of an optimistic disposition on the coping styles one chooses or how one appraises a traumatic situation, combined with positive expectations of social support, seem likely to be connected to how much growth is experienced.

#### Coping, Optimism, and Posttraumatic Growth

The tendency for optimists to initially use problem focused, or active, coping styles fits well with theoretical conjectures about the emergence of posttraumatic growth. Although Tedeschi and Calhoun (1995) emphasize early emotion-focused coping and rumination in creating new schemas and personal change, they hypothesize that these processes occur in response to failure of primary control methods, or the usual coping methods. Thus, the aforementioned study's findings seem to indicate an automatic

inclination toward problem-solving after the crisis which, when found to be unhelpful, is abandoned in favor of more inner-focused coping. Further exploration of these connections seems necessary in creating a clearer picture of the process by which optimists' coping leads to PTG.

Additional evidence suggests that optimists may utilize fewer problem-focused approaches in response to uncontrollable events. In such circumstances, optimists are more likely to react with acceptance and resignation. In a study by Scheier, Weintraub, and Carver (1986) optimists were quicker than pessimists to give up on an anagram puzzle that was unsolvable but were also more likely to finish a subsequent solvable puzzle in an expedient manner. Optimists are also likely to cope by seeking social support and through positive reinterpretation of the situation (Scheier et. al, 1986), strategies which may improve relationship quality and allow the individual to perceive positive change in response to stress (Tedeschi & Calhoun, 1995). Thus optimists seem to possess flexibility with consideration to coping strategies which helps them to adapt to and grow from situations of varying intensity.

#### Overview of Marital Satisfaction

A breast cancer diagnosis can certainly have negative implications for a marriage. Northouse et al. (1998) conducted a longitudinal analysis comparing the marital functioning and distress of couples whose wives were diagnosed with breast cancer to that of couples with female partners receiving a benign diagnosis. Couples' reactions were assessed at three points in time: a few days after diagnosis, 60 days later, and one year post diagnosis. Those couples with a malignancy not only reported greater distress than those who did not receive such a report, but significantly greater decreases in marital

and family functioning over the course of the study. Furthermore, the scores of breast cancer patients and their husbands on measures of adjustment were highly correlated and remained stable over time. Thus both partners seem to experience a similar, longstanding negative impact upon their marital relationship.

Marital satisfaction can likewise be viewed as a strong predictor of adjustment and/or distress in spouses of breast cancer patients and is often depicted as exerting a protective influence over the couple as they experience cancer. Hoskins et al. (1996) identified marital support as an important predictor of both emotional and physical adjustment among the husbands of breast cancer patients. Husbands who did not receive adequate amounts of emotional support from this realm were more likely to experience worry, tension, and uneasiness throughout the 12 month period of the study.

Low marital quality may pose particular challenges for husbands considering the extent to which male partners derive social support from their spouses, as opposed to other sources. A study by Northouse (1988) examined the role of social support in predicting adjustment among breast cancer patients and their husbands. Spouses reported feeling supported by their marital and familial relationships (as did their wives), but they received significantly less support than their wives from friends, physicians, and nurses. Such additional support may not always be of utmost importance (network size was not related to distress in this study), yet the primary role of spousal support for husbands illustrates the power of the marital relationship in attaining a healthy level of adjustment.

Breast cancer may contribute to a shifting of roles in the marital relationship. According to marital role theory, spouses develop role expectations for each other within the marriage, resulting in feelings of equilibrium and positive marital adjustment (Frank,

Anderson, & Rubenstein, 1979). A wife's illness may inflict strain upon these roles, causing, for instance, a husband to take on more household responsibilities or take on a more nurturing role with the couple's children. A study by Lewis and Hammond (1996) suggests that pre-diagnosis marital satisfaction may have a direct effect on how a cancer patient's spouse adapts to changes in his role identity. An indirect effect was also found, with husbands' uncertainty about the disease outcome mediating the relationship between marital satisfaction and role problems. Thus, the effects of role strain upon a spouse may be decreased not only by satisfaction with marital quality, but a hopeful attitude regarding the health of one's partner.

Marital satisfaction is of particular interest when considering the long term effects of breast cancer on marital functioning. Although husbands have been found to return to pre-diagnosis levels of psychological functioning two to three years after their wives' mastectomies (Carter & Carter, 1993), their marital interactions may continue to be troubled. In a small study of breast cancer patients and their spouses, Carter and Carter (1993) found that relationships 2-3 year post-mastectomy showed extreme levels of cohesion, indicating enmeshment between spouses, as well as extreme adaptability, suggesting a fluidity of reactivity to stress. Thus, despite a return to "normality" by spouses as individuals, their marriages may not bounce back as quickly from the stress of diagnosis and treatment, resulting in relationships that are overly cohesive and alert to possible dangers.

One steady predictor of ongoing marital satisfaction after a breast cancer diagnosis seems to be level of satisfaction pre-diagnosis. In a literature review examining the impact of breast cancer on marital functioning (O'Mahoney & Carroll, 1997) a

diagnosis was described as having both positive and negative effects, depending on the pre-diagnosis state of the relationship. Couples in good relationships seem to experience an improvement in areas such as closeness and communication. These findings seem to support the positive development of one factor of posttraumatic growth, relating to others, in spouses exposed to the possibility of losing their wives to cancer.

### Marital Satisfaction and Illness Factors

Illness factors may also effect how a breast cancer patient's husband experiences the marriage. The extent to which a patient's physical functioning effects spousal marital satisfaction has been explored in several studies with varying results. In a study by Fang, Manne, and Pape (2001) it was hypothesized that spousal marital satisfaction would mediate the effect of functional impairment on spousal distress levels. To this end, cancer survivors and their spouses were assessed at three points in time and were asked to describe their marital satisfaction, functional impairment, and psychological distress. Contrary to expectations, marital quality was found to mediate physical functioning and distress at only one point (three months after the initial assessment).

The authors explained these results in light of the stable nature of the marital relationship, having found in their sample no significant changes in marital satisfaction overall. This lack of change is unusual, the opposite having been found in other studies (Northouse et al., 1998; O'Mahoney & Carroll, 1997). For the purposes of the present study, it should also be pointed out that this sample was comprised of both male and female spouses and no tests were done for potential gender differences.

Another study, investigating functional impairment and the negative moods and behaviors of spouses of cancer patients, offered a slightly different perspective. Manne,

Alfieri, Taylor, and Dougherty (1999) found that previously assessed marital satisfaction had a slight but significant moderating effect on the association between a cancer patient's decreased functioning and a spouse's tendency to behave critically or display negative moods toward that patient. These findings support the aforementioned depiction of marital satisfaction as a buffer, sustaining a relationship even when the cancer patient, and often her husband due to caregiving responsibilities, is no longer able to engage in the same activities as previously.

### Overview of Social Support

Social support has been found to be positively associated with adjustment in both the husbands of breast cancer patients (Northouse, 1988; Northouse, Dorris, & Charron-Moore, 1995) and the patients themselves (Hoskins, Baker, Sherman, & Bohlander, 1996; Peters-Golden 1982). Defined as the presence of individuals in one's life who are dependable and caring (Sarason, Levine, Basham, & Sarason, 1983), social support may appear in several forms to the spouse of a breast cancer survivor. Helgeson and Cohen (1996) mentioned three types of supportive interactions important to people dealing with cancer: emotional, informative, and instrumental social support. Emotional social support consists of verbal and nonverbal expression of care. Informative social support alludes to professional individuals who provide facts and advice about the illness, help with treatment decisions, and invoke feelings of optimism about the situation. Finally, instrumental support consists of help with chores and the daily functions of living.

Some forms of support seem more inherently helpful than others. A study by Dunkel-Schetter (1984) interviewed 79 cancer survivors and asked them which types of support were more helpful and from which sources they would prefer to receive this

support (spouse, family, friends, medical staff). Emotional and instrumental support were rated the most helpful and were welcome from any source. Informational support was only cited as helpful if it came from a doctor: otherwise, this type of support was unwanted.

Overall, social support has been described in the literature as serving a protective role for people dealing with significant life stressors. Several theorists have explored the idea of support acting as a buffer against stress. House (1981) provides a useful framework for explaining the relationship between social support and adjustment to illness. In this model, social support is one of many factors (including personal characteristics, appraisal of one's situation, and short-term responses to stress) that affect how health is impacted by stress. House theorizes that social support acts as a buffer through providing a helpful way of coping, allowing the stressed individual a different perception of the situation, and soothing negative reactivity to the stressor. Other explanations for this buffering effect include the provision of resources (instrumental support) to handle the demands of the situation and aid in managing one's emotional responses (Ell, 1984).

Cohen and Wills (1985) explored alternative possibilities regarding the role of social support as a protective presence against stress. In this study, the effects of social support were examined in order to determine whether social support is truly a buffer against stress or simply connected with positive outcomes regardless of the presence of a stressor. They found evidence for both ideas, suggesting that social support not only acts as a mediator, but has direct effects upon distress levels.



Another subject relevant to the study of social support revolves around the issue of how best to capture the construct. Self-report questionnaires assessing social support are likely to be contaminated by individual factors such as personality or mood at the time of measurement. Some researchers argue that support assessed in this way, termed *perceived support*, is useful in predicting well-being despite its subjectivity, suggesting that one's appraisal of available support is more important than its actuality (see meta-analysis by Leppin & Schwartz, 1990). Other researchers, attempting to reach a more objective assessment, have suggested investigating *received social support*, wherein, for example, subjects report the number of supportive experiences received within a certain time period, as done in a study by Barrera and Ainley (1983). Admittedly, this form of measurement, too, may be tainted by subjective bias due to inaccurate reporting.

Little research has focused on the extent to which husbands of women with breast cancer receive the social support they require. The most thorough examination of this subject matter is Northouse's (1988) evaluation of social support and adjustment in breast cancer patients and their spouses. The study was longitudinal and assessed the perceived social support of 50 couples directly after the wives' mastectomies and then again one month later. Several sources of social support were rated, including spouse, family member, friend, nurse and physician. The size of a participant's social network was also obtained by asking the husbands and wives to list all the people in their lives they could depend upon for support and understanding as they dealt with the repercussions of breast surgery.

As expected, husbands with higher levels of social support had fewer adjustment problems at both times. Furthermore, social support distinguished itself as an important

predictor, accounting for more variance in adjustment over time than did the demographic and medical variables in the study (such as husband's education, length of marriage, and various diagnostic and treatment variables concerning the wives' cancer). Social network size, conversely, was unrelated to adjustment, suggesting that number of social contacts is less important than the quality of one's support network.

Husbands experienced less overall support than their wives at both points in time. Despite reportedly high levels of support from wives and family members, husbands also experienced significantly less support than their wives from friends, nurses, and physicians. This comparative lack of attention to the support needs of husbands is also apparent in a study comparing the stability of social support for spouses of women diagnosed with a malignancy in the breast to that of husbands of women with benign breast disease (Northouse, Templin, Mood, & Oberst, 1998). Whereas the wives in this study experienced a gradual lessening in support over the 12 months of the study, husbands of women with breast cancer encountered a dramatic drop in support at the 60 day point, similar to that of couples in the benign group.

There are several possible explanations for why husbands of breast cancer survivors receive less social support and for a shorter length of time than do their wives. Due to socialization, men may feel pressured to appear independent and in control of their problems. Expression of emotion by males is often frowned upon in American society, making it difficult for men to reach out for help when facing traumatic circumstances (O'Neil, 1981). Thus social support may not be present for husbands of breast cancer survivors because they do not actively seek it or present themselves as self-sufficient. Husbands' needs may also be overlooked due to the role they are perceived as

fulfilling: that of caregiver or spouse, as opposed to cancer patient (Northouse, Templin, Mood, & Oberst, 1998). Breast cancer patients' physical suffering and time spent in treatment is likely to draw more support from professional medical staff than that which would be afforded to their partners.

### Social Support and Posttraumatic Growth

Social support has been hypothesized as being an important element for the development and sustainment of posttraumatic growth (Tedeschi & Calhoun, 1995). Likewise, one element of positive change in response to trauma is the enrichment of personal relationships. A qualitative study of 55 cancer patients, for example, found that changes in relationships due to trauma were significantly more positive than negative, with patients claiming to have become more sensitive to the feelings of others, more compassionate, and more conscientious about maintaining relationships since diagnosis (Collins, Taylor, & Skokan 1990).

However, present literature on the connection between social support and PTG is scarce and contradictory. One study that attempted to link PTG and social support, as measured by the Posttraumatic Growth Inventory and the Duke-UNC Functional Social Support Questionnaire, in breast cancer patients found the two to be unrelated (Cordova et al., 2001). Another study (Park, Cohen, & Murch, 1996), focused on stress-related growth in college students identified social support satisfaction as a significant predictor of positive growth. Furthermore, in a sample of 299 breast cancer patients, stress-related growth was identified as a significant predictor of disease disclosure, defined as the extent to which patients talked about their cancer with family, friends, and health-care

professionals (Henderson, B., Davison, K., Pennebaker, J., Gatchell, R., & Baum, A., 2002).

The present study hopes to further knowledge of the relationship between these two constructs, guided by Tedeschi & Calhoun's (1995) theory of posttraumatic growth.

### Summary

Only recently have researchers begun to explore the opportunities for positive growth that can occur as the result of traumatic events. One area of focus in this research has been the responses of individuals with cancer. Cancer patients have reported positive changes in the forms of improved personal relationships, increased appreciation of life, deeper spirituality, and stronger self (Collins, Taylor & Skokan, 1990; Cordova et al., 2001; Fromm, Andrykowski, & Hunt, 1996) in response to their diagnoses and treatment. Such benefits often coexist with negative responses to the situation and thus are not always related to adjustment outcomes (Cordova et al., 2001; Fromm, Andrykowski, & Hunt, 1996).

The development of posttraumatic growth in cancer patients has been linked to a limited number of predictors. Disease characteristics, such as time since diagnosis (Cordova et al.) and prognosis (Fromm, Andrykowski, & Hunt, 1996) have been connected with positive change, as have socioeconomic factors such as income, appraisal factors such as perceived severity of the illness, and interpersonal factors such as talking frequently about cancer with others (Cordova et al., 2001). PTG has also been linked with coping strategies, especially the use of multiple coping styles (Collins, Taylor, & Skokan, 1990). However, there is much missing in the literature regarding how social supports and personality factors foster or reinforce posttraumatic growth.

Even less is known about the positive effects of the cancer experience in husbands whose wives have breast cancer. Only one study has assessed PTG in husbands (Weiss, 2002), finding that they do indeed report positive change, a report that was corroborated by the observations of their wives. There is, however, no data regarding which personal and interpersonal variables contribute to growth in husbands of breast cancer survivors, nor how time interacts with these variables to affect the development of posttraumatic growth.

The present study aimed to contribute to the growing body of literature focused on posttraumatic growth. More specifically, it hoped to clarify how personality characteristics, coping styles, and social support promote the development of PTG in spouses of breast cancer survivors. Although the variables of optimism, self-mastery, coping, marital satisfaction, and social support have been linked to adjustment in various studies, none of these factors has been measured extensively with regard to PTG. Nor have the effects of these variables on the long-term positive growth of husbands of women with breast cancer been examined. The hypotheses and research questions described in the next chapter explored these topics.

### Chapter Three: Statement of the Problem

Few studies have focused on the unique experience of the breast cancer survivor's spouse and the extent to which they are able to garner personal or interpersonal growth from the experience. Yet husbands play a vital role in supporting their wives as they navigate the physical and emotional obstacles associated with breast cancer, often serving as the patients' primary source of social support. Furthermore, since couples seem to face the breast cancer experience as a unit, husbands are likely to experience many of the same fears and frustrations as their wives. They are also, perhaps, just as likely as the wives to undergo life-transforming changes that may be positive, as well as negative, in response to this stressful situation.

By examining which factors contribute to the emergence of positive growth in husbands of breast cancer survivors, the present study hoped to contribute to an increasing base of knowledge about posttraumatic growth. People who reap benefits from traumatic experiences are likely to report closer interpersonal relationships, increased appreciation of life, and greater personal strength, among other positive changes (Tedeschi & Calhoun, 1995). Through a better understanding of how, when, and under what circumstances these changes develop, the posttraumatic growth literature may help clinicians to address issues of psychological and interpersonal growth with spouses of cancer patients. This focus on growth and hiegieology, as opposed to an emphasis on maladjustment, supports the long-held values of the field of counseling psychology and its accentuation of positive mental health (Gelso and Fretz, 1992). Moreover, it supports the field of psychology's recent interest in emphasizing positive psychology (Seligman, 1998).

The purpose of the present study was to examine the relationship of posttraumatic growth to the psychological and social variables of coping, optimism, self-mastery, and marital satisfaction. These variables were examined in a sample of husbands of women who have been diagnosed with breast cancer. Statistical data, including a correlation matrix, as well as means and standard deviations are provided for each measure.

The study also provides descriptive data about this sample. Information regarding husbands' race, age, educational status, and length of marriage have been gathered. Details about the wives' cancer have also been examined, including length of illness and severity, as assessed through stage at diagnosis, surgery, treatment, presence or absence of recurrence, and perceived functional status.

### Hypotheses

The main hypotheses in this posttraumatic growth model involve: (a) the relation of dispositional optimism to posttraumatic growth (b) the relation of self-mastery to posttraumatic growth (c) the relation of coping styles to posttraumatic growth (d) the relation of marital satisfaction to posttraumatic growth (e) the relation of social support to posttraumatic growth and (f) the unique contribution of each of the above factors and time since diagnosis to the construct of posttraumatic growth.

**-Hypothesis 1:** Coping styles, including problem-focused, emotion-focused, and avoidance coping, will be related to posttraumatic growth in the following ways:

**-Hypothesis 1A:** Use of problem-solving coping strategies will be positively related to posttraumatic growth.

**-Hypothesis 1B:** Use of emotion-focused coping strategies will be positively related to posttraumatic growth.

**-Hypothesis 1C:** Use of avoidant coping strategies will be negatively related to posttraumatic growth.

**-Hypothesis 1D:** Use of multiple coping strategies will be positively related to posttraumatic growth.

According to the model of Posttraumatic Growth, trauma is met with an initial appraisal of the situation, followed by the use of coping styles that have been useful for past, less stressful events. If these fail, a second appraisal ensues, wherein the individual uses emotional coping to ruminate over the situation and contemplate his or her capacity to handle it. Once a better understanding of the self in reference to the trauma is attained, other more appropriate coping strategies may be utilized (Tedeschi & Calhoun, 1995).

Problem-solving coping has been identified as a prevalent coping strategy among husbands of breast cancer survivors. Although a great emphasis on problem-solving in an uncontrollable situation can result in distress (Astin et al.), several studies have attested to its usefulness in spouses of breast cancer patients (Collins, Taylor, and Skokan, 1990; Ptacek, Ptacek, & Dodge, 1994). Furthermore, problem-solving coping is often used by optimists, a construct which seems itself to be related to PTG (Tedeschi & Calhoun, 1995) Thus it seemed likely that this active approach to coping would be related to personal growth.

Emotion-focused coping has been designated as the coping strategy most closely related to the construct of rumination, a vital step in the process toward posttraumatic growth (Calhoun et al., 2000; Tedeschi & Calhoun, 1995). This type of coping also has been cited as more helpful than other approaches in uncontrollable situations (Strenz &



Auerbach, 1988). Therefore, coping in an emotional manner seemed likely to be related to the development of PTG.

Avoidant coping has been consistently correlated with various negative outcomes in the literature (Friedman et al, 1990; Carver & Scheier, 1993). By avoiding thinking about or dealing with a traumatic event, the individual is likely to bypass the rumination stage and thereby fail to grow from the experience. Therefore, avoidance was likely to be negatively associated with PTG.

Finally, the use of multiple modes of coping has been associated with achieving a greater number of positive changes after a traumatic incident than would be associated with using only one primary strategy (Collins, Taylor, & Skokan, 1990). The use of multiple modes of coping may reflect a thoughtful progression toward growth, as described by the PTG model, with individuals sampling various coping strategies throughout the appraisal process. Multiple modes of coping seemed likely to be connected to posttraumatic growth.

**Hypothesis 2:** Optimism will be positively related to posttraumatic growth.

Optimists possess many qualities cited as important to the emergence of PTG. First, they are adaptive copers, having an inclination toward active, problem-focused coping (Carver & Scheier, 1987), but reacting with acceptance to situations over which they do not have any control (Scheier, Weintraub, & Çarver, 1986). Second, individuals who think optimistically about intimate relationships are more likely to have greater love, trust, and stability in that relationship (Murray & Holmes, 1997); therefore, married optimists are more likely to be happy in that marriage, as well as being more satisfied with other intimate sources of social support. Finally, previous studies have reported a

significant correlation between posttraumatic growth and optimism (Park, Cohen, & Murch, 1996; Tedeschi & Calhoun, 1995). Due to these findings, optimism seemed likely to be related to posttraumatic growth.

**Hypothesis 3:** Self-mastery will have a curvilinear relationship with posttraumatic growth.

In their conceptualization of personality factors associated with posttraumatic growth, Tedeschi and Calhoun (1995) theorized that a sense of personal control would be connected to coping well with, and growing from, trauma. Individuals who feel able to impact their environment are likely to react to stressful situations proactively. This behavior often results in effective coping and a better understanding of the situation.

Strickland (1989) has pointed out that a lack of perceived control can lead to feelings that escape from pain is impossible, much like Seligman's (1975) theory of "learned helplessness." The literature, however, also cautions against the possible dangers of extreme perceptions of self-mastery. Doggedly pursuing personal control of a situation that is beyond human control can result in intense frustration. As Lightsey (1997) found in his study on stress-buffers and dysphoria, high levels of self-mastery can actually worsen a person's reaction to a negative event. Astin et al.'s (1999) study of breast cancer patients seems to suggest that an average amount of mastery (possessing a balanced proportion of acceptance and assertiveness toward one's disease and treatment decisions) is most psychologically healthy, with all other extremes predicting maladjustment. Thus it seemed likely that a curvilinear relationship would exist between self-mastery and the development of positive change after trauma.

**Hypothesis 4:** Marital satisfaction will be positively related to posttraumatic growth.

The marriage of a couple with breast cancer will encounter many challenges: surgical and treatment decisions, balancing the demands of family life and work as a wife recovers from surgery or struggles with the effects of treatment, the effects of illness and disfigurement on the sexual relationship. Yet, some marriages seem to benefit from the experience. In a review of studies on marital satisfaction and breast cancer, for instance, O'Mahoney and Carroll (1997) found overwhelming evidence that levels of marital satisfaction 1 to 2 years after diagnosis in couples fighting breast cancer was equal to, or above, those of the normal population.

Having a strong relationship prior to serious illness seems to indicate that a couple may remain satisfied with the marriage or grow even closer. The breast cancer literature has found evidence that couples with high levels of marital satisfaction prior to diagnosis are likely to exhibit significantly higher levels of marital satisfaction afterward, including greater support and involvement from their partners, than couples with lower pre-morbid levels of satisfaction (Lightman et al, 1987). Relationships functioning at a lower level pre-diagnosis, conversely, are likely to worsen under the additional strain of the cancer experience (Coyne, Wortman, & Lehman, 1988). Therefore, it seemed likely that marital satisfaction would be associated with greater PTG.

**Hypothesis 5:** Social support will be positively related to posttraumatic growth.

Husbands of breast cancer survivors are often expected to provide a strong, steady presence for their wives as the couple copes with the disease and its effects. Since men are often dependent upon their wives, as opposed to friends or relatives, for emotional support, having to hide their fears in order to protect their partners is likely to add stress. Thus having a dependable social support network with whom they can share feelings

seems necessary for adjustment to the cancer experience. Research supports this idea (Northouse, 1988; Northouse et al., 1998).

Social support is also a valuable piece of the posttraumatic growth process. The social network both provides care and nurturance for the traumatized individual as s/he struggles with the situation and benefits from increased closeness as growth ensues. Thus, social support should both contribute to and profit from PTG. Some studies have indicated that such a link exists (Henderson, B., Davison, K., Pennebaker, J., Gatchell, R., & Baum, A., 2002; Park, Murch, & Cohen, 1996) although another has found no relation (Cordova et al, 2001). The present study predicted that in a sample of husbands, a notably undersupported population compared to their wives, having someone who provides emotional support would be positively related to PTG.

**Hypothesis 6:** Optimism, self-mastery, coping, marital satisfaction, social support and each of the above variables' interactions with time since diagnosis will contribute a unique amount of variance to posttraumatic growth.

Each of the variables described above is believed to create conditions wherein posttraumatic growth is likely to occur, thus being described as predictors of positive growth. However, little is known about how these factors may contribute to the persistence, elevation, or diminishment of PTG over time. For instance, research has suggested that coping styles may change in an uncontrollable situation, with active coping being gradually replaced by acceptance as time since diagnosis increases (Carver et al, 1993). Thus, might problem-focused coping have a differential effect on PTG depending on when it is used? Likewise, might having a good social support system in the days immediately following diagnosis be more important to the development of

posttraumatic growth than feeling supported years later? Husbands of breast cancer patients have been found to experience differing levels of distress at different points in time (Hoskins et al, 1996). Therefore, it seemed likely that levels of PTG would also be affected by time and its interaction with other predictor variables.

### Additional Questions

Several questions were explored in the present study.

#### Questions about wife's cancer diagnosis

- (1) What is the relationship between stage of wife's cancer (where stages range from 0-4) and posttraumatic growth?
- (2) What is the relationship between recurrence of cancer and posttraumatic growth?
- (3) What is the relationship between partner's (wife's) functional status and posttraumatic growth?
- (4) What is the relationship between partner's (wife's) functional status and marital satisfaction?
- (5) What is the relationship between length of time passed since partner's/spouse's initial diagnosis and posttraumatic growth?

#### Questions about race/ethnicity, education, SES.

- (1) Will race/ethnicity be related to posttraumatic growth?
- (2) Will education be related to posttraumatic growth?

## Chapter 4: Methodology

### Research Design

This study used a correlational design to describe the links between several psychological and relational variables and the emergence of posttraumatic growth in husbands of breast cancer survivors. The predictor variables of interest included (a) optimism (b) self mastery (c) coping styles (d) marital quality and (e) social support while posttraumatic growth was the sole criterion variable. These constructs were assessed via self-report measures administered in a naturalistic setting. Wampold and Freund's (1987) article on power analysis was consulted in order to determine the sample needed for a medium effect size, taking into account the number of predictors being entered into the regression. While a minimum of 100 participants was found to be desirable, due to recruitment problems only 97 participants were available for the final analyses.

### Participants

The sample for this study consisted of 97 male spouses of breast cancer survivors whose races/ethnicities were recorded as 82.5% White/European American, 4.1% Foreign National, 4.1% Black American, 2.1% Asian American, 4.1% Mixed Race, and 1% Native American. The mean age of the participants was 51.5 years ( $SD = 10.33$ ).

Participants were recruited via several methods including the use of a snowball method over email and through flyers distributed or posted at breast cancer support groups, wellness centers, hospitals, and rehabilitation centers (see Appendices A,B, & C).

## Measures

The online questionnaire, as well as the hard copies distributed by mail, contained a demographics questionnaire, instruments assessing optimism, self-mastery, and coping styles, as well as measures of marital satisfaction, social support, and posttraumatic growth. Three open-ended questions, written by the researcher, were also included.

Demographic questionnaire Demographic information was collected using a questionnaire designed for this study (see Appendix D). Participants were asked to give information about their age, gender, race/ethnicity, education level, health, length of marriage, occupation, and working status. The sample was also asked for information about their wives including their age, occupation, working status, length of time since breast cancer diagnosis, stage of cancer, types of surgery and treatment undergone, current functioning, and presence or absence of recurrence.

Open-ended questions Three open-ended questions were written by the researcher in order to acquire qualitative data about topics of interest. These questions inquired into changes in the participant's health, marriage, and self-perception (see Appendix E).

## Predictor Variables

Revised Life Orientation Test Optimism was measured using the Revised Life Orientation Test (LOT-R; Scheier, Carver, & Bridges, 1994) (See Appendix F). The LOT-R was developed from the original LOT in order to create a measure that more accurately depicts the optimism construct, removing additional effects of similar variables such as neuroticism. The LOT-R consists of 10 items (6 of which are used to measure optimism) which assess the construct via a 5-point, Likert-type scale. Total

scores can range from 0 to 30 and were determined by recoding three negatively worded items and then summing the responses to the 6 items.

Internal consistency in the LOT-R has been noted as acceptable, with Cronbach's alpha ranging from .75 to .78 (Scheier, Carver, & Bridges, 1994; Harju & Bolen, 1998). The measure's scores have also been found to be stable over time, displaying a test-retest reliability alpha of .79 (Scheier & Carver, 1985). Convergent and divergent validity has been established by correlating the LOT-R with neuroticism as measured by the Guilford-Zimmerman Temperament Survey (Guilford, Zimmerman, & Guilford, 1976;  $r = -.43$ ) and the Eysenck Personality Questionnaire (Eysenck, 1958;  $r = -.36$ ) and self mastery as measured by the Self-Mastery Scale (Pearlin & Schooler, 1978;  $r=0.48$ ). Based on data obtained from the present sample, a coefficient alpha of .84 was found.

The LOT-R's predecessor, the LOT, has been used in prior studies of both cancer patients (Carver et al., 1993; Friedman et al, 1992) and their caregivers (Given, Stommel, Given, Osuch, Kurtz & Kurtz, 1993; Kurtz, Kurtz, Given, & Given, 1995).

The Self-Mastery Scale Self-mastery, or amount of perceived control over one's environment, was measured using the Self-Mastery Scale (Pearlin & Schooler, 1978) (see Appendix G). The measure consists of seven items on a 5-point, Likert-type scale, five of which are negatively phrased. Scores can range from 0-35 and were ascertained by recoding 2 items and then summing the responses to the total number of items. The SMS has been found to have satisfactory psychometric properties (Pearlin & Schooler, 1978) and an internal consistency reliability alpha of .77 (Marshall and Lang, 1990; Lightsey, 1997). The coefficient alpha from the present sample was .75.



Ways of Coping Questionnaire, A Revised Version Coping style was assessed using a revised version of the Ways of Coping questionnaire (Folkman and Lazarus, 1985) (see Appendix H). The Ways of Coping Questionnaire (WOCQ) examines the coping strategies employed by a person to deal with a stressful situation. This questionnaire has been through a variety of revisions and past researchers have created shorter versions based on items relevant to the sample being surveyed.

The shortened version to be used in this study is composed of the 30 items reported in Scherer et al.'s (1988) study in their evaluation of factor structure congruency with Folkman and Lazarus' results. Items are on a Likert scale which ranges from 0 (does not apply or do not use) to 3 (used a great deal). Each participant in this study was asked to describe the extent to which he used each strategy in dealing with his wife's breast cancer diagnosis and treatment.

A factor analysis was run in order to identify subscales within this sample's revised WOC scores. Six components emerged and were named Escaping, Avoiding, Problem Solving, New Directions, Reframing, and Seeking Support. These subscales showed coefficient alphas of: .79 (Escaping), .70 (Avoiding), .68 (Problem Solving), .65 (New Directions), .64 (Reframing), and .63 (Seeking Support) (see Results section for descriptions of subscales). Participants who scored above the median score on two or more subscales were identified as using multiple coping styles, as opposed to favoring only one.

Due to varying responses to stress or trauma, Folkman and Lazarus (1988) have suggested that the reliability of the WOCQ be assessed via examination of the internal consistency of its subscales. The authors of the WOCQ have found internal reliability of

past scales to range from .61 to .79 (Folkman et. al, 1986). Thus, the results of this data seem consistent with those of past research, suggesting adequate reliability for the measure. Folkman and Lazarus (1988) have also held that WOCQ's validity has been determined by the theoretically consistent results of factor analysis on the measure. This study's data produced factors that were similar to previously described coping subscales (Dukes Holland & Holahan, 2003; Gottlieb & Wolfe, 2002; Matson, 1995).

Quality of Marriage Index Marital quality was measured using the Quality of Marriage Index (Norton, 1983)(See Appendix I). The QMI is a global measurement of marital satisfaction, the usefulness of which has been compared favorably with more specific marital measures such as the Dyadic Adjustment Scale (in work by Heyman, Sayers, & Bellack, 1994). It consists of 6 items, 5 of which are rated on a 6-point, Likert-type scale and 1 of which is rated along a 10 point, Likert-type scale. Scores can range from 6-40 and were found by summing the responses to all items. Due to participant confusion over one item (#6, which was scored differently than the others), as well as an undiscovered error in the wording of the questionnaire (on question #1) only 4 items were used in the final analysis. As advised by Norton (1983), the QMI data was examined for skewness; however, the data was not found to be sufficiently skewed to warrant transformation.

Past research has found the QMI to have good convergent and discriminant validity, as well as high internal reliability (coefficient alpha .97; Heyman, Sayers, & Bellack, 1994). Based on data obtained from the current sample, a coefficient alpha of .98 was obtained.

Social Provisions Scale Social support was examined through the Social Provisions Scale (Cutrona and Russell, 1987) (see Appendix J). The SPS consists of 24 items that are rated on a 4-point, Likert-type scale. Scores can range from 24-96 and are found by recoding the 11 negatively worded items and then summing all responses.

Russell and Cutrona (1988) established a solid six-factor structure through a confirmatory factor analysis, with a goodness of fit index of .885. The measure has good convergent validity, which was found by correlating it with other social support measures; conversely, divergent validity was established through low correlations of the measure with unrelated constructs such as social desirability, depression, introversion-extraversion, and neuroticism (Russell & Cutrona, 1988). Finally, strong internal consistency (alpha= .76 to .74) and test-retest reliability (.37 to .66 for subscales, .59 for the entire scale) have been established for the SPS (Russell & Cutrona, 1984). In the current sample, a coefficient alpha of .92 was found.

### **Criterion Variable**

Post Traumatic Growth Inventory Posttraumatic growth was assessed using the Post Traumatic Growth Inventory (Tedeschi and Calhoun, 1995;1996) (see Appendix K). The PTGI has 21 items, ranging from 1-6 on a Likert-type scale, with 0 meaning “I did not experience this change as a result of my crisis” and 5 meaning “I experienced this change to a very great deal as a result of my crisis.” Items were geared toward the participants’ response to their wives’ breast cancer, instead of “crisis.” Scores can range from 21-126 and were computed by summing all responses.

The PTGI has good reliability, internal consistency (.90) and construct validity (Tedechi & Calhoun, 1996). The total-score alpha for a sample of husbands of breast

cancer patients was found to be .94 in a past study (Weiss, 2002). Internal consistency reliability has been strong for the whole scale (alpha of .91; Snape, 1997) as well as the five factors (.67-.85; Tedeschi & Calhoun, 1996). Test-retest reliability is also strong at .81 (Snape, 1997). The reliability analysis for the present data came up with an alpha coefficient of .96.

### Procedure

In order to be considered eligible for the study, participants had to be male and currently married to a breast cancer survivor. The term “survivor” was defined loosely as anyone who had received a diagnosis of breast cancer within her lifetime. Initial attempts to contact possible participants included the spread of informative emails via the “snowball method.” These informative emails (see Appendix A and B) contained a link to the study’s website as well as basic information about the study’s goals, participant qualifications, and the researcher’s contact information.

Due to a low response rate, alternative methods of reaching participants were soon employed (see Appendix C). Support groups, wellness centers, hospitals, rehabilitation centers, and various cancer organizations were contacted, either by phone or email, by the researcher and asked to help by either (a) posting a flyer about the study or (b) forwarding the informative email to possible participants.

Most participants indicated interest in the study by submitting their responses on the online survey. Others contacted the researcher through the phone or email to request hard copies of the survey. No contact information was received unless participants chose to separately submit this information and these names and emails were kept apart from

the rest of the data. Due to the varied conditions under which participants were introduced to the study, it was impossible to assess a response rate.

## Chapter 5: Results

### Descriptive Statistics

Means and standard deviations for the six measures used (including the six subscales of the Ways of Coping Measure, to be described later) are listed in Table 1, as are the reliabilities of each scale; bivariate correlations of all scales are noted in Table 2. Participants were asked to provide descriptive information about themselves and their wives. The majority of spouses were Caucasian (80% ; see Table 3) with a mean age of 51.5 years ( $SD = 10.33$ ). Many participants were highly educated with 62% having graduated from a four year college and over half of these attaining an additional degree (see Table 3).

Participants also answered three open-ended questions related to changes in health, self-perception, and the marital relationship that had occurred since their wives' diagnoses. Qualitative data pertaining to these questions was examined and placed into categories by the researcher, a doctoral level psychology student, and a licensed psychologist. These categories and their affiliated responses were then further examined and condensed by a team of three trained undergraduate students. Interrater reliability for each question was 95% (changes in health), 93% (changes in self-perception), and 91% (changes in marital relationship). The principal researcher made final decisions about contested items after receiving feedback from the three undergraduate raters.

Responses to the open-ended question pertaining to changes in participants' health was first condensed into nine categories by the researcher, doctoral student, and licensed psychologist and later further condensed by the three raters to eight categories. Of the 92 qualitative responses given, 45.4% participants reported no change or

*Table 1**Means, Standard Deviations, Ranges, and Reliabilities of Variables (N=97)*

<b>Scale/Measure</b>	<b>Scale Range</b>	<b>Means and Standard Deviations</b>	<b>Scale Reliabilities</b>
Posttraumatic Growth	0-5	71.28 (24.70)	.96
Coping Styles:			
Escaping	0-4	27.71 (5.60)	.79
Avoiding	0-4	11.06 (3.15)	.74
Problem Solving	0-4	14.28 (2.97)	.65
New Directions	0-4	14.55 (3.30)	.65
Reframing	0-4	14.38 (2.82)	.64
Seeking Support	0-4	8.91 (2.18)	.63
Optimism	1-5	13.87 (4.27)	.84
Self-Mastery	1-5	25.44 (4.70)	.75
Marital Satisfaction	1-6	8.70 (7.17)	.98
Social Support	1-4	41.05 (9.74)	.92

Table 2

*Bivariate Correlations of Scales (N=97)*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Self Mastery	1.00										
2. Escaping	-0.12	1.00									
3. Avoiding	-0.14	0.20	1.00								
4. Problem Solving	0.31**	0.05	-0.22*	1.00							
5. New Directions	0.13	0.11	-0.13	0.51**	1.00						
6. Reframing	0.25*	0.24*	0.11	0.28**	0.32**	1.00					
7. Seeking Support	-0.02	0.11	-0.03	0.22*	0.30**	0.11	1.00				
8. Optimism	0.58**	-0.16	-0.30**	0.27**	0.14	0.17	-0.00	1.00			
9. Social Support	0.44**	-0.06	-0.35**	0.33**	0.17	0.22*	0.33**	0.37**	1.00		
10. Marital Satisfaction	0.32**	-0.06	-0.32**	0.25*	0.08	0.01	-0.05	0.23*	0.38**	1.00	
11. Posttraumatic Growth	0.06	0.17	-0.25*	0.27**	0.50**	0.21*	0.21*	0.22*	0.23*	0.15	1.00

Note: \*\*  $P < 0.01$ ; \*  $p < 0.05$ .



Table 3

*Demographic characteristics of participants in the sample (N=97)*

<i>Characteristics</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Race/Ethnicity:</i>		
Asian American/ Pacific Islander	2	2.1
White/ Euro American	80	82.5
Black/African American	4	4.1
Native American	1	1.0
Foreign National	4	4.1
Mixed Race	4	4.1
<i>Education:</i>		
Middle School/ Junior High school	1	1.0
High school	12	12.4
Technical School	7	7.2
2-Year College	7	7.2
Some 4-Year College	9	9.3
4-Year College Degree	17	17.5
Some graduate school	9	9.3
Master's Degree	23	23.7
Doctorate or Professional Degree	11	11.3
<i>Work Status:</i>		
Working Full Time	75	77.3
Working Part Time	9	9.3
Retired	9	9.3
Currently Not Employed	2	2.1
Student	2	2.1

continued good health since their wives' diagnoses, 20.6% reported problems in their health that were unrelated to their wives' diagnoses, 14.4% felt that their health had in some way declined because of the diagnosis, 14.4% were suffering from stress, anxiety, or physical symptoms related to the diagnosis, 10.3% felt increasingly tired and/or were having trouble sleeping, 8.2% stated that they were depressed, and 8.2% reported having gained or lost weight since the diagnosis. Another 8.2% felt that their health had actually improved since their wives' diagnoses of breast cancer. Some of these men described feeling inspired by their wives new, healthy habits, while others felt more compelled to take care of themselves so that they would be better able to take care of others if something happened to their wives.

Husbands were also asked whether or not their perceptions of themselves had at all changed due to direct or indirect influences of their wives' diagnoses and treatments. Responses to this question were first placed into eleven categories by the researcher, doctoral student, and licensed psychologist and later condensed by the three raters to ten.

Of the 88 men who responded to the question about changes in self-perception, 22% reported no change in self perception, 22% saw themselves as more of a caregiver and/or making more of an effort to put their wives' needs before their own, 18% had taken on more household duties than previously, 18% felt that they had personally gained in some way (becoming stronger, more compassionate, etc.) from the experience, 16% had experienced negative effects on their health and well-being, 11% said that they had learned to appreciate life and living in the moment, 10% felt increased awareness of their own and their wives' mortality, 8% felt that they placed less focus on their careers, 8% reported being better husbands and thereby increasing marital closeness, and 5% felt that

Table 4

*Demographic/ disease characteristics of wives and their cancers (N=97)*

<i>Characteristic</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Work Status:</i>		
Working Full Time	40	41.2
Working Part Time	25	25.8
Retired	15	15.5
Housewife/Mother	9	9.3
Currently Not Working	5	5.2
<i>Stage of Cancer (when diagnosed):</i>		
<i>Stage</i>	<i>Frequency</i>	<i>Percentage</i>
Stage 0 (DCIS)	5	5.2
Stage 1	37	38.1
Stage 2	24	24.7
Stage 3	13	13.4
Stage 4	7	7.2
<i>Current Stage:</i>		
<i>Stage:</i>	<i>Frequency</i>	<i>Percentage</i>
Stage 0	5	5.2
Stage 1	32	33
Stage 2	26	26.8
Stage 3	15	15.5
Stage 4	14	14.4

*Table 4 Continued**Surgeries/Treatments:*

<i>Surgery/Treatment</i>	<i>Frequency</i>	<i>Percentage</i>
Lumpectomy or BCS	49	50.5
Mastectomy	56	57.7
Additional Surgeries	8	8.2
Chemotherapy	67	69.1
Radiation	62	63.9
Hormone	50	51.3
Alternative	10	10.3
Other treatments	13	13.4

*Ongoing Treatments:*

<i>Treatment:</i>	<i>Frequency</i>	<i>Percentage</i>
Hormone Therapy	28	28.9
Chemotherapy or Radiation	15	15.5
Other or Unspecified	11	11.3
Medication for metastatic cancer	10	10.3

*Current Physical Functioning of Wives*

<i>Status:</i>	<i>Frequency</i>	<i>Percentage</i>
Better than before diagnosis	9	9.3%
Same as before diagnosis	28	28.9%
Slightly worse than before diagnosis	37	38.1%
Significantly worse than before diagnosis	19	19.6%
Very poorly	3	3.1%

the intimacy in their marriages had declined.

Information pertaining to participants' wives was also obtained, including age, work status and health status. The average age of the breast cancer survivors in this study was 49.84 (SD= 9.94). 67% of the participants' wives were working outside of the home (see Table 4). An average of 46.09 months (SD= 49.85), or approximately 3.8 years, had passed since the survivors' first diagnoses of breast cancer. Most survivors had been initially diagnosed with either Stage 1 or 2 breast cancer (see Table 4). 21.3% of participants' wives had since experienced a recurrence of the cancer at an average of 31.67 (SD= 42.97) months, or 2.6 years, ago. Through additional information provided about the wives' status, their current stages of breast cancer were estimated in order to ascertain whether or not any of their cancers had become more advanced. Most women's cancers had not progressed past Stage 2 (see Table 4).

The participants' wives had experienced a variety of surgeries and treatments in response to their diagnoses. About half had undergone lumpectomies with slightly more undergoing mastectomies (see Table 4). Other surgeries mentioned include breast reconstruction, additional surgeries to remove secondary cancer sites, lymph node removal, oophorectomy, and hysterectomy. A large number (70%) of the wives had been treated with chemotherapy, with radiation and hormone therapy being the second and third most frequent treatments (see Table 4). Other treatments mentioned include participation in clinical trials, physiotherapy, gamma knife, radioactive plaque and holistic therapies such as jin shinjitsu. Over half of patients were still in treatment (see Table 4 for list of present therapies). Most husbands reported that their wives' physical functioning was slightly worse than, or the same as, before the diagnosis (see Table 4).

Participants had been married to their wives for an average of 21.86 years (SD=12.74). Pertaining to the quality of these relationships, 56.7% of participants said their relationships with their wives had gotten better since diagnosis, 9.3% said they had gotten worse, and 30.9% said they had stayed the same. Additional qualitative data asked to what participants attributed any changes in their relationship. This data was initially coded into eight categories and later condensed into seven by the team of raters. Of the 66 responses, 41% reported increased closeness and team work, 21% a new perspective on life due to a realization of their own and/or their wives' mortality, 21% increased stress, 20% a more positive view of their wives, 18% positive effects of the situation on the life of the husband, and 6% their wives' lack of interest in intimacy. 8% reported no change.

### Primary Analyses

The current study's hypotheses were examined using an alpha level of 0.05 in order to maximize power in this sample (N=97).

*Hypothesis 1: Coping styles, including problem-focused, emotion-focused, and avoidance coping, will be related to posttraumatic growth.*

Prior to factor analysis, the Kaiser-Meyer-Olkin test was performed in order to determine sampling adequacy among the coping scale's items. The Kaiser-Meyer-Olkin measure was .69 and higher than the .60 necessary in order to use a factor model (Bryant & Yarnold, 1995). Barlett's test of sphericity was also performed and found to be significant at the .000 level, indicating that the sample size was large enough to evaluate the factor structure (Bryant & Yarnold, 1995).

Principal factors extraction with varimax rotation was then performed on the 30

Table 5

*Ways of Coping (a revised version) Factors' Loadings (N=97)*

<i>Items</i>	<i>F1</i>	<i>F2</i>	<i>F3</i>	<i>F4</i>	<i>F5</i>	<i>F6</i>	<i>h<sup>2</sup></i>
26. I daydreamed or imagined a better time.	<b>.79</b>	.20	.00	.00	.00	.00	.668
25. Wished that I could change what happened or how I felt.	<b>.77</b>	.00	.00	.00	.00	.00	.639
27. Wished that the situation would go away or somehow be over with	<b>.74</b>	.00	.00	.00	.00	.00	.596
28. Had fantasies or wished about how things might turn out.	<b>.64</b>	.23	.38	.00	.00	.00	.659
4. Hoped a miracle would happen.	<b>.64</b>	.00	.00	.00	.00	.00	.499
1. I went over the situation or event again and again in my mind to try and understand it.	<b>.48</b>	.00	.00	.37	.00	.00	.423
2. I felt that time would make a difference and the only thing to do was wait.	<b>.45</b>	.00	-.30	.00	.30	.00	.401
10. Tried to forget the whole thing.	.00	<b>.78</b>	.00	.00	.00	.00	.651
6. I went on as if nothing had happened.	.00	<b>.73</b>	.00	.00	.00	.00	.594
8. Tried to seek out sympathy.	.00	<b>.65</b>	.00	.00	.00	.27	.546
12. Decided to wait and see what would happen.	.00	<b>.60</b>	.00	-.28	.42	.00	.662
5. Went along with fate; sometimes I just have bad luck.	.34	<b>.51</b>	-.24	.00	.00	.00	.491
21. Thought about what could be done.	.00	-.40	<b>.65</b>	.00	.00	.00	.625
13. Tried to come up with a plan of action.	.00	-.32	<b>.64</b>	.23	.00	.00	.585
22. Considered different solutions.	.00	.00	<b>.62</b>	.36	.00	.00	.533
20. Drew of past experience.	-.20	.00	<b>.58</b>	.00	.26	.00	.507
29. I went over in my mind what I would say or do.	.43	.00	.44	.00	.00	.00	.582

*Table 5 Continued*

<i>Items</i>	<i>F1</i>	<i>F2</i>	<i>F3</i>	<i>F4</i>	<i>F5</i>	<i>F6</i>	<i>h<sup>2</sup></i>
3. Talked to someone to find out more about the situation.	.00	-.40	.43	.00	.00	.00	.418
9. Tried to do something creative.	.00	.00	.00	<b>.66</b>	.21	.00	.535
18. Decided to try to change something.	.00	.00	.38	<b>.62</b>	-.35	.00	.671
11. Tried to make changes in a good way.	.00	.00	.29	<b>.59</b>	.00	.00	.571
16. Decided to rediscover life.	.00	.00	.00	<b>.54</b>	.00	.00	.370
14. Did not go with my first hunch.	.00	.38	.29	<b>.46</b>	.00	.00	.485
23. Tried to accept the situation.	.00	.00	.00	.00	<b>.78</b>	.00	.655
24. Tried to keep my feelings from interfering with other things too much	.00	.00	.25	.00	<b>.66</b>	.00	.575
7. Looked for the silver lining, so to speak; tried to look for the bright side of things.	.00	.00	.00	.27	<b>.57</b>	.00	.467
30. Tried to see other perspectives.	.00	.00	.30	.37	<b>.50</b>	.00	.528
19. Talked to someone about how I was feeling.	.00	.00	.00	.00	.00	<b>.85</b>	.759
17. Asked a friend what s/he thought.	.00	.00	.36	.00	.00	<b>.70</b>	.661
15. Tried to let feelings out.	.00	.00	.00	.35	.00	<b>.60</b>	.525
Eigenvalues:	4.85	4.33	2.36	2.07	1.67	1.55	
% Variance:	16.17	14.44	7.88	6.89	5.58	5.16	

Note: Factor coefficients greater than .45 are in bold type,  $h^2$  = communality.



items from the revised version of the Ways of Coping scale. Six factors were extracted from the sample; each of these factors was well defined by the items therein.

Communality values for each factor were generally high and a cutoff of .45 was used for inclusion of an item in interpretation of a factor. Two items, “3. Talked to someone to find out more about the situation” and “29. I went over in my mind what I would say or do,” did not load higher than .45 on any factor and were therefore deleted from further analyses. A reliability analysis of each factor showed good to adequate internal consistency, depending on the number of items in a particular factor (see Table 1). Due to the explanatory adequacy of these six factors and the fact that oblique rotation showed low to moderate correlation among the factors, orthogonal rotation was retained as a satisfactory means of analysis.

Loadings of variables on the six factors are shown in Table 5. Variables were grouped by factor and ordered according to size of loading. Interpretation of the items loading on each factor resulted in the following descriptions. Factor 1, named the Escaping Scale, contained seven items mentioning coping techniques such as daydreaming about a miraculous change in the situation and had an eigenvalue of 4.85. Factor 2, the Avoiding Scale, contained five items centered around trying to forget about the disease or passively wait and see what would happen and has an eigenvalue of 4.33. Factor 3, the Problem Solving Scale, contained four items that described actively dealing with or planning to handle, the problem and had an eigenvalue of 2.36. Factor 4, the New Directions Scale, contained five items that detailed making new or creative changes in one’s life and had an eigenvalue of 2.07. Factor 5, the Reframing Scale, contained four items dealing with acceptance or adopting a new perspective of the situation and had an

eigenvalue of 1.67. Finally, the three items of Factor 6, the Seeking Support scale described sharing one's feelings with another person and had an eigenvalue of 1.55.

A recent study (Hoffman, Holmes, Mount, Singley, Spiegel, Costar, & Kivlighan 2004) using the revised version of the Ways of Coping Scale on a population of subjects who had undergone a traumatic event (e.g. witnessing, firsthand, the terrorist attacks of 9/11) found a four-factor model with scales similar to those found in the present study. One scale in that study "Creative new perspectives or actions" contained most of the items (with the exceptions of items 20 and 14) found in both the New Directions and Problem Solving scales, "Wishful thinking or fantasies" contained all but one (item 29) of the Escaping scale, "Passive acceptance" contained some items from both the Avoiding and Reframing scales (items 6, 7, 12, 23, and 24), and "Sought support" contained all the items in the Seeking Support scale. The similarity in these scales suggest similarity in emergent coping styles among participants who have experienced a traumatic event.

*Hypothesis 1A: Use of problem-solving coping strategies will be positively related to posttraumatic growth.* The two coping styles identified as problem-solving were the Problem-Solving style and the New Directions style. The relationship between these two factors of the revised Ways of Coping scale (Folkman & Lazarus, 1985) and the total score on the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1995) was explored using Pearson's Zero-Order Correlational Analysis. Both Problem-Solving coping ( $r=0.27$ ;  $p < 0.05$ ) and New Directions ( $r = 0.50$ ;  $p < 0.01$ ) were positively correlated with posttraumatic growth.

*Hypothesis 1B: Use of emotion-focused coping strategies will be positively related to posttraumatic growth.* The coping styles that were identified as emotion-focused were Seeking Support and Reframing. The relationship between these factors of the revised Ways of Coping scale (Lazarus & Folkman, 1985) and the total score on the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1995) were explored using Pearson's Zero-Order Correlational Analysis. A positive relationship ( $r= 0.20$ ;  $p < 0.05$ ) was found between Seeking Support and posttraumatic growth. A positive relationship was also found between Reframing and PTG ( $r=0.21$ ,  $p < 0.05$ ).

*Hypothesis 1C: Use of avoidant coping strategies will be negatively related to posttraumatic growth.* The coping styles found to be representative of avoidant coping were Avoiding and Escaping. The relationship between these factors of the revised Ways of Coping scale (Lazarus & Folkman, 1985) and the total score on the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1995) were explored using Pearson's Zero-Order Correlational Analysis. Avoiding was negatively correlated with posttraumatic growth ( $r= - 0.25$ ;  $p < 0.05$ ). Escaping was not significantly related to PTG.

*Hypothesis 1D: Use of multiple coping strategies will be positively related to posttraumatic growth.* Participants were identified as using multiple coping styles if they scored above the median score on two or more of the four positive coping styles (New Directions, Reframing, Problem-Solving, and Seeking Support). The Avoiding and Escaping subscales were not included in this analysis because they were hypothesized to be negatively correlated with PTG. The scores of participants using multiple coping styles, and those of participants using only one or no dominant coping style, were then compared with total scores on the Posttraumatic Growth Inventory (Tedeschi & Calhoun,

1995) using Pearson's Zero-Order Correlational Analysis. There was a significant positive correlation between the multiple positive coping styles and posttraumatic growth ( $r = 0.41$ ;  $p < 0.01$ ).

*Hypothesis 2: Optimism will be positively related to posttraumatic growth.* The relationship between optimism as measured by the Revised Life Orientation Test (Schier, Carver, & Bridges, 1994) and the total score on the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1995) was explored using Pearson's Zero-Order Correlational Analysis. A positive correlation existed between optimism and posttraumatic growth ( $r = 0.22$ ;  $p < 0.05$ ).

*Hypothesis 3: Self-mastery will have a curvilinear relationship with posttraumatic growth.* The relationship between self-mastery and posttraumatic growth was explored using quadratic regression analysis. Self-mastery and its square were entered into a simultaneous regression, using posttraumatic growth as the dependent variable. The square of self-mastery was found to add a significant amount of variance to the dependent variable ( $R^2 = 0.56$ ,  $F(1, 94) = 5.55$ ,  $p < 0.05$ ) indicating a curvilinear relationship between the two constructs.

*Hypothesis 4: Marital satisfaction will be positively related to posttraumatic growth.* The relationship between participants' scores on this study's revised version of the Quality of Marriage Index (Norton, 1983) (items 1,2,4, and 5) and their total score on the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1995) was explored using Pearson's Zero-Order Correlational Analysis. No relationship was found between marital satisfaction and posttraumatic growth.

*Hypothesis 5: Social support will be positively related to posttraumatic growth.*

The relationship between social support as measured by the Social Provisions Scale (Cutrona & Russell, 1987) and the participants' total score on the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1995) was explored using Pearson's Zero-Order Correlational Analysis. A positive relationship existed between social support and posttraumatic growth ( $r = 0.23$ ;  $p < 0.05$ ).

*Hypothesis 6: Optimism, self-mastery, coping, marital satisfaction, social support and each of the above variables' interactions with time since diagnosis will contribute a unique amount of variance to posttraumatic growth.*

A simultaneous regression analysis was conducted to assess the relative contribution of each variable, and its interaction with time, to posttraumatic growth (see Table 6). Due to the stable, trait-like nature of the constructs of optimism and self-mastery, however, the interactions of these variables with time were not included in the analysis. In the prediction of posttraumatic growth, optimism, self-mastery, the six coping subscales, marital satisfaction, social support, and time passed since diagnosis accounted for 32% of the variance. When each of the above variables' interactions with time (with the exception of optimism, self-mastery, and time passed since diagnosis) were included, 34% of the variance was accounted for.

#### Additional Questions

*Question 1. What is the relationship between stage of wife's cancer and posttraumatic growth?* Pearson's Zero Order Correlational Analysis was used to examine the relationship between stage of wife's cancer and posttraumatic growth as measured by the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1995). No relationship was found.

*Question 2. What is the relationship between recurrence of cancer and posttraumatic*

Table 6

*Summary of Simultaneous Regression Analysis Predicting Posttraumatic Growth**(N = 97)*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	<i>b</i>	<i>t</i>	<i>Significance</i>
1					
(Constant)	66.38	30.83	-	2.15	0.03
Optimism	0.82	0.65	.14	1.26	0.21
Self-Mastery	-0.78	0.61	-.15	1.28	0.20
Escaping	0.79	0.42	.17	1.86	0.06
Avoiding	-1.30	0.78	-.17	-1.66	0.10
Problem Solving	-0.48	0.89	-.06	-0.54	0.59
New Directions	3.04	0.79	.41	3.85	0.00**
Reframing	0.23	0.86	.03	0.27	0.78
Seeking Support	0.48	1.10	.04	0.44	0.66
Marital Satisfaction	0.19	0.34	.06	0.57	0.57
Social Support	0.32	0.29	.13	1.10	0.27
Time Since Diagnosis	0.09	0.05	.20	2.14	0.04*
2					
(Constant)	44.00	36.67	-	1.20	0.23
Optimism	1.26	1.63	.22	1.81	0.07
Self-Mastery	-0.88	0.68	-.17	1.29	0.20
Escaping	0.75	0.62	.16	1.21	0.23
Avoiding	-1.08	1.08	-.14	-1.01	0.32

*Table 6 Continued*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	<i>b</i>	<i>t</i>	<i>Significance</i>
Problem Solving	0.60	1.31	.07	0.46	0.65
New Directions	3.65	1.17	.49	3.12	0.00**
Reframing	-0.07	1.36	-.01	-0.05	0.96
Seeking Support	1.21	1.63	.11	0.74	0.46
Marital Satisfaction	0.15	0.36	.04	0.41	0.69
Social Support	0.31	0.32	.12	0.96	0.34
Time Since Diagnosis	0.10	0.07	.21	1.54	0.13
Escaping x Time	0.00	0.01	.44	0.44	0.66
Avoiding x Time	-0.00	0.02	-.03	-0.17	0.87
P.S. x Time	-0.02	0.03	-.22	-0.98	0.33
N.D. x Time	-0.02	0.02	-.17	-1.06	0.29
Reframing x Time	0.01	0.02	.13	0.63	0.53
S.S. x Time	-0.02	0.03	-.17	-0.82	0.41
M.S. x Time	0.00	0.01	.08	0.62	0.54
Social S. x Time	0.02	0.01	.36	2.38	0.02*

*Note:* 1:  $R^2 = 0.32$ ,  $F(11, 84) = 4.97$ ,  $p < 0.00$ ; 2:  $R^2 = 0.34$ ,  $F(8, 76) = 3.52$ ,  $p < 0.00$ ;  
 \*\*  $p < 0.01$ ; \*  $p < 0.05$ ; P.S.= Problem-Solving, N.D.= New Directions, S.S. = Seeking Support, M.S. = Marital Satisfaction, Social S. = Social Support.

*growth?* Pearson's Zero Order Correlational Analysis was used to examine the relationship between wife's cancer recurrence and participants' scores on the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1995). No relationship was found.

*Question 3. What is the relationship between wife's functional status and posttraumatic growth?* Pearson's Zero Order Correlational Analysis was used to examine the relationship between wife's current functional status and posttraumatic growth as measured by the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1995).

A positive relationship ( $r = 0.23$ ;  $p < 0.05$ ) between functional status and posttraumatic growth was found, with higher levels of functioning being associated with growth.

*Question 4. What is the relationship between wife's functional status and marital satisfaction?* Pearson's Zero Order Correlational Analysis was used to examine the relationship between wife's current functional status and marital satisfaction as measured by the Quality of Marriage Index (Norton, 1983). No relationship was found.

*Question 5. What is the relationship between length of time passed since wife's initial diagnosis and posttraumatic growth?* Pearson's Zero Order Correlational Analysis was used to examine the relationship between time passed since wife's initial diagnosis and posttraumatic growth as measured by the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1995). Time since diagnosis and posttraumatic growth were positively correlated ( $r = 0.28$ ;  $p < 0.01$ ).

*Question 6. Are there differences in posttraumatic growth with regard to race/ethnicity?* Due to the overwhelming presence of Caucasians in the sample (80 out of 97), the races/ethnicities of the participants were recoded into two groups: Caucasian and Other, the latter group including four men who identified as Black, four as Mixed Race, four as



Foreign National, two as Asian, and one as Native American. An independent samples t test found no differences between the groups.

*Question 7. Are there differences in posttraumatic growth with regard to education?*

An ANOVA was run in order to look for differences between four groups. The first included those participants who had completed elementary, middle, or high school only. The second included those who had attended a technical school, a two year college, or some four year college only. The third included those who had attended a four year college and some graduate work only. The fourth included those who had attained a Master's Degree or higher. No differences were found between the groups.

An independent samples t test was then run with the participants broken down into the following two groups: those who had achieved a bachelor's degree and higher, and those who had not completed a four year college. No differences were found between the groups.

*Additional Analyses*

The following analyses were run using data that had been coded from participants' qualitative responses. As these findings seem relevant to exploring the connections between the variables of interest, they are also included.

*Question 8. Are there differences in participants' current health with regard to posttraumatic growth, marital satisfaction, self-mastery, coping styles, social support, optimism, or wife's functioning?*

The responses of this study's partners of breast cancer survivors were split into three groups: 1. men whose health was good, the same, or better since their wives' diagnoses (N= 50), 2. men whose health had recently declined due to factors unrelated to their

wives' diagnoses (N= 15), 3. men whose health had recently declined in response to their wives' diagnoses and treatment (N = 28). Several one-way ANOVAs were run in order to ascertain differences between the groups with relation to the various dependent variables aforementioned. Nonparametric K independent samples tests were also run for three variables (self-mastery, marital satisfaction, and reframing) that did not meet normality assumptions necessary for the analysis of variance.

The following variables reached significance, indicating differences therein among the three groups: the coping style Seeking Support, social support, optimism, and wife's functioning (see Table 7). A post hoc pairwise multiple comparisons test, the Scheffe method, was run in order to better understand differences between groups on each of these measures. Only two reached significance: the measures of optimism and wife's physical functioning. Group 1, composed of men whose health was good or improved, was significantly more optimistic than Group 3, who had experienced a decline in health in response to their wives' diagnoses. The wives of the men in Group 1 were also perceived to be functioning better than the wives in Group 3.

*Question 9. Are there differences in posttraumatic growth, coping, self-mastery, optimism, social support, marital satisfaction and wife's functioning among participants whose self-perceptions have changed as a result of their wives' diagnoses?*

Coded categories of responses to a question asking participants whether or not their self-perceptions had changed in response to their wives' diagnoses were joined into seven more general categories: 1. No change in self perspective 2. Experienced costs to self growth, 3. Experienced personal growth, 4. Experienced relational growth in marriage, 5. Took on new role as caregiver/housekeeper, 6. Experienced decline in relationship,

*Table 7**One Way Analyses of Variance for Changes in Health Among Three Groups*

<i>Variable</i>	<i>F Value / df</i>	<i>p</i>
Posttraumatic Growth	F (1,90) = 0.27	p > 0.05
Escaping Coping	F (1, 90) = 0.01	p > 0.05
Avoiding Coping	F (1, 90) = 3.42	p > 0.05
Problem Solving Coping	F (1, 90) = 0.39	p > 0.05
New Directions Coping	F (1, 90) = 0.11	p > 0.05
Seeking Support Coping	F (1,90) = 4.33	p < 0.05*
Optimism	F (1,90) = 6.70	p < 0.05*
Social Support	F (1,90) = 6.02	p < 0.05*
Wife's Physical Functioning	F (1,90) = 7.59	p < 0.01**

Note: \* p < 0.05, \*\* p < 0.01

7. Chose to place less focus on career, and 8. Increased awareness of own or wife's mortality. Because participants often fell into more than one of these categories, the researcher chose to examine each category's relationship with the dependent variables through a series of Pearson's Zero-Order Correlational Analyses. Due to the large amount of correlational analyses, only those analyses that reached significance will be mentioned below.

A lack of change in self-perception (category 1) was positively related to self-mastery ( $r = 0.25$ ;  $p < 0.05$ ) and optimism ( $r = 0.23$ ;  $p < 0.05$ ). Impeded personal growth (category 2) was negatively related to posttraumatic growth ( $r = -0.23$ ;  $p < 0.05$ ), New Directions coping ( $r = -0.22$ ;  $p < 0.01$ ), self-mastery ( $r = -0.22$ ;  $p < 0.05$ ), and optimism ( $r = -0.20$ ;  $p < 0.05$ ). An increased perception of personal growth (category 3) was positively related to posttraumatic growth ( $r = 0.26$ ;  $p < 0.05$ ) and New Directions coping ( $r = 0.27$ ;  $p < 0.05$ ). Positive changes in the marriage (category 4) were positively related to posttraumatic growth ( $r = 0.27$ ;  $p < 0.01$ ), problem-solving coping ( $r = 0.28$ ;  $p < 0.01$ ), New Directions coping ( $r = 0.33$ ;  $p < 0.01$ ), and wife's level of physical functioning ( $r = 0.21$ ;  $p < 0.05$ ).

An increase in tasks, including household duties, childcare, or caregiving activities (category 5) was positively correlated with problem-solving coping ( $r = 0.22$ ;  $p < 0.05$ ) and negatively correlated with the level of wife's physical functioning ( $r = -0.34$ ;  $p < 0.01$ ). A decline in the marital relationship (category 6) was negatively related to self-mastery ( $r = -0.34$ ;  $p < 0.01$ ) and marital satisfaction ( $r = -0.21$ ;  $p < 0.05$ ). Spending less time or focus on one's career (category 7) was positively related to social support ( $r = 0.21$ ;  $p < 0.05$ ). Finally, an increased awareness of human mortality in response to one's

wife's diagnosis of cancer (category 8) was positively related to self-mastery ( $r = 0.22$ ;  $p < 0.05$ ) and the coping style of Seeking Support ( $r = 0.21$ ;  $p < 0.05$ ).

*Question 10. Are there differences in posttraumatic growth, coping, self-mastery, optimism, social support, marital satisfaction and wife's functioning among participants whose marital relationships changed as a result of their wives' diagnoses?*

The seven original categories compiled from a qualitative question asking participants to describe any changes in their marital relationship since their wives' diagnoses were condensed by the researcher into three more general categories. These categories were 1. Positive changes in marital relationship, 2. Negative changes in marital relationship, and 3. No change in marital relationship. Because participants often fell into more than one of these categories, the researcher chose to examine each category's relationship with the dependent variables through a series of Pearson's Zero-Order Correlational Analyses.

Positive changes in one's marital relationship were positively correlated with posttraumatic growth ( $r = 0.29$ ;  $p < 0.01$ ), problem-solving coping ( $r = 0.25$ ;  $p < 0.05$ ), and social support ( $r = 0.26$ ;  $p < 0.05$ ). Negative changes in the marital relationship were positively related to avoidance coping ( $r = 0.28$ ;  $p < 0.01$ ) and negatively related to self-mastery ( $r = -0.39$ ;  $p < 0.01$ ), social support ( $r = -0.28$ ;  $p < 0.01$ ), marital satisfaction ( $r = -0.42$ ;  $p < 0.01$ ), and level of wife's functioning ( $r = -0.48$ ;  $p < 0.01$ ). None of the variables of interest were significantly correlated with a lack of change in the marital relationship.

## Chapter Six: Discussion

The present study hoped to contribute to what is currently known about posttraumatic growth (PTG) by examining correlates of PTG in a sample of men whose wives had been diagnosed with breast cancer. The relationships between PTG and several psychological and social variables were explored, as well as the construct's association with additional situational factors. The findings add to the body of literature regarding which variables are associated with posttraumatic growth and will suggest areas for future research.

This discussion section will take a deeper look at the relationships found between optimism, self-mastery, social support, marital satisfaction, coping, and additional situational factors with posttraumatic growth. These findings will be compared with those of past studies utilized to examine PTG theory as proposed by Tedeschi and Calhoun (1995). Limitations of the present study will then be discussed, followed by a reflection on the implications of the study's findings for practice and future directions for research.

### Hypotheses 1A-1D

All of the coping styles, except the use of escaping coping, were found to be related to posttraumatic growth. Despite the weak nature of most of these correlations, which may have been due in part to the small sample size, the present study's findings generally support those of previous studies. As found in research on adjustment, rehabilitation, and well-being (Friedman et al., 1990; Carver & Scheier, 1993), posttraumatic growth seems to be positively connected with active coping strategies and negatively correlated with avoidance coping.

PTG was also found to be positively related to emotion-focused coping styles such as seeking support and attempting to reframe one's cognitions and feelings, but these correlations were the weakest of all the significant correlations. These results seem to contradict prior research that has found emotional coping to be more helpful than problem solving coping in situations in which people perceive themselves to have little control (Strenz & Auerbach, 1988). Emotional coping was also theorized to be vital to the rumination process that leads to posttraumatic growth, according to Tedeshi and Calhoun (1995).

A possible reason for the lessened presence of emotional coping is the all male sample of this study. Past research has found that men are more likely to cope by tackling problems directly, or else avoiding them altogether, rather than seeking out emotional support (Sullivan, 2002; Bouchard, Sabourin, Lussier, Wright, & Richer, 1998). But what about in a situation with low controllability, such as the diagnosis of one's spouse with a serious illness? The answer may lie with the strongest predictor of posttraumatic growth, the coping scale of New Directions. Perhaps some of the active problem solvers in this study, when confronted with a situation in which their actions had an ultimately limited impact upon their wives' chances of survival, channeled their energies into making changes in other parts of their lives. Thus, posttraumatic growth, in this sample, seems to involve an active process that increases one's sense of meaning and connectedness.

In examining how men cope with their wives' breast cancer, it is also important to remember that the spouses, unlike the actual breast cancer patients, did not experience a first hand threat to their own lives. Thus it is possible that the experience was not emotionally jarring for some of the husbands and therefore did not require an increase in

social support or emotional processing. In such circumstances, level of controllability over the situation might be irrelevant. Also muting the reactions of the participants could be the time at which the survey was taken. Participants whose wives did not appear to be in immediate danger at the time of the survey may have been less likely to include emotional coping as a often-used response to the situation.

As for the possible lack of evidence for a rumination phase, this adapted version of the Ways of Coping scale may simply have not possessed the necessary items to adequately capture what occurs during rumination. Generating more items based specifically upon PTG theory's description of the rumination process (for example "Engaged in deep contemplation over what this event might mean for my life") might have garnered more information about this step of the PTG process. Tedeschi and Calhoun have also written a measure of rumination (Calhoun et al., 2000) which could be helpful in further attempts to understand how husbands' coping styles lead to PTG.

Using more than one coping style to deal with a wife's diagnosis of breast cancer was also found to be associated with posttraumatic growth. This finding supports previous work that suggests that flexibility in coping may be associated with better outcome (Collins, Taylor, & Skokan, 1990). Thus, men who draw from a wide repertoire of coping strategies may be more likely to experience growth after trauma.

Escapist coping was also not significantly correlated with PTG. Perhaps this is because the items associated with this scale were not as extremely distancing as those in the Avoiding scale. Wishing for and having fantasies about a positive outcome could more easily co-occur with actively working at attaining that positive outcome than pretending that nothing is wrong.



## Hypothesis Two

The results from this study indicated that a small, positive correlation exists between the trait of optimism and the occurrence of posttraumatic growth in this sample ( $r = 0.22$ ;  $p < 0.05$ ). These findings are similar to those of another study that assessed the relationship between optimism and a measure of stress-related growth, similar to the PTGI. That study of college students who had experienced a traumatic event in the past year, conducted by Park, Cohen, and Murch (1996), found a similar correlation between growth and optimism ( $r=0.27$ ,  $p< 0.01$ ). According to a nonparametric test for two correlation coefficients, no significant difference exists between the results found for the two samples ( $p>0.05$ ).

PTG theorists Tedeschi and Calhoun (1995) predicted a small correlation between the two constructs, hypothesizing that a third variable may be responsible for the connection between being optimistic and growing in a meaningful way from trauma. Thus some additional factor may be responsible for the connection between the two.

A recent study examining several aspects of PTG, however, (Updegraff & Marshall, in press) has suggested an alternative explanation for why studies like the current one have found varying levels of relationship between optimism and positive growth. These authors propose that optimism may be an important early predictor of growth and that studies assessing both constructs later after the event may fail to detect a strong correlation. Their design, which surveyed its participants shortly after they were hospitalized for attacks suffered in their communities and then three months later, found optimism to be a unique predictor of variance among posttraumatic growth scores only at the time of the first survey. This may be explained by the theory that subjective well-

being, and closely related constructs such as optimism, may be periodically dampened as people deal with a trauma before returning to a baseline level of well-being (Deneve & Cooper, 1998). At the three-month point, levels of optimism for the participants may have differed from their original baseline levels.

Participants took the present survey, on average, 3.8 years after the initial diagnoses of their wives, but the time since the diagnoses of their spouses ranged from 1 month to 17.5 years. Therefore the design of the current study, which measured responses over a long range of time and did not compare the responses of subjects at particular time periods since the diagnosis, may have not been sensitive enough to capture certain time-related information. Future research should take this into account when designing similar studies.

### Hypothesis Three

The results of this study supported the prediction that a curvilinear relationship exists between self-mastery and posttraumatic growth. This hypothesis was based upon the idea that both feeling completely out of control with regards to one's wife's health or requiring high amounts of control over an uncontrollable situation would result in equally ill effects, thus impeding posttraumatic growth. Such a connection seemed likely according to the compiled findings of previous research (see literature review).

These findings support Lightsey's (1997) study which found that self-mastery could act as a stress exacerbator during tough times, being linked to such symptoms as dysphoria. They also mirror Astin et al.'s (1999) research with cancer survivors, which found that both asserting control and accepting the loss of it were equally important predictors of adjustment to the cancer experience. Thus posttraumatic growth seems to

have a relationship to self-mastery that is similar to that between self-mastery and various adjustment variables.

Like cancer survivors, therefore, the spouses of survivors seem more likely to grow positively from this trauma when they are able to achieve a balance between helplessness and a strong need for mastery in a situation which may contain aspects that are uncontrollable. Future studies could attempt to delineate the particular situations in which the desire to master one's environment is helpful or harmful. For instance, early on in the treatment process husbands of breast cancer patients may grow from facing their fears and attempting, through information-seeking or taking part in medical decisions, to make an impact on their wives' treatment. However, after the initial surgery is over, or, in some cases, when few treatment options are left to their wives, growth may occur from letting go of the need for control and meeting the future with acceptance. Future research could detail the importance of situational factors such as time and prognosis in the relationship between self-mastery and posttraumatic growth.

A side issue addressed by this study's examination of self-mastery involves the aforementioned (see literature review of self-mastery) controversy regarding the distinctive nature of optimism and self-mastery. The unique relationships of optimism and self mastery to posttraumatic growth, combined with their moderate relationship with each other ( $r = 0.58$   $p < 0.01$ ), support prior findings that these constructs are indeed distinct entities measuring different traits (Scheier, Carver and Bridges, 1994; Marshall and Lang, 1990).

#### Hypothesis Four

Contrary to predictions, marital satisfaction did not correlate with posttraumatic growth. Before discussing possible theoretical explanations for this outcome, several problems unique to this study and the scale used should be discussed. First, response bias may have interfered with an accurate representation of the desired information. Since husbands may have been induced to participate in the study by their wives, who were themselves contacted via online or in-person support groups, we may assume that the taking of this survey may not have always been the confidential process that it should have been. In fact, several women on one online group talked about how fascinating it was to discuss the survey with their spouses as they worked on it, one even sharing that she had typed in the answers for her arthritic spouse (the importance of confidentiality was quickly reinforced by the researcher). Although such contamination could be potentially harmful to all of the measures, it seems most likely to affect responses geared toward marital satisfaction.

Second, several participants reported feeling confused about the last question of the Quality of Marriage Index which, after asking five questions on a 7-point Likert scale ranging from Strongly Agree to Strongly Disagree asked, on the sixth question, to rate on a 1-10 Likert scale their total satisfaction from the Lowest Degree of Happiness to Highest Degree of Happiness. Even when steps were taken by the researcher to alert participants to this change, responses which did not make sense when compared to previous answers on the measure were continuously submitted, leading to the eventual dropping of this item. Combined with the dropping of an additional item, due to a

mistake in its wording which made it repetitious, this measure was reduced to a mere four items, lessening the chances of its usefulness in assessing marital satisfaction.

There are other possible reasons for a zero correlation between the two constructs. Perhaps certain personality traits or coping styles of the participants were simply more vital to the process of posttraumatic growth than marital happiness. After all, PTG is not only about forming closer relationships, but contains several components such as developing personal strength, learning new insights about the meaning of one's life, and growing as a spiritual being. One could, theoretically, grow wiser from the experience of one's wife's breast cancer, while simultaneously growing apart from her. Also, as discussed in the literature review, posttraumatic growth has been found to be unrelated to various measures of adjustment. Thus, positive growth in response to the cancer experience can coexist with negative effects of that same experience, such as a relatively more rocky marriage.

A more specific measure of marital quality might have, in retrospect, given a better idea of the construct's relationship with posttraumatic growth. As commented in the qualitative data, breast cancer could be damaging to certain aspects of married life, while strengthening others. For example, a life-saving surgery might result in less physical intimacy and a more uneven distribution of duties around the house but also increased emotional closeness. The general questions of the Quality of Marriage Index may have missed such subtleties by allowing participants to define a "good" or "strong" marriage on more vague terms.

### Hypothesis Five

Social support was, as predicted, related to posttraumatic growth, with higher levels of support related to greater positive growth. According to PTG theory (Tedeschi and Calhoun, 1995), social support is extremely important to individuals faced with trauma who are actively ruminating over, and revising, old schemas in light of their new experiences. Social relationships may not only provide comfort and assurance, as the traumatized person struggles with difficult issues, but may in turn be deepened and solidified by the experience: a frequent gain described by the theory of posttraumatic growth.

Support may be especially helpful to men who feel the need to “be strong” for their sick wives. Several of the study’s participants wrote about the importance of staying strong and positive in front of their wives, in order to protect the survivors from the extra burden of their own fears and doubts. Since husbands, more than wives, have been theorized to depend more on their spouses for emotional support than other sources (Northouse, 1988), feeling that relationships with “friends, family members, co-workers, community members and so on” (as noted in the Social Provisions Scale) are also emotionally supportive could help to promote positive growth, both personally and relationally.

Further questions about social support might pursue the helpfulness of various kinds of support (emotional, instrumental, informational) in facilitating PTG. For example, several men mentioned increased involvement with household, childcare, and caregiver duties after their wives’ diagnoses. Might instrumental support, in the form of family members willing to baby-sit or friends offering relief from other duties, help to

provide the space and private time necessary for personal contemplation to occur? Or is emotional support, such as listening or helping the individual to make sense of what has occurred, of primary importance to facilitating growth?

Furthermore, how does posttraumatic growth in turn affect one's social support network? Might insights raised in response to trauma teach the individual to reach out more to his social network and better maintain and appreciate his relationships? Such questions could help to clarify the connection between social support and posttraumatic growth.

### Hypothesis Six

As described in the Results section, a simultaneous regression was conducted in order to better understand the relative importance of the predictors self-mastery, optimism, social support, coping styles, marital satisfaction, and time since diagnosis to posttraumatic growth. Several interesting findings emerged from this analysis. First, the New Directions coping subscale was found to contribute a unique amount of variance to the model ( $t = 3.85$ ;  $p < 0.01$ ). Second, time passed since diagnosis was found to contribute to the model both on its own ( $t = 2.14$ ;  $p < 0.05$ ) and in an interaction with social support ( $t = 2.38$ ;  $p < 0.05$ ).

The first of these findings reiterate the connection between the coping style of New Directions and posttraumatic growth. The relative strength of this predictor suggests that coping with trauma by making changes in one's life may help to lead to posttraumatic growth. More specifically, the items of this subscale indicate that such changes are often creative and involve acting not according to habit, but in accordance with a newly acquired perspective. Indeed, this style of coping seems to be synonymous

with the idea of PTG itself: behavioral and cognitive change brought on by a new perspective (leading to the questions of who employ this type of coping and what processes precede it). The helpfulness of New Directions coping did not appear to wax or wane over time.

Time itself was a significant predictor of PTG in the first part of the model. This suggests that the longer the amount of time passed since a traumatic event such as breast cancer occurs, the greater the likelihood that PTG will have occurred. There could be several explanations for this connection. The stress and daily demands of cancer treatment and decision making may impede a spouse's ability to reflect upon the situation, making posttraumatic growth impossible. Thus, the husbands whose wives had been newly diagnosed simply may not have had enough time to engage in rumination resulting in the implementation of changes in their behavior and/or thinking.

A longer amount of time passed since diagnosis may also indicate more distance from the cancer experience and thus an increase in hope that a recurrence will not take place. Thus, participants for whom diagnosis occurred years ago might be feeling more positive overall about the cancer experience than those whose wives are in immediate danger. This could also explain the role of time as a predictor, although this study's assessment of time (time since *diagnosis*, as the survey was worded, does not make a distinction between time spent in constant treatment, the occurrence of recurrences, or time spent cancer-free) is unhelpful in shedding further light on this possibility.

Finally, the passage of time may have resulted in changes in the participants unrelated to the experience of breast cancer or posttraumatic growth. Tedeschi & Calhoun (1995) describe an event-based increase in "wisdom" as being an end result of



the PTG process. Since wisdom is traditionally believed to occur naturally with age, it may have been difficult for participants to differentiate how much of their growth in this area was due to PTG or to the effects of aging.

The interaction between time and social support provides interesting information about the role of social support in predicting PTG. The longer the amount of time has passed since the diagnosis of breast cancer, the more important social support becomes to the development of PTG. Perhaps the understanding that, over time, one's social support network will remain strong and helpful increases the relational aspects of PTG, such as perceiving those relationships as closer and appreciating them more than before. At the same time, having steady relationships in which one can talk about one's reactions to a traumatic event over an extended period of time may help to facilitate positive changes in thinking and behavior.

#### Additional Questions

Several analyses were run in order to explore the relationship between illness variables, such as stage of cancer, recurrence, and perceived physical functioning, with posttraumatic growth. Only one of these, the relationship between wife's functional status and PTG, was found to be significant. These results can be discussed in light of a topic of interest in PTG theory, namely, are objective or subjective measures of trauma-related distress (or, in this case, illness severity) more closely correlated with PTG?

The current study's findings seem to support those of other research: that subjective appraisal is more important than objective measures of threat. For example, two previously described studies (Updegraff & Marshall, in press; Cordova et al., 2001) found no significance between objective measures of illness or injury and PTG but did

find a relationship between positive growth and measures of perceived distress. Although measuring a different construct, the perception of one's wife's physical functioning when compared to pre-diagnosis, the present study also found appraisal of the situation to be a better predictor of PTG than a more objective measure.

An explanation for the relationship between PTG and wife's perceived physical functioning may lie with the increase in caregiving and household responsibilities experienced by men whose wives are truly functioning poorly. Such stressors, especially without the presence of long-term support, might prevent husbands from reflecting on the situation and revising old schemas, thus blocking the development of PTG. Feelings of sadness or anxiety accompanying the decline of one's wife's health could also overshadow or hinder the occurrence of any positive changes.

The participants' responses did not reflect that their wives' physical functioning was related to the quality of their marriages. This was not entirely surprising considering that past studies have found mixed results with regard to a connection between the two (Fang, Manne, and Pape, 2001; Manne, Alfieri, Taylor, and Dougherty, 1999; Northouse et al., 1998; O'Mahoney & Carroll, 1997). Most of these studies, however, examined marital satisfaction as a buffer between the physical functioning of one's spouse and other variables, such as distress or negative behavior toward the ill spouse. As the present study included no such measures of adjustment, it is possible that marital satisfaction may indeed play a mediating role between physical functioning and negative outcome.

The present study also found no evidence of a link between the race/ethnicity of the participants and PTG, although the dominating presence of Caucasians in this sample

may limit the generalizability of these findings to racial and ethnic minorities. Despite earlier reports that higher SES was associated with PTG (Cordova et al., 2001), education (often highly linked with SES) was also unrelated to PTG. However, it should be acknowledged that the actual salaries of the participants' households were not assessed, thus leaving the significance of education level up to interpretation. These results, combined with those of a current study (Updegraff and Marshall, in press) which found no differences along the lines of race (in a predominantly Latino sample) or SES (in a sample in which the majority of participants had not finished high school) seem to provide evidence that posttraumatic growth is not related to such factors, but is experienced by all races and classes.

#### Qualitative Questions

An examination of the participants' responses to three open-ended questions provides a more detailed understanding of how a diagnosis of breast cancer affected various aspects of the patients' husbands' lives. Participants in this sample reported changes in their health that they attributed in some manner to their wives' diagnoses. In response to this question, each man's health was categorized into one of three groups: (1) health remained the same or improved since wife's diagnosis, (2) health worsened due to external factors/ factors unrelated to wife's breast cancer, or (3) health worsened due to stressors related to wife's diagnosis. These three categories of health were significantly related to social support, coping by seeking social support, optimism, and level of wife's functioning.

Only two variables were significant in differentiating the three groups: optimism and the wife's level of physical functioning. Men who were optimistic were more likely

to say that their health was good, or better, than before the diagnosis, while men who blamed their poor health on factors related to the cancer experience reported lower levels of optimism. Due to the correlational nature of this analysis, we can only guess whether optimistic men tend to put a positive “spin” on how they are feeling or that optimism somehow buffers these men from becoming vulnerable to stress-related illnesses. Past research has placed optimism in the predictor role when it comes to health (Kurtz et al 1995; Given et al., 1993).

The relationship between perceived health and wife’s physical functioning seems clearer. The demands of caregiving can result in increased stress and poor health in the caregiver. Thus men whose wives are functioning poorly are more likely to experience illness. Still, due to the correlational nature of these questions, all conjectures must be made with caution.

Interestingly, none of the three categories of health in the analysis was significantly related to posttraumatic growth. This could be a result of the earlier discussed disconnect between PTG and various measures of adjustment. Time of wife’s treatment and diagnosis, in relation to when the survey was taken, or wife’s level of physical functioning could moderate the relationship between these two variables.

The second open-ended question asked husbands to describe changes in their self-perception since their wives’ diagnoses. With regard to posttraumatic growth, PTG was positively related to the categories of “experienced personal growth” and “experienced relationship growth in marriage” and negatively related to the category of “experienced costs to self growth.” These relationships are what would be expected, considering what

is known about PTG (Cordova et. al, 2001; Park, Cohen, & Murch, 1996; Tedeschi & Calhoun, 1995).

It is interesting to note that PTG was not related to responses categorized as “took on new role as caregiver/housekeeper,” or “chose to place less focus upon my career.” A lack of connection between these categories and PTG may serve as an example of the complexity of the breast cancer experience. For example, some men may find more personal meaning in focusing on their wives and families instead of work, while others may unhappily do so out of necessity. Similarly, caring for one’s wife, children, and/or household more regularly could enhance the sense of oneself as a relational being or simply add stress and resentment to the situation. Also, unlike the previously mentioned categories describing rather emotionally-charged changes in perception about one’s self and one’s relationship, the latter two categories may just be capturing the daily, functional aspects of the men’s lives, which are not necessarily affectively linked.

Also of interest was the lack of a correlation between PTG and “increased awareness of own or wife’s mortality,” a concept often spoken of in PTG theory. However, the shock and simultaneous negative impact of such knowledge may explain why the category was not associated primarily with growth. Victims of trauma often describe themselves as feeling both stronger and more vulnerable as a result of this awareness (Calhoun & Tedeschi, 1999). Thus awareness of mortality may only be related to PTG after a certain amount of time and processing has passed and resulted in greater appreciation of one’s life (something that was not reported in all responses about mortality).

Also affecting the men's responses about mortality may be the degree of distance the husbands maintained from the situation. As noted earlier, the men themselves were not ill and thus not as likely to experience the same reactions as their wives. Also, all of the wives of the participants in this sample were alive at the time of the survey, with few of them advanced into the later stages of cancer, so the idea of death may not have been as much of a reality as with, say, husbands whose wives were currently in the process of dying.

Another finding with regard to changes in self-perception was that more active coping styles were related to more positive changes. Both Problem Solving and New Directions coping were positively related to "experienced relational growth in marriage," with New Directions also being connected positively to "experienced personal growth" and negatively to "experienced costs to self growth," and Problem Solving coping also related to "took on new role as caregiver/housekeeper." These results may give insight into the differential roles of these two types of active coping. While both Problem Solvers and those taking New Directions in coping may be good at staying connected to others or perhaps providing care to wife and family (thus reporting enhanced relationships), only those using New Directions report growing as a person. Problem Solving copers may differ from those using New Directions in that their coping is more "other" related, resulting in relational but not personal growth. Supporting this is the finding that Problem Solvers engage in more household and caregiving tasks, suggesting that these types of people may cope by keeping helpfully busy or, due to a demanding schedule, may need to utilize this coping style more than others.

Self-mastery was positively related to the category “no change in self-perception” and negatively related to the categories “experienced costs to self growth” and “experienced relationship decline.” People who perceive themselves as having high levels of control may therefore feel that they are able to prevent negative repercussions from invading their lives, but are not necessarily likely to move away from the status quo in a positive way either. Another possibility is that spouses whose lives have not been as negatively effected by the trauma of their wives’ diagnoses are likely to feel more in control of their situations than others.

Interestingly, self-mastery was positively related to “increased awareness of own or wife’s mortality.” Perhaps men who feel a great deal of mastery over their environments are the most deeply shocked by the sudden occurrence of an event that is beyond their control. However, since this awareness does not seem to automatically lead to positive growth, other factors may predict whether or not those with high self-mastery are able to grow from the experience. The need for high levels of control could actually interfere with PTG, as some flexibility and creativity seem necessary to change one’s way of living. A better understanding of the factors associated with PTG could help to clarify its relationship with this construct.

Optimism, surprisingly, was also only positively related to “no change in self-perception” and negatively to “experienced costs to growth,” again suggesting some protection against negative influences but no connection to growth. As noted earlier, a third variable such as time might have an impact on the relationship between optimism and PTG. Future regression analysis might also suggest that more optimistic people are

more likely to be protected against negative outcomes, while other factors must be present in order for optimism to promote PTG.

The only other variable related to a growth-related change in self-perception was perception of wife's physical functioning, which was positively related to relationship growth. This seems understandable, as wives who are barely able to function may not be able to participate in conversations or activities that could strengthen the relationship. Conversely, husbands who feel that their relationships are stagnant may be more likely to blame this on their wives' reactions to cancer and its treatments. Also, wife's functioning was negatively related to an increase in tasks, so spouses of very ill women might feel too stressed to attend to their relationships.

The last qualitative question to be discussed pertains to the participants' reflections on changes in their marriages since the event of their wives' diagnoses. Positive changes in marital relationships were significantly related to problem solving coping, higher levels of social support, and posttraumatic growth. Here, again, is seen the connection of the Problem Solving coping style to relationship growth (while New Directions, which was associated with positive changes in self perception, is not significantly related), perhaps suggesting that men involved in active caregiving and information-seeking activities are likely to grow closer to their wives through this sharing of the experience. The relationship between positive growth in one's marriage and social support may reflect these feelings of closeness to one's spouse or be indicative of a larger support network providing alternative outlets for speaking about the challenging aspects of the cancer experience.



Negative changes in the marital relationship were positively related to avoidance coping, a common finding in the literature (Bouchard et. al, 1998; Lussier et. al, 1997)). They were also negatively related to perceived wife's functioning, marital satisfaction, self-mastery, and social support. The connection between a worsening relationship and the worsening physical condition of one's wife is consistent with prior research, as is the presence of self mastery as a trait which seems incompatible with most negative changes. The importance of social support to relational growth is also reaffirmed by these findings.

### Limitations

Several limitations associated with this study may have affected the previously described findings. Most notable are possible threats to external and internal validity invoked by characteristics of the study's sample. Because random sampling methods were not utilized in the recruiting of participants, it is possible that the participants of this study are not representative of the spouses of breast cancer patients in general. One visible example of this is the overwhelming presence of Caucasian, highly educated men in the sample. The presence of men from an apparently high socioeconomic background, who are more likely to have access to health care and various sources of informational and instrumental support, may result in a skewed picture of how husbands of breast cancer survivors deal with the disease.

The ways in which possible participants were contacted place further limitations on the generalizability of the study's findings. First, the fact that the majority of participants took the survey online (only eight out of 97 responded via hard copies of the survey) indicates that the study's accessibility was limited to people who owned, or had easy access to, a computer. Second, distribution of the study primarily through the

channels of online and in-person support groups across the country may have resulted in bias. Men in support groups, or men with wives engaged in a group, might have more of an interest in mental health, or less hesitation about seeking social support, than other men.

Furthermore, because of the greater ease with which the researcher was able to contact breast cancer survivors themselves as opposed to their spouses, many of the husbands were asked by their wives to participate in the study. Those who obliged may have done so for several reasons, including the desire to please his wife (indicating a strong marital relationship), feeling a great amount of distress about the situation, or being more comfortable than men who did not respond with exploring feelings and relationships. The methods used have no way of approximating a response rate and thus a better understanding of why some men chose not to participate.

As mentioned earlier, in addition to the traditional problems of self report measures, such as a participant's tendency to respond favorably instead of truthfully to questions about one's self, outside influences may have also affected participants' responses. For example, because the taking of a survey inside a participant's home cannot be monitored, the participants' wives may have actively influenced the answers given by their husbands. This could especially be true of husbands whose health or aversion to computers may have interfered with their work on the survey.

Additional problems were identified with the analyses used. First, the sample size obtained provided the minimum amount of power needed to detect significance among the large number of predictors in the regression analysis. A bigger sample might produce a clearer picture of which predictors are most important to the facilitation of

posttraumatic growth. Second, there is the possibility that some of the smaller correlations found for the hypotheses and research questions may have been due to chance. A relatively small amount of variance was accounted for in many of the analyses which could be the result of factors such as sample size, instrumentation, the need to consider other variables of importance, or the fact that spouses were being studied rather than the wives themselves. For example, concerning the two analyses conducted with the qualitative questions about changes in self-perception and marital relationship, the high number of correlational tests run may have made it more likely that some of the significant differences were due to chance.

Finally, the results of this study may have been affected by the measures used and problems encountered with them. Most notably, the Quality of Marriage Index (Norton, 1983) was accidentally made to include a repetitious statement that made one item unfit for use: a mistake that was not brought to the researcher's attention until after the study was finished. The confusing last question on the survey was also eventually cut from the measure, resulting in a smaller measure that may not have as accurately captured the construct of marital satisfaction as might have been hoped.

Information about disease characteristics might have also been limited by husband's lack of knowledge about their wives' cancers. For example, several husbands, when entering the stage of cancer at which their wife was first diagnosed, included a question mark, indicating that they were unsure about their responses or, perhaps, that the cancer had not fallen clearly into one stage or another. Such uncertainty may have affected the results of analyses connected with the stage of one's wife's breast cancer.

Finally, because the study included no measures of adjustment, such as distress levels or depression/anxiety, little information is available regarding negative reactions to the breast cancer experience. Although many participants spoke of various negative effects in their qualitative responses, not all chose to submit qualitative material, resulting in a dearth of knowledge about the co-occurrence of both negative and positive changes in response to breast cancer. Also unknown is whether or not participants differed on such variables as depression or marital satisfaction before diagnosis.

#### Implications and Recommendations for Research and Practice

This study aimed to increase knowledge about the psychological and social characteristics associated with posttraumatic growth in order to develop a better understanding about the growth experience and the factors that may contribute to it. With regard to implications for posttraumatic growth theory, this study found that husbands of breast cancer survivors do indeed report positive growth in relation to their wives' encounters with breast cancer. Of the 97 participants, 64% reported in response to open questions having experienced some sort of positive growth following their wives' breast cancers, ranging from better health habits to a more positive perception of one's marital relationship and the possibilities of life.

As previously theorized, personality traits and social support were found to be related to posttraumatic growth. The present study found posttraumatic growth to be related to optimism, self-mastery, social support, and various coping styles. Future research, employing larger samples and different research designs, could be used to better understand these relationships. For instance, researchers could examine moderating and mediating variables of PTG such as points in time since diagnosis, type of traumatic

event, the presence or absence of financial or health resources, whether or not children are living in the home, quality of sexual relationship, and caregiving rewards. With regard to variables that were not found to be significantly related to PTG, like marital satisfaction, slightly different measures could be used in order to look more closely at these relationships. For example, instead of a general measure of marital satisfaction, a more detailed measure questioning specific details of married life might provide some clues about if and how marital quality is related to PTG.

As predicted by PTG theory, how the participants coped with trauma was related to PTG. PTG theory has stated that positive growth is a reaction to the formation of new schemas formulated during a rumination phase, and the employment of new coping strategies (Tedeschi & Calhoun, 1995). The New Directions subscale of the coping measure seems to fit this description of a coping style that is new, creative, and associated with making positive change, although not necessarily directly to the problem of cancer, as in problem-solving coping. Future research could examine the stages hypothesized by Tedeschi and Calhoun (1995) in samples similar to that used in the present study to better understand the role of such coping styles.

Although this study did not employ a measure of rumination, future research might benefit from doing so in order to form a more complete picture of how PTG progresses. The importance of social support, both in general and as a coping style, indicates that talking about one's changing thoughts, fears, and hopes, as described in the rumination stage, is related to PTG. Furthermore, the presence of social support over time seems to predict PTG. The coping style of Reframing, which contains items describing the process of keeping one's feelings under control while trying to both accept the

situation and see it from a different perspective, seems to capture the struggle of schematic change during the rumination process, although this subscale was not as strongly related to PTG as the active coping of New Directions in this all-male sample. PTG theory would benefit from more research in this realm, including tests for gender differences regarding the use of more active or passive pathways toward PTG.

Additional studies could also examine the role of psychological and social variables with regard to both PTG and adjustment. While some prior studies have found current well-being (Updegraff et al, 2002; Thompson & Coll, 1985) or subsequent well-being (Davis et al., 1998; Curbow, Somerfield, Baker, Wingard, and Legro, 1993) to be related to PTG, others have found no relationship between the two (Cordova et al., 2001; Fromm, Andrykowski, & Hunt, 1996). A current study (Updegraff & Marshall, in press) suggests that a relationship may exist early on, then dissipate with time, meaning that those who adjust negatively to trauma immediately after it occurs, may be more likely to experience positive growth later. Searching for moderators or mediators might produce interesting information clarifying what additional factors might account for PTG resulting in greater adjustment, or vice versa.

Continued development of knowledge about the PTG process could contribute toward the field of counseling by providing information and strategies relevant to providing mental health services to those experiencing trauma in the form of illness, death of a loved one, or various other events. Special attention to the facilitation of PTG in groups such as the spouses of breast cancer survivors could help clinicians to identify specific areas of importance that may help these groups grow from the experience, such as enhancing social support networks or learning to utilize growth-fostering coping

patterns such as New Directions or Reframing. More specified knowledge of how PTG occurs, such as the relative importance of PTG-related factors at different points in time and possible variations in the progress across types of traumatic events, could help clinicians know what strategies to employ and when to employ them.

In summary, the experience of posttraumatic growth is an area of study that remains ripe for future research. The current, rather exploratory, study did reveal some intriguing findings with regard to the positive growth experiences of the husbands of breast cancer survivors. Because research into posttraumatic growth is still in its early stages, these findings may have raised more questions than they answered. It is hoped that the current study will add to the literature and motivate future researchers to explore in greater detail the experience of positive growth in those who find themselves facing traumatic events such as the serious illness of a loved one.

## Appendix A

The following advertisement will be contained in an email which will be sent to breast cancer-related internet sites:

Dear Reader,

I am a graduate student at the University of Maryland conducting a study on the effects of the breast cancer experience on BC survivors' partners. The study will look at a variety of factors (such as personal characteristics and social support) and will be used to better understand the unique reactions of partners of women who have in the past, or are currently, undergoing the breast cancer experience.

If you are the life partner of a breast cancer survivor, please click on the following link to learn more about participation in this study. If you know someone who is the partner of a BC survivor and who might be interested in participating, please forward this email to him or her.

It is my hope that this research may help to broaden understanding of a group of people who play such an important role in the lives of breast cancer survivors: the partners who love and support them. Please consider participating in the study or sending word out to possible participants. If you have any questions about this study, you may contact me via the information listed below. Thank you for your help!

{Link to the Consent Form}

Holly Costar  
University of Maryland  
College Park, MD 20742  
hollymarie20@aol.com



## Appendix B

Dear Breast Cancer Partner,

Thank you for your interest in this study! As noted in the previous email, the information you provide here will help to increase understanding of the effects of breast cancer on the partners of the women who are fighting this disease. Beyond contributing to this valuable research, I hope that you will also benefit from being able to share your personal reactions in a confidential forum.

The study consists of several questionnaires which will take approximately 15 minutes to complete. All information will be kept completely confidential and you will not be contacted again by the researcher. If you experience any difficulty in submitting your responses, please contact me. You are also welcome to print out the questionnaires, complete them by hand, and mail them out to me at the address below.

Please consider contributing your thoughts and feelings to this study. Many responses are needed in order to gather information about the unique experience of breast cancer partners! If you have any questions about the study, please contact me at the address below. Thank you!

Fill Out The Survey {link}

Holly Costar  
University of Maryland  
College Park, MD 20742  
hollymarie20@aol.com

## Are you the spouse of a breast cancer survivor?

If your current partner has been recently diagnosed with, or is a long term survivor of, breast cancer, **you are in the unique position of helping us with an important research project.**

Although many studies have focused on what the breast cancer experience is like for those being treated for the disease, little is known about the reactions of the **life partners** of breast cancer survivors.

**Please lend your voice** and help us to increase our knowledge of the experience of this infrequently heard population! Our study will look at several important aspects of life, including social support, personality characteristics, and personal reactions to living with, or after the remission of, the disease.

For more information about this study, please check out the following web site: [www.bcpartnerstudy.com](http://www.bcpartnerstudy.com)

Any questions about the study can be directed to:

Holly M. Costar  
Counseling Psychology Program  
3214 Benjamin Building  
University of Maryland  
College Park, MD 20740  
(301) 982-7360  
hollymarie20@aol.com

(Note: Appendix A will contain pieces of paper at the bottom containing the email address of the site which can be torn from the original sheet. Also, if applicable, instructions will be given about how to attain a hard copy: unmarked copies will be kept by a staff member, although it will be the responsibility of the subject to put it in the mail once it has been completed.)

## Appendix D

Demographic Form

Instructions: Please provide the following information about yourself.

1. What is your age?
2. What is your gender? Male Female Transgender
3. Race/Ethnicity (Check all that apply)
  - \* Asian American/Pacific Islander
  - \* White/Euroamerican
  - \* Middle Eastern/Arab
  - \* Asian Indian/Pakistani
  - \* Hispanic/Latino
  - \* Biracial/Multiracial
  - \* Black/African American
  - \* Native American/Native Alaskan
  - \* Foreign national (Please specify)
  - \* Other race (Please specify)
4. What is the highest level of education that you have completed?
  - \* Elementary school
  - \* Middle school/Junior High school
  - \* High school
  - \* Technical school
  - \* 2-year college
  - \* Some 4-year college
  - \* 4-year college degree
  - \* Some graduate school
  - \* Master's degree
  - \* Doctorate or professional degree
5. What is your current occupation?
6. Are you currently working full time or part time?
7. What is your partner's/spouse's occupation?
8. Is she currently working full time or part time?
9. What is your partner's/spouse's age?
10. How many years have you been married to your present partner/spouse?

11. How long ago was your partner/spouse first diagnosed with breast cancer?  
.....years ..... months
12. What stage was your partner's/spouse's breast cancer when first diagnosed?
13. What type of surgery did your partner/spouse undergo? (select all that apply)
- \* lumpectomy
  - \* mastectomy
  - \* other (please specify)
14. What kind of treatment did your partner/spouse undergo? (select all that apply)
- \* chemotherapy
  - \* radiation therapy
  - \* hormone therapy (tamoxifen, etc.)
  - \* alternative therapy
15. Is your partner/spouse still undergoing treatment? ..... Please specify. ....
16. Please describe your partner's/spouse's current physical functioning in daily activities:
- \* Better than before her breast cancer diagnosis
  - \* Same as before her breast cancer diagnosis
  - \* Slightly lower functioning than prior to diagnosis
  - \* Significantly lower functioning than prior to diagnosis
  - \* Very poor functioning compared to pre-diagnosis
17. Has your partner/spouse had a recurrence?..... If so, how long ago did it occur?.....
18. How, if at all, has the breast cancer experience changed your perception of yourself? Please be as explicit as possible (example: changes in family roles, etc.)
19. Since your partner's/spouse's diagnosis of breast cancer, would you say your relationship with her has gotten better, gotten worse, or stayed the same? To what do you attribute any changes in your relationship?
20. Please describe your own health and any changes in health you may have experienced since your partner's/spouse's illness.

## Appendix E

Open-ended Questions

1. Since your partner's diagnosis of breast cancer, has your perception of yourself changed due to direct or indirect effects of your wife's cancer? Please be as explicit as possible (example: changes in family roles, etc..)

2. Since your partner's diagnosis of breast cancer, would you say that:

A. your relationship with her has gotten better,

B. gotten worse, or

C. stayed the same?

To what do you attribute any changes in your relationship?

3. Please describe your own health and any changes in health you may have experienced since your partner's illness.

## Appendix F

The Revised Life Orientation Test: LOT-R, A Measure of Optimism

(Scheier, M.F., Carver, C.S. & Bridges, M.W. 1994)

Please answer the following questions about yourself by indicating the extent of your agreement using the following scale:

[0] = strongly disagree

[1] = disagree

[2] = neutral

[3] = agree

[4] = strongly agree

Be as honest as you can throughout, and try not to let your responses to one question influence your response to other questions. There are no right or wrong answers.

..... 1. In uncertain times, I usually expect the best.

..... 2. It's easy for me to relax.

..... 3. If something can go wrong for me, it will.

..... 4. I'm always optimistic about my future.

..... 5. I enjoy my friends a lot.

..... 6. It's important for me to keep busy.

..... 7. I hardly ever expect things to go my way.

..... 8. I don't get upset too easily.

..... 9. I rarely count on good things happening to me.

..... 10. Overall, I expect more good things to happen to me than bad.

## Appendix G

The M Scale: A Measure of Self-Mastery

(Pearlin &amp; Schooler, 1978)

Please indicate the extent to which you agree or disagree with the following statements by circling the appropriate response from the following key:

Strongly Agree SA	Agree A	Undecided U	Disagree D	Strongly Disagree SD	
1. There is really no way I can solve some of the problems I have,	SA	A	U	D	SD
2. Sometimes I feel that I'm being pushed around in life.	SA	A	U	D	SD
3. I have little control over the things that happen to me.	SA	A	U	D	SD
4. I can do just about anything I really set my mind to.	SA	A	U	D	SD
5. I often feel helpless in dealing with the problems of life.	SA	A	U	D	SD
6. What happens to me in the future mostly depends on me.	SA	A	U	D	SD
7. There is little I can do to change many of the important things in my life.	SA	A	U	D	SD

## Appendix H

WOC Revised: A Measure of Coping

(Folkman &amp; Lazarus)

Please read each item below and indicate, by marking the appropriate category, to what extent you use it to deal with your wife's breast cancer diagnosis and treatment.

Does not apply or not used 0	Used somewhat 1	Used quite a bit 2	Used a great deal 3	
1. I went over the situation or event again and again in my mind to try and understand it.	0	1	2	3
2. I felt that time would make a difference and the only thing to do was to wait.	0	1	2	3
3. Talked to someone to find out more about the situation.	0	1	2	3
4. Hoped a miracle would happen.	0	1	2	3
5. Went along with fate; sometimes I just have bad luck.	0	1	2	3
6. I went on as if nothing had happened.	0	1	2	3
7. Looked for the silver lining, so to speak; tried to look for the bright side of things.	0	1	2	3
8. Tried to seek out sympathy.	0	1	2	3
9. Tried to do something creative.	0	1	2	3
10. Tried to forget the whole thing.	0	1	2	3
11. Tried to make changes in a good way.	0	1	2	3
12. Decided to wait and see what would happen.	0	1	2	3
13. Tried to come up with a plan of action.	0	1	2	3
14. Did not go with my first hunch.	0	1	2	3



15. Tried to let feelings out.	0	1	2	3
16. Decided to rediscover life.	0	1	2	3
17. Asked a friend what s/he thought.	0	1	2	3
18. Decided to try to change something.	0	1	2	3
19. Talked to someone about how I was feeling.	0	1	2	3
20. Drew on past experience.	0	1	2	3
21. Thought about what could be done.	0	1	2	3
22. Considered different solutions.	0	1	2	3
23. Tried to accept the situation.	0	1	2	3
24. Tried to keep my feelings from interfering with other things too much.	0	1	2	3
25. Wished that I could change what had happened or how I felt.	0	1	2	3
26. I daydreamed or imagined a better time.	0	1	2	3
27. Wished that the situation would go away or somehow be over with.	0	1	2	3
28. Had fantasies or wished about how things might turn out.	0	1	2	3
29. I went over in my mind what I would say or do.	0	1	2	3
30. Tried to see the other perspectives.	0	1	2	3

## Appendix I

The QMI (Norton, 1983)

Please rate the following items with regard to how you feel about your marriage at the present time.

Strongly Agree..... Strongly Disagree

1. We have a good marriage .      1      2      3      4      5      6

2. My relationship with my partner is very stable.      1      2      3      4      5      6

3. Our marriage is strong.      1      2      3      4      5      6

4. My relationship with my partner makes me feel happy.      1      2      3      4      5      6

5. I really feel like a part of a team with my partner.      1      2      3      4      5      6

6. {The degree of happiness, everything considered, in your marriage }

Lowest degree of happiness ..... Highest degree of happiness

1      2      3      4      5      6      7      8      9      10

## Appendix J

Social Provisions Scale

Instructions: In answering the following questions, think about your current relationships with friends, family members, co-workers, community members and so on. Then indicate by circling the correct number, to what extent each statement describes your current relationships with other people. Use the following scale to give your opinions:

1	2	3	4
strongly disagree	disagree	agree	strongly agree

1. There are other people I can depend on to help me if I really need it.

1   2   3   4

2. I feel that I do not have close personal relationships with others.

1   2   3   4

3. There is no one I can turn to for guidance in times of stress.

1   2   3   4

4. There are people who depend on me for help.

1   2   3   4

5. There are people who enjoy the same social activities I do.

1   2   3   4

6. Other people do not view me as competent.

1   2   3   4

7. I feel personally responsible for the well-being of another person.

1   2   3   4

8. I feel part of a group of people who share my attitudes and beliefs.

1   2   3   4

9. I do not think that other people respect my skills and abilities.

1   2   3   4

10. If something went wrong, no one would come to my assistance.

1   2   3   4

11. I have close relationships that provide me with a sense of emotional security and well-being.

1   2   3   4

12. There is someone I could talk to about important decisions in my life.  
1 2 3 4
13. I have relationships where my competence and skills are recognized.  
1 2 3 4
14. There is no one who shares my interests and concerns.  
1 2 3 4
15. There is no one who really relies on me for his or her well-being.  
1 2 3 4
16. There is a trustworthy person I could turn to for advice if I were  
having problems.  
1 2 3 4
17. I feel a strong emotional bond with at least one other person.  
1 2 3 4
18. There is no one I can depend on for aid if I really need it.  
1 2 3 4
19. There is no one I feel comfortable talking about my problems with.  
1 2 3 4
20. There are people who admire my talents and abilities.  
1 2 3 4
21. I lack a feeling of intimacy with another person.  
1 2 3 4
22. There is no one who likes to do the things I do.  
1 2 3 4
23. There are people I can count on in an emergency.  
1 2 3 4
24. No one needs me to care for him or her.  
1 2 3 4

## Appendix K

The Post Traumatic Growth Inventory

(Calhoun & Tedeschi, 1995)

Indicate for each of the statements below the degree to which this change occurred in your life as a result of your crisis, using the following scale.

- 0 = I did not experience this change as a result of my crisis.
- 1 = I experienced this change to a very small degree as a result of my crisis.
- 2 = I experienced this change to a small degree as a result of my crisis.
- 3 = I experienced this change to a moderate degree as a result of my crisis.
- 4 = I experienced this change to a great degree as a result of my crisis.
- 5 = I experienced this change to a very great degree as a result of my crisis.

1. I changed my priorities about what is important in life.
2. I have a greater appreciation for the value of my own life.
3. I have developed new interests.
4. I have a greater feeling of self-reliance.
5. I have a better understanding of spiritual matters.
6. I more clearly see that I can count on people in times of trouble.
7. I established a new path for my life.
8. I have a greater sense of closeness with others.
9. I am more willing to express my emotions.
10. I know better that I can handle difficulties.
11. I am able to do better things with my life.
12. I am better able to accept the way things work out.
13. I can better appreciate each day.
14. New opportunities are available which wouldn't have been otherwise.
15. I have more compassion for others.

16. I put more effort into my relationships.
17. I am more likely to try to change things which need changing.
18. I have a stronger religious faith.
19. I discovered that I'm stronger than I thought I was.
20. I learned a great deal about how wonderful people are.
21. I better accept needing others.

## References

- American Cancer Society (July 16, 2003). *Facts and figures* [Electronic File]. Available: [www.cancerorg/docroot/STT/stt\\_o.asp](http://www.cancerorg/docroot/STT/stt_o.asp).
- Astin, J.A., Anton-Culver, H., Schwartz, C.E., Shapiro, D.H., McQuade, J., Breur, A.M., Taylor, T.H., Lee, H., & Kurosaki, T. (1999). Sense of control and adjustment to breast cancer: The importance of balancing control coping styles. *Behavioral Medicine*, 25 (3), 101-109.
- Barrera, M. & Ainley, S.L. (1983). The structure of social support: A conceptual and empirical analysis. *Journal of Community Psychology*, 11, 133-143.
- Ben-Zur, H. (2001). Your coping strategy and my distress: interspouse perceptions of coping and adjustment among breast cancer patients and their spouses. *Families, Systems, & Health: The Journal of Collaborative Family Healthcare*, 19 (10), 83-95.
- Bouchard, G., Sabourin, S., Lussier, Y., Wright, J., & Richer, C. (1998). Predictive validity of coping strategies on marital satisfaction: cross-sectional and longitudinal evidence. *Journal of Family Psychology*, 12 (1), 112-131.
- Bryant, F.B., Yarnold, P.R. (1995). Principle components analysis and exploratory and confirmatory factor analysis. In L.G. Grimm & P.R. Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 99-136). Washington D.C.: American Psychological Association.
- Calhoun, L., Cann, A., Tedeschi, R., McMillan, J. (2000). A correlational test of the relationship between posttraumatic growth, religion, and cognitive processing. *Journal of Traumatic Stress*, 13 (3), 521-527.

Carter, R. & Carter, C. (1993). Individual and marital adjustment in spouse pairs subsequent to mastectomy. *The American Journal of Family Therapy*, 21 (4), 291-300.

Carver, C., Pozo, C., Harris, S., Noriega, V., Scheier, M., Robinson, D., Ketcham, A., Moffat Jr., F., & Clark, K. (1993) How coping mediates the effect of optimism on distress: a study of women with early stage breast cancer. *Journal of Personality and Social Psychology*, 56 (2) 375-390.

Carver, C., Scheier, M., & Weintraub, J. (1989). Assessing coping strategies: a theoretically based approach. *Journal of Personality and Social Psychology*, 56 (2), 267-283.

Carver, C.S. & Gaines, J.G. (1987). Optimism, pessimism, and postpartum depression. *Cognitive Therapy and Research*, 11, 449-462.

Cohen, S. & Wills, T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98, 319-357.

Collins, R., Taylor, S., & Skokan, L. (1990). A better world or a shattered vision? Changes in life perspectives following victimization. *Social Cognition*, 8 (3), 263-285.

Cordova, M., Cunningham, L., Carlson, C. & Andrykowski, M. (2001). Posttraumatic growth following breast cancer: A controlled comparison study. *Health Psychology*, 20 (3), 176-185.

Cordova, M., Andrykowski, M., Kenady, D., McGrath, P., Sloan, D., & Redd, W. (1995). Frequency and correlates of posttraumatic-stress-disorder-like symptoms after treatment for breast cancer. *Journal of Consulting and Clinical Psychology*, 63 (6), 981-986.



Coyne, J.C., Wortman, C.B., & Lehman, D.R. (1988). The other side of support: Emotional overinvolvement and miscarried helping. In B.H. Hottlieb (Ed.) *Marshaling social support* (pp. 305-330). Newbury Park, CA: Sage.

Cutrona, C. E. & Russell, D. (1987). The provisions of social relationships and adaptation to stress. In W. H. Jones & D. Perlman (Eds.), *Advances in personal relationships* ( pp. 37—67). Greenwich, CT: JAI Press.

Dukes Holland, K. & Holahan, C. (2003). The relation of social support and coping to positive adaptation to breast cancer. *Psychology and Health, 18 (1)*, 15-30.

Dunkel-Schetter, C. (1984). Social support and cancer: Findings based on patient interviews and their implications. *Journal of Social Issues, 40 (4)*, 77-98.

Ell, K. (1984). Social support and recovery from myocardial infarction: A panel study. *Journal of Social Service Research, 7 (4)*, 1-19.

Eysenck, H.J. (1958). A short questionnaire for the measurement of two-dimensions of personality. *Journal of Applied Psychology, 42*, 14-17.

Fang, C., Manne, S., & Pape, S. (2001). Functional impairment, marital quality, and patient psychological distress as predictors of psychological distress among cancer patients' spouses. *Health Psychology, 20 (6)*, 452-457.

Fisher, B., Anderson, S., Bryant, J. Margolese, R., Deutsh, M., Fisher, E., Jeong, J. & Wolmark, N. (2002). Twenty-year follow-up of a randomized trial comparing total mastectomy, lumpectomy, and lumpectomy plus irradiation for the treatment of invasive breast cancer. *New England Journal of Medicine, 347 (16)*, 1233-1241.

Folkman, S. & Lazarus, R. S. (1988). *Manual for the Ways of Coping Questionnaire*. Consulting Psychologists Press: Palo Alto, CA.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotions and coping during three stages of a college examination. *Journal of Personality and Social Psychology, 48*, 150-1170.

Frank, E., Anderson, C. & Rubenstein, D. (1979). Marital strain and sexual satisfaction. *Journal of Consulting and Clinical Psychology, 25*, 747-758.

Frankl, V.E. (1963). *Man's search for meaning: an introduction to logotherapy*. New York: Pocket Books.

Friedman, L., Nelson, D., Baer, P., Lane, M. Smith, F., & Dworkin, R. (1992). The relationship of dispositional optimism, daily life stress, and domestic environment to coping methods used by cancer patients. *Journal of Behavioral Medicine, 15 (2)*, 127-141.

Fromm, K., Andrykowski, M., & Hunt, J. (1996). Positive and negative psychological sequelae of bone marrow transplantation: implications for quality of life assessment. *Journal of Behavioral Medicine, 19 (3)*, 221-239.

Gelso, C.J. & Fretz, B.R. (1992). *Counseling Psychology*. Fort Worth: Harcourt Brace Jovanovich.

Given, C., Stommel, M., Given, B., Osuch, J., Kurtz, M. & Kurtz, J. (1993). The influence of cancer patients' symptoms and functional states on patients' depression and family caregivers' reactions and depression. *Health Psychology, 12 (4)* 277-285.

Gottlieb, B.H. & Wolfe, J. (2002). Coping with family caregiving to persons with dementia: a critical review. *Aging and Mental Health, 6 (4)*, 325-342.

Hannum, J. Giese-Davis, J., Harding, K. & Hatfield, A. (1991). Effects of individual and marital variables on coping with cancer. *Journal of Psychosocial Oncology*, 9 (2), 1-20.

Harju, B.L. & Bolen, L.M. (1998). The effects of optimism on coping and perceived quality of life of college students. *Journal of Social Behavior and Personality*, 13, 185-200.

Helgeson, V.S. & Cohen, S. (1996). Social support and adjustment to cancer reconciling descriptive, correlational, and intervention research. *Health Psychology*, 15 (2) 135-148.

Hilton, B., Crawford, J., & Tarko, M. (2000). Men's perspectives on individual and family coping with their wives' breast cancer and chemotherapy. *Western Journal of Nursing Research*, 22 (4), 438-460.

Hilton, B.A. (1993). Issues, problems, and challenges for families coping with breast cancer. *Seminars in Oncology Nursing*, 9, 88-100.

Hoffman, M.A., Holmes, S.E., Mount, M.K., Singley, D., Spiegel, E. B., Costar, H.M., & Kivlighan, D.M., (2004) Coping with 9/11: A Biopsychosocial Exploration of Subjective Well-Being. Paper presented at the Annual Convention of the American Psychological Association. July:Honolulu, Hawaii.

Hoskins, C., Baker, S., Budin, W., Ekstrom, D. , Maislin, G., Sherman, D., Steelman-Bohlander, J., Bookbinder, M., & Knauer, C. (1996). Adjustment among husbands of women with breast cancer. *Journal of Psychosocial Oncology*, 14 (1), 41-69.

Hoskins, C., Baker, S., Sherman, D., & Bohlander, J. (1996). Social support and patterns of adjustment to breast cancer. *Scholarly Inquiry for Nursing Practice, 10* (2), 99-123.

House, J.S. (1981). Measures and concepts of social support. In S. Cohen & L. Syme (Eds.) *Social support and health*. (pp.83-108). New York: Academic Press.

Kelly, G.A. (1955) *The psychology of personal constructs* (Vol 1.). New York: Norton.

Kurtz, M., Kurtz, J., Given, C., & Given, B. (1995). Relationship of caregiver reactions and depression to cancer patients' symptoms, functional states, and depression: a longitudinal view. *Social Science and Medicine, 40* (6), 837-846.

Lazarus, R. & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.

Leppin, A. & Schwarzer, R. (1990). Social support and physical health: An updated meta-analysis. In J. Weinman & S. Maes (Eds.), *Theoretical and applied aspects of health psychology* (pp. 185-202). London: Harwood.

Lewis, F.M. & Hammond, M.A. (1996). The father's, mother's, and adolescent's functioning with breast cancer. *Family Relations, 45*, 456-465.

Lichtman, R.R., Taylor, S.E., & Wood, J.V. (1987). Social support and marital adjustment after breast cancer. *Journal of Psychosocial Oncology, 5*, 47-74.

Lightsey, O. (1997). Stress buffers and dysphoria: a prospective study. *Journal of Cognitive Psychotherapy: An International Quarterly, 11* (4), 263- 277.

Lussier, Y., Sabourin, S., & Turgeon, C. (1997). Coping strategies as moderators of the relationship between attachment and marital adjustment. *Journal of Social and Personal Relationships, 14* (6), 777-791.

Maguire, P. (1981). The repercussions of mastectomy on the family. *International Journal of Family Psychiatry, 1*, 485-503.

Manne, S. & Schnoll, R. (2001). Measuring cancer patients' psychological distress and well-being: a factor analytic assessment of the mental health inventory. *Psychological Assessment, 13* (1), 99-109.

Manne, S., Alfieri, T., Taylor, K. L. & Dougherty, J. (1999). Spousal negative responses to cancer patients: The role of social restriction, spouse mood, and relationship satisfaction. *Journal of Consulting and Clinical Psychology, 67*, 352-361.

Margolin, G. (1978). Relationships among marital assessment procedures: A correlational study. *Journal of Consulting and Clinical Psychology, 46*, (6), 1556-1558.

Marshall, G. N. & Lang, E. L. (1990). Optimism, self-mastery, and symptoms of depression in women. *Journal of Personality and Social Psychology, 59*, 132-139.

Matson, N. (1995). Coping in context: strategic and tactical coping in carers of stroke survivors and carers of older, confused people. *Journal of Community and Applied Social Psychology, 5*, 89-104.

Montgomery, G., David, D., Goldfarb, A., Silverstein, J., Weltz, C., Birk, J. & Bovbjerg, D. (2003). Sources of anticipatory distress among breast surgery patients. *Journal of Behavioral Medicine, 26* (2), 153-164.

Murray, S.L. & Holmes, J.G. (1997). A leap of faith? Positive illusions in romantic relationships. *Personality and Social Psychology Bulletin, 23*, 586-602.

National Alliance of Breast Cancer Organizations (May 23, 2003). *The basics: Facts and stats*. [Electronic File] Available: [www.nabco.org](http://www.nabco.org).

Northouse, L., Templin, T., & Mood, D. (2001). Couples' adjustment to breast disease during the first year following diagnosis. *Journal of Behavioral Medicine, 24*, 115-136.

Northouse, L., Templin, T., Mood, D., & Oberst, M. (1998). Couples' adjustment to breast cancer and benign breast disease: a longitudinal analysis. *Psycho-Oncology, 7*, 37-48.

Northouse, L., Dorris, G., & Charron-Moore, C. (1995). Factors affecting couples' adjustment to recurrent breast cancer. *Social Science and Medicine, 41(1)*, 69-76.

Northouse, L. & Peters-Golden, H. (1993). Cancer and the family: strategies to assist spouses. *Seminars in Oncology Nursing, 9 (2)*, 74-82.

Northouse, L. (1988). Social support in patients' and husbands' adjustment to breast cancer. *Nursing Research, 37 (2)*, 91-95.

Northouse, L. & Swain, M. (1987). Adjustment of patients and husbands to the initial impact of breast cancer. *Nursing Research, 36*, 221-225.

O'Mahoney, J. & Carroll, R. (1997). The impact of breast cancer and its treatment on marital functioning. *Journal of Clinical Psychology in Medical Settings, 4 (4)*, 397-415.

O'Neil, J.M. (1981). Male sex role conflicts, sexism, and masculinity: Psychological implications for men, women, and the counseling psychologist. *The Counseling Psychologist, 9*, 61-80.

Park, C.L., Cohen, L.H. & Murch, R.L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality*, 64, 71-105.

Pearlin, L. I. & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior*, 19, 2-21.

Perloff, L.S. (1983). Perceptions of vulnerability to victimization. *Journal of Social Issues*, 39, 41-61.

Ptacek, J.T., Ptacek, J. J., & Dodge, K. (1994). Coping with breast cancer from the perspectives of husbands and wives. *Journal of Psychosocial Oncology*, 12 (3), 47-72.

Russell, D. & Cutrona, C. E. (1984, August). *The provisions of social relationships and adaptation to stress*. (Paper presented at the 92nd Annual Convention of the American Psychological Association, Toronto, Ontario, Canada).

Sarason, I. G., Levine, H. M., Basham, R. B., & Sarason, B. R. (1983). Assessing social support: The Social Support Questionnaire. *Journal of Personality and Social Psychology*, 44(1), 127-139.

Scheier, M., Carver, C., & Bridges, M. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery and self-esteem): A Re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67 (6) 1063-1078.

Scheier, M.F., Macgovern, G.J., Abbott, R.A., Matthews, K.A., Owens, J.F., Lefebvre, R.C., & Carver, C.S. (1989). Dispositional optimism and recovery from coronary artery bypass surgery: The beneficial effects on physical and psychological well-being. *Journal of Personality and Social Psychology*, 51, 1257-1264.

Scheier, M.F., Weintraub, J.K., & Carver, C.S. (1986). Coping with stress: Divergent strategies of optimists and pessimists. *Journal of Personality and Social Psychology, 51*, 1257-1264.

Scheier, M.F. & Carver, C.S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychology, 4*, 219-247.

Scherer, R.F., Wiebe, F.A., & Luther, D.C. (1988). Dimensionality of coping: Factor stability using the Ways of Coping Questionnaire. *62 (3)*, 763-770.

Schmale, A., Morrow, G., Schmitt, M., Adler, L., Enelow, A., Murawski, B., & Gates, C. (1983). Well-being of cancer survivors. *Psychosomatic Medicine, 45 (2)* 163-168.

Schnoll, R., Knowles, J., & Harlow, L. (2002). Correlates of adjustment among cancer survivors. *Journal of Psychosocial Oncology, 20 (1)*, 37-60.

Seeman, M. & Evans, J.W. (1962). Alienation and learning in a hospital setting. *American Sociological Review, 27*, 772-783.

Seligman, M.E.P. (1998). Building human strength: psychology's forgotten mission. *APA Monitor, 29 (1)*.

Seligman, M.E.P. (1975). *Helplessness: On Depression, development, and death*. San Francisco: Freeman.

Smith, T. W., Pope, M. K., Rhodewalt, F. & Poulton, J. L. (1989). Optimism, neuroticism, coping, and symptom reports: An alternative interpretation of the Life Orientation Test. *Journal of Personality and Social Psychology, 56*, 640-648.

Snape, M.C. (1997). Reactions to a traumatic event: the good, the bad, and the ugly. *Psychology, Health, and Medicine, 2 (3)*, 237-242.



Spanier, G.B. & Thompson, L. (1988). A confirmatory analysis of the dyadic adjustment scale. *Journal of Marriage and the Family*, 44 (3), 731-738.

Spanier, G.B. (1976). Measuring dyadic adjustment: new scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family*, 38, 15-28.

Strickland, B.R. (1989). Internal-external control expectancies: From contingency to creativity. *American Psychologist*, 44, 1-12.

Sullivan, A. (2002). Gender differences in coping strategies of parents of children with Down Syndrome. *Down Syndrome: Research and Practice*, 8 (2), 67-73.

SusanLoveMD.org: The Website for Women (May 17, 2003). *Decision making*. [Electronic File]. Available: [www.susanlovemd.com](http://www.susanlovemd.com).

Susan G. Komen Foundation (May 23, 2003). *Komen facts for life*. [Electronic File]. Available: [www.komen.org/bci](http://www.komen.org/bci).

Swindle, R.W., Heller, K., & Lakey, B. (1988). A conceptual reorientation to the study of personality and stressful life events. In L.H. Cohen (Ed.), *Life events and psychological functioning: Theoretical and methodological issues* (pp. 237-268). Newbury Park, CA: Sage.

Tait, R. & Silver, R.C. (1989). Coming to terms with major negative life events. In J.S. Uleman & J.A. Bargh (Eds.), *Unintended thought* (pp. 351-382). New York: Guilford.

Tedeschi, R., Park, C., & Calhoun, L. (Eds.) (1998). *Posttraumatic growth: positive changes in the aftermath of crisis*. Mahwah: Lawrence Erlbaum Associates.

Tedeschi, R. & Calhoun, L. (1996). The PTG inventory: measuring the positive legacy of trauma. *Journal of Traumatic Stress*, 9, 455-471.

Tedeschi, R. & Calhoun, L. (1995) *Trauma and transformation*. Thousand Oaks: Sage Publications.

Thompson, S.C., Sobolew-Shubin, Galbraith, M., Schwankovsky, L. (1993). Maintaining perceptions of control: Finding perceived control in low-control circumstances. *Journal of Personality and Social Psychology*, 64 (2), 293-304.

Wampold, B.E. & Freund, R.D. (1987). Use of multiple regression in counseling psychology research: A flexible data-analytic strategy. *Journal of Counseling Psychology*, 34, 372-382.

Weiss, T. (2002) Posttraumatic growth in women with breast cancer and their husbands: an intersubjective validation study. *Journal of Psychosocial Oncology*, 20 (2) 65-80.

Weiss, R. (1974). The provisions of social relationships. In Z. Rubin (Ed.), *Doing unto others* (pp. 17-26). Englewood Cliffs, NJ: Prentice-Hall.

Witkins, M.H. (1979). Psychosocial myths and realities of mastectomy. *Medical Aspects of Human Sexuality*, 13, 65-79.

Zahlis, E., & Shands, M. (1993). The impact of breast cancer on the partner 18 months after diagnosis. *Seminars in Oncology Nursing*, 9 (2), 83-87.