POSTTRAUMATIC GROWTH IN SURVIVORS OF BREAST CANCER: THE ROLE OF DISPOSITIONAL OPTIMISM, COPING STRATEGIES, AND PSYCHOSOCIAL INTERVENTIONS

by

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Abstract  

This study investigated the experience of posttraumatic growth for breast cancer survivors who volunteered to complete a survey ($N = 277$). A number of participants also provided narrative responses containing their personal experiences of breast cancer ($N = 100$). Demographic characteristics, breast cancer variables, optimism, coping strategies, and participation in psychosocial interventions were examined in relation to posttraumatic growth as measured by the Posttraumatic Growth Inventory. Differences between those who participated in psychosocial interventions versus those who did not were examined. The relation of coping strategies utilized and optimism level to interventions accessed was also of interest. Predictors of posttraumatic growth were examined via generalized linear modeling. Finally, the narrative responses were investigated by means of content analysis. The results provided evidence that demographic characteristics (i.e., affiliation with religion and lower levels of education) and one breast cancer variable (i.e., increased number of years since diagnosis) were related to experiences of posttraumatic growth for breast cancer survivors. Use of active forms of coping, optimism level, and participation in recreational interventions were also related to posttraumatic growth. Those who participated in psychosocial interventions were more likely to be employed and have higher levels of education than those who did not access interventions. Use of several
active coping strategies and one passive coping strategy increased the likelihood of accessing a number of different psychosocial interventions. Posttraumatic growth was predicated by affiliation with religion, lower levels of education, increased number of years since diagnosis, knowledge of breast cancer stage, higher levels of optimism, and use of one passive and two active coping strategies. Many of these findings support previous research, however some conflict with prior results.

The narrative responses contained information regarding diagnosis and treatment, impact of breast cancer, coping with breast cancer, and support accessed. Although the negative impact of breast cancer was discussed in terms of short and long-term, positive long-term changes were also reported. A variety of coping strategies and supports were utilized by the participants as well.
Acknowledgments

I have been fortunate to have had the support of many wonderful people throughout the time that it took to complete this dissertation.

I am thankful for the women who participated in this research and shared their personal accounts of living with breast cancer. I have learned from their experiences that although this diagnosis can be trying and at times devastating, it can also lead to positive outcomes such as the formation of new relationships, new found strength, and appreciation for life.

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Dedication

This work is dedicated to my mother, Marilyn Buxton, who received a diagnosis of breast cancer in 2005, my first year of the Ph.D. program. I admire her ongoing strength, determination, and positive attitude. I am so thankful that she is still celebrating life. She showed me first hand that the “c” word needs not diminish one’s spirit.
Chapter One: 
Introduction and Literature Review

Statement of the Problem: Prevalence, Incidence and Impact of Breast Cancer

Cancer continues to be a rising concern as demonstrated by the increasing number of cancer diagnoses each year. It was predicted that 171,000 new cases of cancer would be diagnosed in Canada in 2009 (Canadian Cancer Society’s Steering Committee, 2009). This was an increase from the 166,400 new cases that were predicted for 2008 (Canadian Cancer Society/National Cancer Institute of Canada, 2008). For women, breast cancer is the most commonly diagnosed cancer worldwide. Each year an estimated 22,000 Canadian women will be diagnosed (Canadian Cancer Society/National Cancer Institute of Canada, 2007). Due to advances in adjuvant therapy (e.g., chemotherapy, radiation, and surgery) and increased participation in screening programs, mortality rates for breast cancer have been declining since the mid-1980’s (Canadian Cancer Society’s Steering Committee, 2009). This decline in mortality rates has resulted in more women than ever before living with a diagnosis of breast cancer. In Canada alone, an estimated 147,595 women had received a diagnosis of breast cancer at some point between 1995 and 2005 (Canadian Cancer Society’s Steering Committee, 2009). With increasing numbers of women living with breast cancer and as survivors of breast cancer, an understanding of the experience of living with a diagnosis of breast cancer is paramount. The high incidence and longer survival rates have been reflected in research with growing numbers of studies investigating how women are coping with a breast cancer diagnosis.
It is clear that breast cancer can have a very detrimental physical and psychological impact on women diagnosed with the disease. A diagnosis of a life threatening disease such as breast cancer can be a traumatic experience. While the majority of psychological research to date has focused on negative effects, we have long known that dealing with adversity and trauma can also help individuals derive meaning and psychological growth. Many variables or factors may contribute to psychological growth such as ways of coping, personality traits, and participation in psychosocial interventions. The following review of current literature focuses on the psychological impact of breast cancer, the concept of posttraumatic growth, ways of coping with the diagnosis, the personality characteristic of dispositional optimism, and psychosocial interventions for women with breast cancer.

**Psychological Impact of Breast Cancer**

The impact of breast cancer goes beyond the physical, from the spread of cancer and the often invasive procedures involved in treatment (e.g., chemotherapy, radiation, lumpectomy, and mastectomy), to impact the patient on a psychological level as well. Micozzi (2007) generally described the understanding of a cancer diagnosis: “To the patient, cancer is “bad”. It may be viewed as a punishment or as something unnatural placed on Earth to curse humankind” (p. 13). This struggle with meaning, as well as multiple stressors related to the aftermath of the diagnosis, may overwhelm the ability of the person diagnosed with cancer to cope. For example, psychological symptoms such as depression and anxiety may develop.

A large focus of breast cancer research to date has been the experiences of women following diagnosis. Coping with treatment may be challenging as treatment can be both invasive (e.g., lumpectomy) and lengthy (e.g., multiple sessions of chemotherapy). Once
treatment has been completed many survivors continue to experience distress as a result of concern about the effectiveness of treatment, symptoms, and follow-up; worries about physical functioning; problems concentrating; feelings related to the body; and a focus on mortality (Lauver, Connolly-Nelson, & Vang, 2007). Common physical ailments may also become triggers for the person who has endured cancer. A previously ignored headache or other pain may be interpreted as a recurrence of the disease and can trigger thoughts and fears related to the cancer (Meyerowitz, 1980).

Upon reviewing the literature pertaining to psychosocial correlates of breast cancer, Meyerowitz (1980) provided a summary of the most common responses to breast cancer and treatment. Meyerowitz categorized these responses into three categories: psychological symptoms including depression, anxiety, and anger; changes in life patterns such as physical problems, marital relationship, and reduced activity; and fear regarding the cancer and treatment. The majority of research has demonstrated an intense negative emotional reaction to a diagnosis of breast cancer (e.g., Hegal et al., 2006; Meyerowitz, 1980; Palmer, Kagee, Coyne, & DeMichele, 2004) and the most commonly documented psychological symptoms are those of depression and anxiety.

**Depression.** Symptoms of depression for those living with a breast cancer diagnosis are well-documented and have been reported as a significant problem (Sharpley & Christie, 2007). A recent review of studies on major depression for breast cancer survivors reported that the prevalence rate for Major Depressive Disorder was between 10-25% depending on the methods implemented for screening (Fann et al., 2008). The rate of depression for breast cancer survivors was reported by Fann et al. (2008) to be higher than that of most other cancers. The authors speculated that treatment related menopause and estrogen decline
resulted in the higher occurrence of depressive symptoms. Breast cancer survivors suffering with depression were likely to experience amplification of pain, cognitive impairment, and decreased adherence to treatment (Fann et al., 2008).

Although Sellick and Crooks (1999) reported in their review that many cancer patients did not meet the full criteria for a diagnosis of Major Depressive Disorder or Dysthymic Disorder, these patients still suffered from distressing symptoms such as decreased energy, difficulty concentrating, and thoughts of death. The authors suggested that if left untreated, depressive symptoms would impact the cancer patient’s ability to cope, ability to tolerate treatment, and general quality of life.

**Anxiety.** Since symptoms of depression and anxiety often co-occur, it is not surprising that anxiety has also been an issue for women diagnosed with breast cancer. Incidence of anxiety in breast cancer patients has been reported to be as high as 38% (Mehnert & Koch, 2008). In contrast, research by Sharpley and Christie (2007) revealed lower rates. They asked women who had a diagnosis of breast cancer during the previous 4 years to complete questionnaires about symptoms of anxiety and depression currently and to retrospectively answer the same surveys with how they felt at the time of diagnosis. Results indicated an incidence of 26% meeting criteria for an anxiety disorder at the time of diagnosis and an incidence of 16.3% as meeting criteria for an anxiety disorder an average of 2 years post-diagnosis.

Posttraumatic Stress Disorder (PTSD), considered an anxiety disorder (APA, 1994), has been investigated as a reaction to a breast cancer diagnosis. Although many breast cancer survivors view their cancer diagnosis as traumatic, the diagnosis does not automatically result in a posttraumatic stress response. To invoke this response, the breast cancer diagnosis
must be viewed as life threatening and accompanied by feelings of fear, helplessness, and/or horror (APA, 1994).

The prevalence of PTSD following a breast cancer diagnosis varies in the research. For example, Palmer et al. (2004) determined that there was a low prevalence of PTSD among breast cancer survivors (4%). Similarly, research conducted by Mehnert and Koch (2007) found a low prevalence of PTSD in breast cancer patients during primary cancer care (2.4%). However, a more recent study by Mehnert and Koch (2008) demonstrated a higher rate of PTSD in long-term breast cancer survivors of 12%. Although prevalence rates of meeting full PTSD criteria have been relatively low for survivors of breast cancer, many women experience posttraumatic stress symptoms. For example, Mehnert and Koch (2007) reported that 54.3% of their sample experienced their breast cancer diagnosis as a traumatic event and 21.3% experienced posttraumatic stress symptoms of intrusion (e.g., recurrent and intrusive distressing thoughts) and/or arousal (e.g., irritability).

Most survivors of breast cancer will not meet the full criteria for a specific depression or anxiety related diagnosis, however, many women will experience significant symptoms of depression and anxiety. These psychological symptoms are common among survivors of breast cancer prior to treatment, during treatment, and following treatment. In coexistence with experiences of distress related to breast cancer, some women will also experience positive outcomes (i.e., posttraumatic growth) as a result of their breast cancer diagnosis. A popular model of posttraumatic growth and a literature review of posttraumatic growth following a diagnosis of breast cancer follow.
Posttraumatic Growth

Still a new research area, the movement toward investigating positive outcomes from traumatic experiences has been developing over the past 15 to 20 years. Despite this recent focus in research, the concept of positive change following suffering dates back to early religious writings and teachings (e.g., Christianity, Hinduism, and Buddhism; Tedeschi & Calhoun, 1995).

The term “posttraumatic growth” is a recent one and as a result a theoretical basis is still emerging. Posttraumatic growth has been included as a construct in the branch of positive psychology (e.g., Linley, Joseph, Maltby, Harrington, & Wood, 2009). The beginnings of positive psychology trace back to Martin E. P. Seligman’s 1999 Presidential Address for the American Psychological Association (Joseph & Linley, 2006). Positive psychology focuses on positive qualities such as strengths rather than focusing on psychopathology. Seligman and Csikszentmihalyi (2000) assert that psychology has long focused on weaknesses and deficits instead of positive characteristics. They suggest that this is a result of negative emotions being associated with urgency and danger. They further explain why they believe that positive emotions have been largely neglected in the field of psychology,

Perhaps, however, people are blinded to the survival value of positive emotions precisely because they are so important. Like the fish who is unaware of the water in which it swims, people take for granted a certain amount of hope, love, enjoyment, and trust because these are the very conditions that allow them to go on living. These conditions are fundamental to existence, and if they are present, any number of objective obstacles can be faced with equanimity and even joy. (p. 13)

Seligman and Csikszentmihalyi discuss the importance of balancing the negative focus of psychology by also focusing on those emotions that make living worthwhile and improve quality of life. Traumatic events have been thoroughly investigated in terms of their negative
impact on lives, however, there is evidence that trauma can also result in positive change (i.e., posttraumatic growth).

**Model of posttraumatic growth.** The use of the term posttraumatic growth to refer to positive outcomes following a crisis was coined by Tedeschi and Calhoun. A description of how these positive changes transpire follows, “the frightening and confusing aftermath of trauma, where fundamental assumptions are severely challenged, can be fertile ground for unexpected outcomes that can be observed in survivors: posttraumatic growth” (Tedeschi & Calhoun, 2004, p. 1). Tedeschi and Calhoun (2004) explain that experiencing a trauma can result in a reevaluation of how survivors make sense of the world. Although distress often accompanies trauma, Tedeschi and Calhoun (2004) suggest that posttraumatic growth coexists with distress and is an ongoing process that results in the achievement of positive changes in one or more areas of a survivor’s life. While a number of aspects of posttraumatic growth have been identified by researchers, clinicians have long considered the various aspects of a person’s life that can be affected by positive changes following trauma.

A general model of posttraumatic growth has been outlined by Calhoun and Tedeschi (1998; 2006; Tedeschi & Calhoun, 2004). They propose that posttraumatic growth develops from the cognitive processing that occurs as a result from coming to terms with the impact of a traumatic event. This essential component is described as the “struggle with the new reality in the aftermath of trauma that is crucial in determining the extent to which posttraumatic growth occurs” (Tedeschi & Calhoun, 2004, p. 5). They explain that the more a person’s assumptive world (e.g., beliefs about predictability), safety, identity and future are challenged, the more likely the traumatic event has been experienced as a crisis and the individual will experience distress.
According to Calhoun and Tedeschi (2006), this cognitive processing of trauma consists of rumination phases (i.e., repeated thinking). At first, rumination is mostly automatic and intrusive. In this model rumination is not meant to be viewed in a negative light (i.e., intrusive thoughts), instead the authors suggest that rumination be thought of as cognitive engagement. This initial rumination phase leads to both self-disclosure and a decrease of emotional distress, management of automatic rumination, and disengagement from goals. This step leads to a rumination phase that is more deliberate in nature; there is schema change and development of narrative. Posttraumatic growth occurs as a result of incorporating these challenges into a new way of thinking. This cognitive processing allows a person to become stronger or more resilient in facing future traumas.

**Five factors of posttraumatic growth.** The development of a scale to quantify posttraumatic growth, the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996), led to the identification of five factors that contribute to posttraumatic growth. These five factors are widely accepted to be: “personal strength”, “new possibilities”, “relating to others”, “appreciation of life”, and “spiritual change”. The factors “personal strength” and “new possibilities” both represent the domain of “changed perception of self”. The factors of “appreciation of life” and “spiritual change” represent the domain of “changed philosophy of life”. A description of these five factors of posttraumatic growth follows.

**Personal strength.** The first factor of posttraumatic growth involves a change in self-perception following the experience of a trauma. Having the capacity to live through a crisis that threatens well-being may result in newfound personal strength (Tedeschi & Calhoun, 1996). Women who have battled breast cancer and survived treatment may recognize the strength and spirit they embodied to persevere through this experience. Their newly
discovered strength may then be applied to other areas of their lives (Tedeschi & Calhoun, 2004) and result in increased risk taking and confidence when dealing with challenges and adversity.

**New possibilities.** New possibilities may also arise out of changes in self-perception following trauma (Tedeschi & Calhoun, 1996). Newly developed interests, changes in career, and participation in new activities may occur. Tedeschi and Calhoun (2004) provide the example of a woman who changed career paths to oncology nursing after grieving her own personal loss. In addition, more time may be invested in fulfilling activities following an experience of trauma. For example, dragon boat racing has become an increasingly popular physical activity for women who have survived breast cancer. The first breast cancer survivor dragon boat team was formed in Vancouver, British Columbia in 1996 as part of a research study (McKenzie, 1998). As of 2008 the number of breast cancer survivor teams had increased to 93 worldwide (Parry, 2008).

**Relating to others.** Deeper and more meaningful relationships may develop following the experience of trauma (Tedeschi & Calhoun, 1996). Living through a crisis and drawing on social support during a time of need will strengthen some relationships and dissolve others. Tedeschi and Calhoun (2004) suggest that although some relationships are lost, the relationships that become stronger and more meaningful contribute to the experience of posttraumatic growth. Additionally, greater compassion may result from the experience of trauma allowing greater empathy toward those who are also facing adversity (Tedeschi & Calhoun, 2004).
Appreciation of life. Changes in the philosophy of life may emerge following an experience of trauma, which can include changed priorities and appreciation (Tedeschi & Calhoun, 1996). After one is challenged by a traumatic event, a feeling of being fortunate to be alive and a new appreciation of life may result (Tedeschi & Calhoun, 2004). Those receiving the diagnosis of a life threatening illness such as breast cancer are forced to confront their own mortality and may develop new outlooks on areas of their lives that were previously taken for granted (e.g., the “little things” such as the smile of a child; Tedeschi & Calhoun, 2004).

Spiritual change. Additionally, those who have experienced trauma may need to renegotiate their belief systems and search for answers to spiritual questions such as what purpose did the trauma serve? (Tedeschi & Calhoun, 1996). This process may strengthen spirituality and religious beliefs. Those who are not religious may also experience growth in this area through the contemplation of existential questions (Tedeschi & Calhoun, 2004). Breast cancer survivors may create their own personal meaning for why they developed cancer. For example, some survivors come to view their cancer as a gift that taught them to slow down, decrease stress, and stop taking their lives for granted.

These five factors of posttraumatic growth demonstrate positive changes that may occur after a traumatic event such as a breast cancer diagnosis. While posttraumatic growth does not necessarily occur for every person who is faced with trauma, some breast cancer survivors may experience one or more of these factors.

Posttraumatic growth literature review. Since Tedeschi and Calhoun created a questionnaire to measure posttraumatic growth in 1996, research in this area has included a variety of populations and traumatic experiences. Examples of external traumatic events in
the research include war and terrorism survivors (e.g., Hall et al., 2008), survivors of catastrophic events (e.g., Walsh, 2007), female survivors of physical and sexual assault (e.g., Grubaugh & Resick, 2007), and motor vehicle accident survivors (e.g., Harms & Talbot, 2007). A variety of populations facing traumatic health conditions have also been investigated in terms of posttraumatic growth including amputation of limb survivors (e.g., Phelps, Williams, Raichle, Turner, & Ehde, 2008); HIV patients (e.g., Milam, 2006); heart disease survivors (e.g., Chan, Lai, & Wong, 2006); and cancer survivors (e.g., Bellizzi, 2004). To date, of all health conditions in the posttraumatic growth literature, breast cancer survivors have been the most thoroughly researched (Bellizzi & Blank, 2006).

Researchers have expanded our understanding of posttraumatic growth among breast cancer survivors by examining correlates of sociodemographic variables, stressor characteristic, personality attributes, aspects of social context, coping processes, and indicators of psychological adjustment (Stanton, Bower, & Low, 2006). A review of the correlates follows.

**Sociodemographic variables.** Sociodemographic variables include socioeconomic status, ethnicity, and age (Stanton et al., 2006). There have been divergent findings for socioeconomic status (consisting of level of income and education) as a correlate of posttraumatic growth for women with breast cancer. Some researchers have found significant associations between income, education, and posttraumatic growth (e.g., Bower et al., 2005; Cordova, Cunningham, Carlson, & Andrykowski, 2001) and some have not found significant relationships (e.g., Manne et al., 2004; Petrie, Buick, Weinman, & Booth, 1999). Findings of significant associations between socioeconomic status and posttraumatic growth have also been inconsistent as some studies resulted in breast cancer survivors with higher levels of
income and education experiencing higher levels of posttraumatic growth (e.g., Bower et al., 2005) and others resulted in survivors with lower levels of income and education as experiencing higher levels of posttraumatic growth (e.g., Tomich & Helgeson, 2004).

Ethnicity has been found to be a correlate of posttraumatic growth. Some studies reported that minority status was associated with greater posttraumatic growth in breast cancer survivors (e.g., Bower et al., 2005; Urcuyo, Boyers, Carver, & Antoni, 2005). A recent study by Bellizzi et al. (2010) found that breast cancer survivors of African American decent experienced higher levels of posttraumatic growth than Caucasian breast cancer survivors. Bellizzi et al. discovered that this relationship was mediated by religiosity. According to Stanton et al. (2006), studies that have not demonstrated a significant correlation between minority status and posttraumatic growth (e.g., Sears, Stanton, & Danoff-Burg, 2003) tend to have smaller samples, with fewer participants in the minority category, which may have resulted in the non-significant results.

The majority of studies to date with breast cancer survivors have not found a significant relationship between age and posttraumatic growth (e.g., Tomich & Helgeson, 2004; Urcuyo et al., 2005; Weiss, 2004). However, a small number of studies reported significant negative correlations where younger age was related to increased posttraumatic growth (e.g., Bower et al., 2005; Cordova et al., 2007). Stanton et al. (2006) suggested that younger adults may find a cancer diagnosis especially distressing as this diagnosis is more often associated with older adults, and this high level of distress may be related to higher levels of posttraumatic growth.
**Stressor characteristics.** Stressor characteristics in the research include the perceived stressfulness of cancer, severity of the disease, time since diagnosis/treatment, and cancer treatment variables. Increased perceived threat of breast cancer has been significantly correlated with higher levels of posttraumatic growth (e.g., Sears et al., 2003). In studies where there were non-significant correlations between perceived threat and posttraumatic growth, the Impact of Event scale was utilized (e.g., Cordova et al., 2001). This scale is suggested by Stanton et al. (2006) to be a “less direct indicator of cancer-related threat than measures used in other studies” (p. 157).

Conflicting findings regarding the association between breast cancer disease severity and posttraumatic growth have been reported. When the relationship was significant, increased severity of disease progression was related to higher posttraumatic growth scores (e.g., Tomich & Helgeson, 2004; Urcuyo et al., 2005). Other studies have demonstrated non-significant relationships between breast cancer disease severity and posttraumatic growth (e.g., Cordova et al., 2001; Manne et al., 2004). Stanton et al. (2006) suggested that there needs to be further research in this area to determine the relation of disease severity to posttraumatic growth. They posited that a nonlinear relation may be present and that perhaps the degree of life disruption for survivors may be more pertinent than disease severity.

The time since diagnosis and treatment in relationship to posttraumatic growth for breast cancer survivors has also had conflicting findings. Results of positive correlations (e.g., Sears et al., 2003), negative correlations (e.g., Weiss, 2004), and non-significant correlations (e.g., Urcuyo et al., 2005) have all been reported. Stanton et al. (2006) suggested that future studies investigating the relationship between time since diagnosis and treatment, and posttraumatic growth focus on the longitudinal approach.
Breast cancer treatment variables have consistently demonstrated a lack of relationship with posttraumatic growth (e.g., Mann et al., 2004; Tomich & Helgeson, 2004; Weiss, 2004). Different adjuvant therapies (e.g., chemotherapy, radiation, or hormone therapy) and types of surgery have been examined with few being significant predictors of posttraumatic growth (Stanton et al., 2006).

**Personality attributes.** With regard to personality attributes, optimism has been the most thoroughly researched. Optimism has been consistently related to posttraumatic growth in breast cancer survivors in a positive manner (e.g., Antoni et al., 2001; Urcuyo et al., 2005). Other personality attributes such as agreeableness, conscientiousness, extraversion, openness to experience, and self-esteem were found to be positively related to posttraumatic growth for an undergraduate student population (Tedeschi & Calhoun, 1996).

**Aspects of social context.** In general, social context (i.e., relationship status and level of social support) has not been related to posttraumatic growth for breast cancer survivors. A non-significant relationship between posttraumatic growth and relationship status for breast cancer survivors was reported by Tomich and Helgeson (2004) and Urcuyo et al. (2005). Cordova et al. (2001) and Weiss (2004) also reported non-significant associations between posttraumatic growth and level of social support for breast cancer survivors.

**Coping processes.** Although divergent results have been reported for the relationship between coping processes and posttraumatic growth for breast cancer survivors, approach oriented coping has resulted in a positive relationship with posttraumatic growth most often in research studies. The use of the following approach oriented coping strategies were related to higher levels of posttraumatic growth for breast cancer survivors: active coping (Urcuyo et al., 2005), problem-focused coping (Sears et al., 2003), positive reappraisal coping (Sears et
al., 2003), acceptance coping (Urcuyo et al., 2005), seeking social support (Sears et al., 2003), contemplate reason for cancer (Manne et al., 2004), and emotional approach coping (Antoni et al., 2001). To a lesser degree, lower levels of use of avoidance coping strategies have been significantly related to posttraumatic growth for breast cancer survivors. For example, lower use of substance abuse was related to higher posttraumatic growth scores for breast cancer survivors (e.g., Urcuyo et al., 2005).

**Psychological adjustment.** Psychological adjustment includes psychological distress, positive affect, and quality of life. Level of psychological distress for breast cancer survivors has generally not been significantly related to posttraumatic growth (e.g., Cordova et al., 2007; Sears et al., 2003). Positive affect has been both positively related to posttraumatic growth for breast cancer survivors (e.g., Bower et al., 2005) and unrelated (e.g., Tomich & Helgeson, 2004). Quality of life has not generally been found to be related to posttraumatic growth (e.g., Manne et al., 2004; Urcuyo et al., 2005). Therefore psychological adjustment for breast cancer survivors does not appear to be associated with experiences of posttraumatic growth.

Posttraumatic growth research with breast cancer survivors is still in its infancy as demonstrated by the conflicting findings previously mentioned. There continue to be many questions regarding the factors that contribute to posttraumatic growth following a diagnosis of breast cancer. To date, the following correlates were most often related to higher levels of posttraumatic growth for breast cancer survivors: minority status, increased perceived threat of breast cancer, higher levels of optimism, and the use of approach oriented coping strategies.
Coping with Breast Cancer

A breast cancer diagnosis can be a frightening and life-changing event. The diagnosis, treatment and side effects have an impact on psychological, psychosocial, and physical functioning. The breast cancer patient must find ways to cope with fear, anxiety, and depression related to breast cancer. In addition, lengthy and invasive treatments may require an extended leave from employment and changes in family roles and responsibilities. Potential declines in physical functioning as a result of treatment may occur as well. Thus, as all areas in the lives of those with breast cancer are affected, coping with these changes and threats to well-being becomes of utmost importance.

Lazarus and Folkman’s theoretical model of coping. The ways people cope with various stressors has been thoroughly investigated by researchers. While many conceptualizations of coping have been proposed, the model of coping described by Lazarus and Folkman (1984) has assumed particular properties. Lazarus and Folkman define coping as the “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). Therefore, coping is the process where the demands of stress are managed. Lazarus and Folkman explain that the way a person copes with stress is determined by cognitive appraisal and the interaction between situational (environmental) and personal factors. A description of the transactional nature of the coping process follows:

Coping appraisal and coping are transactional variables, by which we mean that they refer not to the environment or to the person alone, but to the integration of both in a given transaction. An appraisal of threat is a function of a specific set of environmental conditions that are appraised by a particular person with particular psychological characteristics. Similarly, coping consists of the particular thoughts and behaviours a person is using to manage the demands of a particular person-environment transaction that has relevance to his or her well-being. (Folkman, Lazarus, Gruen, & DeLongis, 1986, p. 572)
Lazarus and Folkman’s model of coping provides insight regarding how a breast cancer diagnosis can result in differing levels of stress and a variety of ways of coping based on cognitive, environmental, and personal factors.

**Cognitive appraisal.** Cognitive appraisal has been categorized by Lazarus and Folkman (1984) into primary and secondary appraisal. Primary appraisal involves evaluating whether an event is stressful. When an event is characterized as stressful (i.e., the outcome is viewed as resulting in harm/loss, threat, and challenge; Lazarus & Folkman), secondary appraisal takes place. Secondary appraisal involves evaluating what can be done to deal with the stressor. This process does not necessarily enter conscious awareness. For breast cancer survivors, primary appraisal likely results in a determination that the diagnosis is stressful followed by secondary appraisal involving the contemplation of coping options. As new information becomes available, cognitive reappraisals will take place.

**Environmental factors.** Once the stressor is identified the novelty, event uncertainty, temporal factors, and ambiguity of the stressor, all become important environmental factors. A stressor will be viewed as more of a threat if the novel situation is associated with harm or danger. Most women who are diagnosed with breast cancer have preexisting knowledge regarding cancer and will likely view the diagnosis as a threat. Event uncertainty occurs when an individual is unable to predict outcomes and increases the stress related to an event. For newly diagnosed breast cancer patients, uncertainty of their future health may have an immobilizing impact on coping as they are unable to anticipate what it is they will need to cope with. Temporal factors relevant to breast cancer survivors include the timing of the stressor and duration (the length of time during which the stressful event occurs). If the stressful event occurs at the same time as other stressful events in the life cycle (e.g.,
marriage or death of a parent), then coping resources may already be taxed and the event may be perceived as more stressful. In addition to timing, the duration of the stressor is also important. In contrast to stressful events that occur for a limited amount of time (e.g., waiting for health related test results), a diagnosis of breast cancer involves multiple subsequent and ongoing stressors. Elliott and Eisdorfer (1982) described different categories of stressor duration including time-limited, stressor sequences over an extended time period, chronic intermittent, and chronic. For breast cancer survivors, time-limited stressors may include waiting for a surgery date (e.g., mastectomy), while stressor sequences may involve enduring multiple sessions of chemotherapy treatment. Chronic stressors are also present such as the fear of cancer reoccurrence or long-term financial implications of time off work. Ambiguity plays a part in appraisal as well. Ambiguity refers to the lack of situational clarity that may surround a stressful event. Ambiguity differs from event uncertainty, which involves confusion regarding the meaning of an event, in that stressor information is unavailable. For example, a rare breast cancer diagnosis such as inflammatory breast cancer increases ambiguity as there is less known about this specific diagnosis.

**Personal factors.** Interacting with environmental factors to impact ways of coping are personal factors, which consist of commitments and beliefs (Lazarus & Folkman, 1984). Commitments refer to what holds importance and meaning for individuals. For example, those facing life threatening illness may have commitments involving a will to live or to achieving life goals. Beliefs are related to personal control and existential viewpoints. These may be personally held or shared with the culture of the individual. A belief in a higher purpose may allow those dealing with a breast cancer diagnosis to more readily create meaning and maintain hope.
The strategies individuals use for coping involve the often unconscious process of the appraisal of stressors once environmental and personal factors are taken into consideration. Lazarus and Folkman’s (1984) model captures this complex process that results in individual differences in coping. There are many ways of coping that those diagnosed with breast cancer might utilize. These ways of coping are best understood in the context of the two categories of coping described below.

**Types of coping: problem and emotion-focused.** Folkman and Lazarus (1988) theorized that coping styles involve strategies that are both problem and emotion-focused. Problem-focused coping involves dealing with the problem that is causing stress (e.g., defining the problem or finding solutions) while emotion-focused coping is characterized by diminishing negative emotions related to the problem (e.g., distracting the self, minimization, or selective attention). Another way to classify coping is into approach (active) and avoidance (passive) coping. Approach coping is characterized by reducing, eliminating, or managing the stressor demands and avoidance coping refers to ignoring, avoiding, or withdrawing from the stressor demands (Suls & Fletcher, 1985). Table 1 presents the categorization of coping strategies.

Coping strategies should be evaluated within specific contexts since a coping strategy that is effective in one situation may not be effective in another (Lazarus & Folkman, 1984). Therefore, particular coping processes are not necessarily superior to others. “Goodness of fit” refers to the appraisal of controllability and coping (Lazarus & Folkman, 1984). Active, instrumental problem-focused coping tends to occur when the threat is appraised as controllable. Conversely, emotion-focused active or passive coping tends to be associated with appraisals of low controllability.
Table 1

*Categorization of Coping Strategies*

<table>
<thead>
<tr>
<th>Approach/Active Coping</th>
<th>Problem-Focused Coping</th>
<th>Emotion-Focused Coping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Planning</td>
<td>Cognitive restructuring</td>
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<tr>
<td></td>
<td>Seeking instrumental support</td>
<td>Seeking emotional support</td>
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<tr>
<td></td>
<td>Task-oriented coping</td>
<td>Turning to religion</td>
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<td></td>
<td>Active coping</td>
<td>Acceptance</td>
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<td></td>
<td>Confrontive coping</td>
<td>Positive reinterpretation</td>
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<tr>
<td>Avoidance/Passive Coping</td>
<td>Problem avoidance</td>
<td>Denial</td>
</tr>
<tr>
<td></td>
<td>Behavioral disengagement</td>
<td>Distancing</td>
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<tr>
<td></td>
<td></td>
<td>Mental disengagement</td>
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<tr>
<td></td>
<td></td>
<td>Wishful thinking</td>
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<td></td>
<td></td>
<td>Social withdrawal</td>
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Women with breast cancer may utilize different forms of coping at different times in their fight against breast cancer. For example, while passive coping (such as distracting the self) might be helpful while waiting to receive test results that will determine a diagnosis of breast cancer, active coping (such as gathering information pertaining to treatment options) might be helpful once the diagnosis has been given. Although women with breast cancer will likely utilize a range of coping strategies, researchers have placed importance on overall style of coping. The following literature review examines the findings related to active and passive styles of coping for survivors of breast cancer.

**Coping with breast cancer literature review.** The majority of the research on coping with breast cancer to date has focused on the relationship between type of coping (i.e., active or passive), well-being and quality of life. Researchers are in agreement that studies
suggest that active forms of coping generally result in better psychological and physical outcomes than passive forms of coping for women with breast cancer.

A cross-sectional study of breast cancer patients with chronic pain by Bishop and Warr (2003) examined the impact of different coping strategies and catastrophizing. They reported that active coping was associated with lower ratings of self-reported disability and passive coping was associated with higher ratings of self-reported disability. In addition, higher ratings of catastrophizing (i.e., rumination, exaggeration of the threat, and hopelessness response style) were associated with greater levels of emotional distress.

Similarly, Hack and Degner (2004) found that when coping with breast cancer active coping strategies were more effective than passive coping strategies. Coping responses following a diagnosis of breast cancer were examined and the results indicated that breast cancer patients who were depressed during the planning phase of their treatment, and coped with the breast cancer diagnosis with the passive strategy of cognitive avoidance, scored significantly worse on measures of psychological adjustment upon follow-up 3 years later. Use of cognitive avoidance and low endorsement of approach based coping strategies were related to poor adjustment. Hack and Degner concluded that poor psychological adjustment over time is associated with an initial reaction of passive acceptance and resignation following a breast cancer diagnosis.

Holland and Holahan (2003) also measured adaptation to breast cancer. They investigated the perceived level of social support and utilization of coping strategies in relation to positive adaptation following diagnosis. Higher levels of perceived social support and endorsement of approach oriented coping strategies were related to positive adjustment.
Endorsement of avoidance oriented coping strategies, however, was related to poorer adjustment.

In addition to psychological adjustment, quality of life has also been investigated in regards to coping. Coping strategies utilized by patients with advanced breast cancer and their family caregivers were compared and how those strategies related to patient and caregiver quality of life was examined (Kershaw, Northouse, Kritpracha, Schafenacker, & Mood, 2004). Breast cancer patients favoured the use of the following coping strategies: emotional support, religion, positive reframing, distraction, venting, and humour. Family caregivers favoured substance use coping. For both breast cancer patients and caregivers, active coping strategies were related to a higher quality of life score. Conversely, avoidant coping strategies were associated with a lower quality of life score.

In a recent study, Danhauer, Crawford, Farmer, and Avis (2009) hypothesized that quality of life would impact coping strategies utilized rather than coping style resulting in quality of life. The outcome of their 6 month longitudinal study of breast cancer survivors was that initial quality of life ratings predicted the following coping strategies: seeking social support, keeping feelings to self, and wishful thinking. Danhauer et al. reported that coping strategies utilized also predicted the later ratings of quality of life, although to a lesser extent. They suggested that this relationship is one of a dynamic nature.

Although some researchers have labeled emotion-focused coping as passive and have concluded that this type of coping is maladaptive, others assert that some forms of emotion-focused coping should be considered active. Stanton et al. (2000) investigated emotional approach coping, which they identified as processing and expressing emotions in an active manner. They reported that breast cancer survivors who coped through their experience of
cancer with the emotional approach had fewer medical appointments for symptoms related to
cancer, increased physical health, and decreased distress compared to those who scored lower
on the emotional approach coping strategies. Therefore, although the majority of emotion-
focused coping can be categorized as passive forms of coping, some emotion-focused coping
strategies take an active form and as such are adaptive. The coping research strongly
demonstrates that overall active styles of coping result in better mental health outcomes for
women with breast cancer than passive styles of coping.

As detailed earlier, Lazarus and Folkman’s (1984) model of coping provides many
aspects that play a role in determining which style of coping is likely to be used. Although
cognitive appraisal, environmental factors, and personal factors all play a role, there are
growing numbers of studies reporting a significant relationship between dispositional
optimism and style of coping. Dispositional optimism is a personality factor that may be one
of the most influential in cognitive appraisal. Optimism and its relation to both coping and
well-being for women with breast cancer are explored below.

**Optimism**

A commonly used definition of optimism is the tendency to anticipate positive future
experiences (Scheier & Carver, 1985). The opposite of optimism is pessimism. Carver,
Scheier, and Segerstrom (2010) suggest that these personality traits are not dichotomous,
instead they are best conceptualized on a continuous scale with optimism on one end and
pessimism on the other. The extent that optimism or pessimism is present impacts the ways
in which individuals deal with stressors and cope with hardship (Carver et al., 2010).
Individuals expecting desirable outcomes are more likely to engage in effortful behaviour to
reach their goals than individuals expecting undesirable outcomes (Nes & Segerstrom, 2006).
If negative future experiences are expected, it stands to reason that goal oriented behaviour would be abandoned in order to reduce energy spent reaching an unfavourable outcome.

Since those who are more optimistic tend to better adjust to deal with adversity, optimism has become a prominent concept in research with breast cancer survivors. Research in breast cancer literature has most often examined optimism and its relationship with coping and well-being.

**Dispositional optimism and coping.** Individuals having higher optimism scores tend to use more problem-focused coping strategies (e.g., Friedman et al., 1992; Steed, 2002). This finding is likely due to problem-focused coping requiring an active approach and that optimism is related to positive expectancy. In contrast, individuals scoring lower on optimism may not be motivated to take an active approach. Indeed, a lower rating of dispositional optimism has been associated with endorsement of avoidance coping (e.g., Friedman et al., 1992; Karademas, Karvelis, & Argyropouolou, 2007).

A meta-analytic review of dispositional optimism and coping was conducted by Nes and Segerstrom (2006). Their review contained studies with many different populations such as college students, athletes, business executives, cancer patients, and senior citizens. Similar to other researchers, they determined that dispositional optimism was positively related to approach coping strategies and negatively related to avoidance coping strategies.

Optimism has been related to use of active (i.e., problem-focused and approach) coping strategies in a variety of populations. As reviewed earlier, use of active coping has also been associated with well-being for breast cancer survivors. The relationship between optimism and well-being is reviewed next.
**Dispositional optimism and well-being.** Psychological and physical functioning related to breast cancer over 4 years of follow-up post-treatment was examined by Helgeson, Snyder, and Seltman (2004). The researchers indicated that approximately half the women in their study demonstrated little change in psychological and physical functioning over the 4-year period. Personal resources (i.e., self-image, optimism, perceived control) and social resources (i.e., social support) were related to better mental and physical functioning.

David, Montgomery, and Bovbjerg (2006) investigated the impact of optimism, pessimism, and coping responses on distress for women scheduled for breast cancer surgery. They reported that those scoring high on optimism experienced less distress. Conversely, those who scored high on pessimism experienced more distress. The following coping responses were related to higher distress scores: planning, denial, self-distraction, instrumental support, humour, emotional suppression, venting, self-blame, and substance abuse. Although planning, instrumental support, and venting are generally thought of as positive coping strategies, the authors suggested that in terms of an immediate stressor such as impending surgery, they were not.

In addition to psychological functioning and distress, quality of life has also been investigated in relation to optimism. Friedman et al. (2006) examined optimism, social support, adjustment, and quality of life in Hispanic and African-American breast cancer patients. Dispositional optimism accounted for the most variance in quality of life scores, distress, and mood disturbance. In a study predicting quality of life scores for long-term survivors of breast cancer (5-13 years post-surgery), dispositional optimism predicted long-term quality of life most consistently (Carver, Smith, Petronis, & Antoni, 2006).
Recent research by Wimberly, Carver, and Antoni (2008) investigated optimism, social support and distress related to psychosexual well-being for early stage breast cancer patients. They presented two models: those higher on optimism perceived more social support and scored higher on psychosexual well-being; and those higher on optimism experienced less distress and scored higher on psychosexual well-being.

The prediction of optimism has also been of interest to researchers. Karademas et al. (2007) examined whether illness-related stress and self-efficacy predicted optimism in breast cancer survivors. They determined that illness-related stress predicted optimism through coping and self-efficacy predicted optimism directly and through coping. Of interest, demographic variables did not predict optimism. However, increased time since diagnosis predicted less optimism while increased time since surgery predicted more optimism. In regards to coping, focusing on the positive was related to more optimism and avoidance coping was related to less optimism.

The current literature on the role of dispositional optimism in coping with breast cancer and resulting health outcomes overwhelmingly suggests that women scoring higher on dispositional optimism fair better in both the short-term and long-term following a breast cancer diagnosis. Additionally, optimism has been positively related to an experience of posttraumatic growth. As researchers have been learning more about what contributes to positive adaptation to trauma, they have also been asking questions about how to facilitate posttraumatic growth. This has inevitably turned to examining the role of psychosocial intervention for breast cancer survivors due to the prevalence of use among this group. Although research on psychosocial interventions that specifically promote posttraumatic growth is still in its infancy, posttraumatic growth may be fostered as a result of taking part
in already established psychosocial interventions. The literature on psychosocial services for breast cancer survivors is reviewed next.

**Psychological Treatment of the Impact of Breast Cancer**

**History of psycho-oncology.** Because many sources, such as Raven (1990), suggest that cancer has always plagued humankind, from Egyptian medical papyruses dating from 3000 B.C., it is not surprising that there is an extensive history on the physical treatment of cancer. Treatment for the emotional impact of cancer, however, has a very recent history of approximately 40 years (Holland, 2002). Holland (2002) described the mid-1970s as being a time when the stigma related to a cancer diagnosis was diminishing. Previous negative attitudes toward cancer and mental illness were barriers to psychosocial care and research (Holland, 2002). Care for cancer patients up until this time was almost entirely physical in most countries (Dolbeault, Szporn, & Holland, 1999). In the 1970s diagnoses of cancer began to be revealed to the patient. Previously, the view of cancer was equated with a death sentence and resulted in keeping the diagnosis from the patient and only informing family members.

Treatment for the emotional impact of cancer began to emerge and eventually became known as psycho-oncology. Holland (2002) provided the following description of psycho-oncology:

The core of psycho-oncology addresses this “suffering of the mind” that occurs with cancer. It incorporates the psychological, social, spiritual, and existential dimensions and seeks to help the patient find a tolerable meaning to the presence of the unwelcome intruder of serious illness and threat to the future and to life itself. (p. 215)
Current psychosocial interventions. Currently there are a variety of psychosocial interventions available to cancer patients. Psychosocial oncology is provided in tertiary cancer programs, community oncology cancer programs, community based cancer agencies, and in primary care (Canadian Association of Psychosocial Oncology, 2010). In Canada, various organizations such as Wellspring (a network of cancer support centres across Canada) were founded with the goal of providing support. Most often these programs are offered free of charge. These programs are extremely accessible to cancer patients who would like to attend and are often suggested to patients by their oncologists. In particular there are many psychosocial interventions specifically provided for breast cancer survivors (e.g., various programming via Wellspring, including peer support and psychoeducational groups).

Resource needs and use. Research has been conducted on both the psychosocial needs of breast cancer survivors and personal characteristics that increase likelihood of psychosocial resource use.

Information and support needs of breast cancer patients following treatment were described by Cappiello, Cunningham, Knobf, and Erdos (2007). They determined that physical and psychological symptoms persisted long after cancer treatment was completed and breast cancer patients required the provision of education and psychosocial support. Specific concerns following treatment for breast cancer survivors included persistent treatment side effects, emotional distress, and lifestyle changes.

A recent study conducted by Salander (2010) at an oncology department in Sweden examined the motives of cancer patients meeting with the department psychologist over a 10-year period. The majority of women taking part in this study had been diagnosed with breast
cancer. Salander reported that the most common motivation for psychological treatment was acute anxiety or worries associated with the cancer diagnosis. The second most common was problems in interpersonal relationships that were not related specifically to the impact of cancer. The third was relational problems related to cancer.

Psychosocial support needs for women with Stage I and II breast cancer were investigated by Chantler, Podbilewicz-Schuller, and Mortimer (2006). The following social supports were identified: medical professionals, family members and friends, other breast cancer survivors, support groups, and religious community. In regard to support groups, they were identified as being places to share resources, experiences and to receive advice. Of note, the majority of women described the support groups as unorganized and confusing. Positive aspects of the support groups included emotional support, and normalizing of experiences. Religious communities were described as providing comfort, a greater purpose, and emotional support through the prayers of other members.

Edgar, Remmer, Rosberger, and Fournier (2000) investigated resource use in women with breast cancer. Women who scored higher on problem-solving coping and lower on escape/avoidance coping were more likely to seek support from cancer support organizations or utilize complementary therapies (i.e., relaxation, imagery and meditation, massage, acupuncture, homeopathic medicine and nutritional therapies). Women who obtained such supports scored moderate on optimism, had a lower sense of personal control and were more distressed than those that did not utilize these supports.

Predictors of participation of breast cancer patients in a psychosocial support program were examined by Cameron et al. (2005). They reported that the following increased likelihood of participation in the program: younger age, increased illness-specific distress,
and beliefs that weakened immunity causes cancer. Additionally, those utilizing avoidance coping strategies were less likely to participate. Beliefs about personal control and levels of anxiety and depression were not determined to be significant predictors.

Fukui et al. (2001) also investigated predictors of participation of Japanese breast cancer patients in psychosocial group interventions. They determined that those with higher levels of anxiety, those who had completed surgery within 12 months, and those who were between 50-65 years old were most likely to participate.

Breast cancer survivors have many psychosocial needs even after treatment has been completed. Despite there being many documented needs, not every woman with breast cancer accesses psychosocial interventions. Those who are most likely to use services tend to use more problem-solving coping strategies and less avoidance coping strategies, rate their distress levels as higher, and score higher on measures of optimism. The benefits of psychosocial interventions for breast cancer survivors are reviewed next.

**Psychosocial interventions and relationship to survival duration.** The often cited study of Spiegel, Kraemer, Bloom, and Gottheil (1989) was the first of its kind to demonstrate a significant effect of psychosocial intervention on survival in patients with metastatic breast cancer. Breast cancer patients who attended weekly group therapy for the period of 1 year were found to live on average 18 months longer than breast cancer patients in the control group. Since this study, there have been inconsistent results in intervention studies examining psychological factors in relation to duration of survival in cancer patients. Some studies have demonstrated no effect of psychosocial intervention on survival (e.g., Cunningham et al., 1998; Edelman, Lemon, Bell, & Kidman, 1999).
Cunningham et al. (2000) conducted a prospective longitudinal study examining psychological factors and their relationship to survival among patients with metastatic cancer who were attending a psychotherapy group. The themes of ability to act and change, willingness to act and change, willingness to initiate change, application to self-help work, relationships with others, and quality of experiences were significantly related to the duration of survival. Additionally, expectancy that psychological efforts would have an impact on health was significantly related to duration of survival.

Goodwin (2005) reviewed five randomized studies examining support groups for those with metastatic breast cancer. She found that all studies concluded that there were beneficial psychosocial effects of the intervention. She did not find evidence of beneficial survival effects as only one study reported survival benefit of group support for metastatic breast cancer (Spiegel et al., 1989). Beneficial psychosocial effects were most often noted in mood and pain control.

Although some studies have demonstrated a relationship between participation in psychosocial interventions and duration of survival for breast cancer survivors, there continues to be conflicting results in this area. Other benefits of psychosocial interventions for breast cancer survivors have also been reported such as increased quality of life.

**Psychosocial interventions and relationship to quality of life.** Shapiro et al. (2001) examined quality of life and the relationship of psychosocial variables for women with stage II breast cancer within 2 years post-treatment. Results suggested that psychosocial variables were related to quality of life. Specifically, an increased quality of life was significantly related to sense of coherence, marital quality, vigor, and positive modes of control. Alternately, decreased quality of life was significantly related to depression, anxiety, anger,
hostility, and emotional distress. Shapiro et al. suggested that giving up following a diagnosis of breast cancer might increase distress levels (i.e., giving in to hopelessness/helplessness).

**Characteristics of psychosocial intervention.** Characteristics of interventions such as timing of access of treatment and the type of professional providing the support have also been investigated. Vos, Visser, Garssen, Duivenvoorden, and de Haes (2006) examined the effect of time of enrollment in a group psychosocial intervention for adjustment in women with early stage breast cancer. They found that women who began attending the group within 4 months of diagnosis demonstrated better psychological adjustment than those that began the group later. Women in both groups improved in terms of distress levels, body image, and level of participation in recreational activities.

With regard to the type of professional who provides psychosocial support to breast cancer patients, there does not appear to be an overall difference between professionals on patients’ perceptions of satisfaction with the support. Arving et al. (2006) investigated the outcome of psychosocial support provided by either specially trained oncology nurses or psychologists to Swedish breast cancer patients. Regardless of whether the breast cancer patients received psychosocial support from oncology nurses or psychologists, they reported satisfaction with the treatment. Additionally, up to 24 months post-intervention, breast cancer patients continued to perceive benefit. The only difference found between interventions was that breast cancer patients with increased somatic concerns were more likely to derive benefit from interventions provided by oncology nurses. The authors speculated that this may be due to the medical knowledge possessed by nurses of physical symptoms and treatment.
The impact of the type of professional leading psychosocial support for breast cancer survivors was also investigated via meta-analysis by Zimmermann, Heinricks, and Baucom (2007). Effect size increased for psychologist lead cognitive-behavioural therapy in comparison to other professionals. However, effect size decreased for psychologist lead psychoeducation. The authors speculated that the expertise and/or credibility of the professional should coincide with the type of intervention.

**Type of psychosocial intervention.** Different types of psychosocial interventions and therapeutic orientations have been evaluated for breast cancer survivors. A review of cognitive behavioral group therapy and supportive-expressive group therapy interventions for women with breast cancer was conducted by Boutin (2007). Both types of group intervention and combined group intervention demonstrated positive results (e.g., decreased mood disturbance, depression, tension, confusion, and pain). Although all interventions were successful, supportive-expressive group therapy demonstrated more positive outcomes than the cognitive behavioural therapy or combined therapy.

Helgeson, Cohen, Schulz, and Yasko (2000) examined individual differences in the psychological and physical functioning of women with breast cancer in response to an information-based educational group and an emotion-focused peer discussion group. They determined that the educational group was most helpful for women with more difficulties, such as limited support and personal resources, while the emotion-focused group was most helpful for women who reported limited social support. Alternately, they found that the emotion-focused group was harmful for women who entered the group with high levels of support. They suggested that perhaps peer support groups compensate for shortfalls in cancer patients’ social support networks and therefore those with a high level of social support may
not benefit from a support group. In this case those women with high levels of social support were adversely affected and the authors suggested that perhaps these women reevaluated their support network as a result of the support group and/or increased negative interactions.

Docherty (2004) conducted a qualitative study investigating the experience, functions, and benefits derived from cancer support groups. The majority of the sample consisted of breast cancer patients. Support groups were viewed as offsetting negative experiences related to medical care, providing information free from pressure or judgment, creating norms of experiences through shared stories (e.g., experiences of side effects), providing a source of emotional support, teaching coping techniques, helping with coping with emotions, and creating a sense of belonging.

Cameron, Booth, Schlatter, Ziginskas, and Harman (2007) investigated changes in emotion regulation and psychological adjustment following participation in a psychosocial support group for women with breast cancer in New Zealand. To meet inclusion criteria, the participants were required to have received a diagnosis of primary breast cancer within 6 weeks. Half of the women with breast cancer were provided standard care (i.e., provided information, received consultations with psychologists, received reading materials and invited to social gatherings consisting of other patients) and the other half received an intervention consisting of education, relaxation training, imagery, meditation, priority and goal setting, expressive writing, anger management, and group discussion. Cameron et al. (2007) indicated that the women who had received the intervention reported increased use of emotion regulation strategies and relaxation techniques compared to those who only received the standard care. The women who attended the intervention also reported increased perception of control, increased emotional well-being, increased coping efficacy, decreased
anxious mood, and decreased worry and perception of risk of cancer recurrence. Furthermore, participants in the intervention reported greater benefit finding (another term for posttraumatic growth) related to the experience of breast cancer than those who did not participate in the intervention.

Kissane et al. (2003) conducted a randomized controlled trial involving cognitive-existential group therapy for women with primary breast cancer. Women who received group therapy experienced decreased anxiety, improved family functioning, greater satisfaction with therapy, increased coping, self-growth, and knowledge pertaining to cancer in comparison to the control group. Effect sizes were larger for groups lead by psychologists than other professionals (i.e., psychiatrists, social workers, occupational therapists, and oncologist nurses).

A recent meta-analysis conducted by Zimmermann et al. (2007) examined moderators of intervention efficacy for breast cancer patients. Effect size was moderate for psychoeducation and small for cognitive-behavioral, supportive, and relaxation treatments.

The majority of psychosocial intervention research for women with breast cancer has focused on in-person individual and group psychoeducation, psychotherapy and social support. Recently, an increasing number of studies have focused on other types of interventions. For example, a recent study on religious expression within internet support groups for women with breast cancer demonstrated that increased religious expression was related to lower levels of negative emotions and increased health self-efficacy and functional well-being (Shaw et al., 2007). Research on telephone therapy for breast cancer patients, however, has not demonstrated treatment effects (Sandgren & McCaul, 2003). Another study investigated dance/movement therapy as an intervention for breast cancer survivors (Dibbell-
Hope, 2000). Although the women who participated in the dance/movement therapy demonstrated minimal improvement in mood, distress, body-image and self-esteem in comparison with the control group, they gave feedback of self-perceived improvement in these areas.

The abovementioned research demonstrates the positive outcomes (e.g., psychological symptom reduction and increased quality of life) of participation in a variety of types of psychosocial interventions for breast cancer survivors. Although research investigating well-being and posttraumatic growth as outcomes of psychosocial interventions is currently sparse, there is some indication that posttraumatic growth may be facilitated by this type of treatment (e.g., Cameron et al., 2007).

Need for study

Literature on cancer survivorship, and particularly breast cancer survivorship, has focused on the physical and more recently the psychological aspects of living with cancer. This focus, now known as the field of psycho-oncology, is still in its infancy with less than 40 years of history (Holland, 2002). To date the majority of research in this field has focused on the negative psychological impact of a cancer diagnosis including distress, symptoms of depression, anxiety, and posttraumatic stress. The negative impact of these psychological symptoms on quality of life has also been a prominent focus of research. Within the past 10 years research has emerged investigating other impacts of dealing with life threatening illness, including some positive outcomes. Positive adaptation that is beyond the pre-morbid level of functioning following traumatic events has been referred to in the literature as posttraumatic growth, benefit finding, and stress-related growth.
Understanding the development and process of posttraumatic growth among cancer survivors is an emerging area of investigation. Among breast cancer survivors, investigation of the personal characteristics that contribute to an experience of posttraumatic growth has perplexed researchers. Conflicting findings have been reported in terms of demographic variables (e.g., socioeconomic status and ethnicity) and health variables (e.g., stage of cancer and type of adjuvant treatment received) and their relationship to posttraumatic growth. Most consistently, posttraumatic growth has been found to be positively related to dispositional optimism and use of active forms of coping. The efficacy and relationship of psychosocial interventions to posttraumatic growth has been raised as well, however, little research to date has focused on these interventions in relation to their impact on posttraumatic growth. Those studies that have examined posttraumatic growth as an outcome have limited the investigation to a specific type of intervention (e.g., support group or cognitive behavioural psychotherapy group). Other potential factors relating to posttraumatic growth such as quantity of participation and involvement in a variety of different types of psychosocial interventions has yet to be examined for breast cancer survivors. Receiving treatment via several forms of psychosocial interventions and increased time spent participating in interventions, may increase the likelihood of experiencing posttraumatic growth.

**Research Questions**

While the newly emerging study of posttraumatic growth is important to our theoretical and clinical understanding of surviving cancer, research is greatly needed to identify potential contributors. This study used a mixed method design to investigate further some of the factors that contribute to the phenomenon of posttraumatic growth among survivors of breast cancer and to further theoretical understanding of the foundations of
posttraumatic growth. In addition, descriptive information regarding the use of psychosocial interventions for breast cancer survivors was of interest since there are few existing studies on this topic. Specifically, the following questions were posed:

1. How are demographic characteristics (e.g., age, education, relationship status, and ethnicity) and breast cancer variables (e.g., time since diagnosis and stage of breast cancer) related to an experience of posttraumatic growth?

2. What are the demographic characteristics of breast cancer survivors who access psychosocial interventions?

3. How are types of coping strategies, dispositional optimism score, and quantity/and or type of psychosocial interventions accessed related to posttraumatic growth for breast cancer survivors?

4. How are types of coping strategies used and dispositional optimism score for breast cancer survivors related to quantity and type of psychosocial interventions accessed?

5. What are the predictors of posttraumatic growth following a diagnosis of breast cancer? Possible predictors include demographic characteristics, breast cancer related variables, use of psychosocial supports, dispositional optimism and/or ways of coping.

**Hypotheses**

Based on previous research and theory, it is expected that:

1. The following demographic characteristics will be related to posttraumatic growth: younger age and minority ethnicities (e.g., African and Hispanic). Some studies have reported significant negative correlations where younger age is
related to increased posttraumatic growth for breast cancer survivors (e.g., Cordova et al., 2007). In addition, ethnicity has been found to be a correlate of posttraumatic growth for breast cancer survivors in previous research (e.g., Urcuyo et al., 2005). The following illness related variable will be related to posttraumatic growth: more severe stage of disease. There has been some evidence that breast cancer disease severity is related to posttraumatic growth (e.g., Tomich & Helgeson, 2004).

2. The demographic characteristics of breast cancer survivors who access psychosocial interventions for this population will be described.

3. Active coping styles, higher scores on dispositional optimism, and higher level of participation in psychosocial interventions will be related to posttraumatic growth. Active coping styles such as approach oriented coping have been consistently reported as having a positive relationship with posttraumatic growth (e.g., Sears et al., 2003). Similarly, optimism has been consistently related to posttraumatic growth (e.g., Antoni et al., 2001). Although participation in psychosocial interventions has yet to be evaluated in the research, it is hypothesized that participation in these interventions will lead to benefits such as greater use of active coping which in turn may have an impact on the experience of posttraumatic growth. Alternatively, individuals higher on optimism may be more likely to seek out interventions. Although the reason for the correlation may not be understood, a positive relationship between participation in interventions and posttraumatic growth is expected.
4. Endorsement of active coping strategies and higher scores on dispositional optimism will be related to a larger quantity of psychosocial interventions accessed. Previous research has reported that women who use active coping strategies and are have higher levels of optimism are more likely to use breast cancer resources (e.g., Edgar et al., 2000).

5. Research addressing the prediction of posttraumatic growth following a breast cancer diagnosis is limited. However, previous studies have described relationships between posttraumatic growth and other variables. The following variables were expected to predict posttraumatic growth: minority ethnicity, younger age, more severe stage of disease, use of active coping, dispositional optimism, and higher level of participation in psychosocial interventions.

This study was designed to investigate the experience and the factors associated with the development of posttraumatic growth among adult women who had previously received a diagnosis of breast cancer. Participant experiences following diagnosis were also documented in comments, which permitted in-depth qualitative descriptions. Personal characteristics including demographic variables and health variables were examined in relation to posttraumatic growth. Dispositional optimism and use of active coping strategies were investigated as well for their contribution to posttraumatic growth. Participation in psychosocial interventions was also of interest in terms of types of interventions utilized and quantity of supports accessed. Finally, the specific predictors of posttraumatic growth were examined.
Chapter Two:  
Methodology

Participants and Procedures

In order to have sufficient power for the purpose of regression, Stevens’ (1996) guidelines were followed of a minimum of 15 participants per predictor. Since there were 12 predictors in the current study, a minimum of 180 participants were required. Participants in this study were 277 breast cancer survivors over the age of 18 who had volunteered for our study. Study participants were recruited from flyers posted in the local community, advertisements on various chat rooms or message boards relating to breast cancer on the internet, and e-mail communication with recreational teams for breast cancer survivors and with coordinators of support groups for breast cancer survivors (see Appendix A for recruitment flyer). Interested breast cancer survivors were directed to the researcher’s web page (see Appendix B) which contained information about the study (i.e., topic of study, the anonymous nature of participation, length of time expected to complete the questionnaires, participation resulting in a donation to a local breast cancer charity, and the researcher’s contact information). The researcher’s web page included a link to the study which was located on a web-based survey site (www.surveymonkey.com). The web-based survey contained the following: A consent form (see Appendix C) and six questionnaires (see Instruments/Measures section). Following completion of the survey, the participants were directed to a page that thanked them for their participation in the study and provided contact information for several breast cancer organizations and the number to a distress phone line.

A total of 316 participants visited the survey page on the website and 313 began the survey. Of the participants who began the survey, 29 did not complete significant portions of the survey (i.e., demographic questions or one or more entire questionnaires) and as a result
they were removed from the analysis. A criterion for acceptable number of missing items was set. Since the data set consisted of 137 total items, a criterion of 10% of missing items was deemed acceptable (14 items). Seven participants were found to be missing more than 10% of items and therefore were removed from the analysis. Of note, upon exploring for patterns of those missing more than 10% of items, it appears that the majority of missing items were located near the end of the survey. This pattern of consistent responding up to a point in the survey and then quitting the survey prior to completion has been labeled as “Answering drop-outs” by Bosnjak and Tuten (2001). Answering drop-outs may simply occur as a result of survey fatigue or a lack of survey-response propensity (i.e., a tendency to complete all items; Bickart & Schmittlein, 1999).

The final data set contained 277 participants. Descriptive statistics for demographic information are included in Table 2. A requirement of participation was identifying as female and as having received a diagnosis of breast cancer in adulthood. The age range of participants was 21 to 81 years ($M = 54.30$, $SD = 9.92$). The age distribution was negatively skewed with most women being at the higher end of the age range. The majority of respondents identified their ethnocultural background as White/Caucasian (87%), a small percentage of respondents identified as Asian (2.9%) and First Nation (1.4%), and 1.4% were identified as “Other”. Country of residence for the majority of participants was Canada (71.1%). The remainder of participants reported residence in the United States (22.4%) or Other (3.2%) at the time of the study. In terms of relationship status, most respondents indicated that they were in a relationship (73.3%). Specifically, 69% of participants reported that they were married, 2.2% were in a committed relationship, 2.2% considered themselves in a common-law relationship, 6.9% were single, 2.9% were separated, 10.8% were divorced
and 5% were widowed. Most of the respondents had received undergraduate or graduate degrees (44.4%) or received some post-secondary education (42.2%). More than half of the participants were employed (60.6%) and the majority were living in an urban area (74.7%). With respect to religion, the majority of participants indicated that they were affiliated with a religion (62.4%).

Table 2

Demographics of Participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>Level</th>
<th>N</th>
<th>M or %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td>270</td>
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<tr>
<td>Ethnocultural Background</td>
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<tr>
<td></td>
<td>Caucasian</td>
<td>241</td>
<td>87.00%</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>8</td>
<td>2.89%</td>
</tr>
<tr>
<td></td>
<td>First Nations</td>
<td>4</td>
<td>1.44%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>4</td>
<td>1.44%</td>
</tr>
<tr>
<td>Country of Residence</td>
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<td>268</td>
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</tr>
<tr>
<td></td>
<td>Canada</td>
<td>197</td>
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<tr>
<td></td>
<td>United States</td>
<td>62</td>
<td>22.38%</td>
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<td></td>
<td>Other</td>
<td>9</td>
<td>3.25%</td>
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<td>Relationship</td>
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<td>274</td>
<td>98.92%</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>191</td>
<td>68.95%</td>
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<td></td>
<td>Committed Relationship</td>
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<td>2.17%</td>
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<td></td>
<td>Common-law</td>
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<td>2.17%</td>
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<td></td>
<td>Single</td>
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<td>6.86%</td>
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<td></td>
<td>Separated</td>
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<td>2.89%</td>
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<tr>
<td></td>
<td>Divorced</td>
<td>30</td>
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<td></td>
<td>Widowed</td>
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<td>Education Level</td>
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<td>277</td>
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<td></td>
<td>High School or less</td>
<td>37</td>
<td>13.36%</td>
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<td></td>
<td>Post-Secondary</td>
<td>117</td>
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<td>University or Graduate</td>
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<td>Employment Status</td>
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<td></td>
<td>Employed</td>
<td>168</td>
<td>60.65%</td>
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<td></td>
<td>Not employed</td>
<td>108</td>
<td>38.99%</td>
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<tr>
<td>Affiliated with Religion</td>
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<td>276</td>
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<td></td>
<td>Yes</td>
<td>173</td>
<td>62.45%</td>
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<td></td>
<td>No</td>
<td>103</td>
<td>37.18%</td>
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Table 2 (continued)

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<th>Variables</th>
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<th>M or %</th>
</tr>
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<tbody>
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<td>Living Rural or Urban</td>
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<td>275</td>
<td>99.28%</td>
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<tr>
<td></td>
<td>Urban</td>
<td>207</td>
<td>74.73%</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>68</td>
<td>24.55%</td>
</tr>
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</table>

Descriptive statistics for breast cancer information are included in Table 3. Number of years passed since diagnosis of breast cancer ranged from 1-28 \( (M = 6.80, SD = 4.95) \). The distribution of the years passed since diagnosis was highly positively skewed with most women being a few years after diagnosis. The majority of the respondents reported that their diagnosis of breast cancer was in Stage II (37.5%), Stage I (30%), or Stage III (17%). Stage 0 was identified by 5.1% of participants and Stage 4 by 3.6%. A small percentage of participants did not know the stage of their breast cancer diagnosis (6.9%). Most participants indicated that they had finished treatment related to breast cancer at the time of the study (65.3%). Just over half of respondents reported that they had been told their breast cancer was in remission (56%) and 10.5% of respondents did not know whether they were in remission. Number of years passed since remission status was indicated by 137 participants and ranged from 1-20 years \( (M = 6.16, SD = 4.56) \). The distribution of the number of years passed since remission status was highly positively skewed with the majority of women being only a few years since remission.
Table 3

*Breast Cancer Descriptive Statistics*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Level</th>
<th>N</th>
<th>M or %</th>
<th>Mdn</th>
<th>SD</th>
<th>Range</th>
<th>Skewness</th>
<th>Kurtosis</th>
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<tr>
<td>Years Since Diagnosed</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Stage 0</td>
<td>14</td>
<td>5.05%</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Stage 1</td>
<td>83</td>
<td>29.96%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Stage 2</td>
<td>104</td>
<td>37.54%</td>
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<tr>
<td>Stage 3</td>
<td>47</td>
<td>16.97%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Stage 4</td>
<td>10</td>
<td>3.61%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't Know</td>
<td>19</td>
<td>6.86%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Treatment Status</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Finished</td>
<td>181</td>
<td>65.34%</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Not finished</td>
<td>87</td>
<td>31.41%</td>
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<tr>
<td>N/A</td>
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<td>2.89%</td>
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<tr>
<td>Disease status</td>
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<tr>
<td>Remission</td>
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<td>56.00%</td>
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<td></td>
</tr>
<tr>
<td>Not remission</td>
<td>91</td>
<td>32.85%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't Know</td>
<td>29</td>
<td>10.47%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years since remission</td>
<td>137</td>
<td>6.16 yrs</td>
<td></td>
<td>5.00</td>
<td>4.56</td>
<td>1-20</td>
<td>1.12</td>
<td>0.70</td>
</tr>
</tbody>
</table>

**Instruments/Measures**

Participants completed six questionnaires selected to address the main study questions. These questionnaires included the following:

**Demographics Questionnaire.** The Demographics Questionnaire consisted of items gathering participant background information. Items such as age, relationship status, and ethnocultural background provided information relating to the sample. Medical items such as stage of breast cancer and treatment received were also included. In addition, a single item requiring participants to rate their satisfaction with social support and a single item measuring overall quality of life were included (see Appendix D).
Use of Psychosocial Support Questionnaire. A questionnaire consisting of nine items related to use of psychosocial interventions was created by the researcher. Each item represented one of the following types of psychosocial interventions: psychotherapy, counselling, psychiatry, in-person support group, internet support group, weekend retreat, telephone support, recreational support, and other. For each item, participants were asked to indicate the number of times they participated in each psychosocial support category (never, 1 session, 2-5 sessions, 6-10 sessions, or more than 10 sessions). Those who selected the “other” category were requested to specify the type of support they received (see Appendix E). As expected, low internal consistency among items was found, likely a result of differing personal preferences of participants and varying access to psychosocial services. It was expected that individuals may use one type of support over another and therefore, despite low internal consistency, a total score consisting of a count of number of different services accessed was used in the analyses addressing the research questions of this study.

Ways of Coping Questionnaire (WOC). The WOC (Folkman & Lazarus, 1988), a self-report scale with 66 items measuring coping strategies on eight coping scales was used in the study. The coping scales included confrontive coping (e.g., “stood my ground and fought for what I wanted”), distancing (e.g., “made light of the situation; refused to get too serious about it”), self-controlling (e.g., “I tried to keep my feelings to myself”), seeking social support (e.g., “talked to someone to find out more about the situation”), accepting responsibility (e.g., “criticized or lectured myself”), escape-avoidance (e.g., “wished that the situation would go away or somehow be over with”), planful problem solving (e.g., “I knew what had to be done, so I doubled my efforts to make things work”), and positive reappraisal (e.g., “changed or grew as a person in a good way”). The majority of the scales contained six
items each (i.e., confrontive coping, distancing, seeking social support, and planful problem-solving). Two of the scales contained seven items (i.e., self-controlling and positive reappraisal). The scale accepting responsibility contained four items and the escape-avoidance scale contained eight items. The remaining 16 items were fill items. Each item was rated on a 4-point Likert scale (0 = does not apply or not used, 3 = used a great deal) (see Appendix F).

Internal consistency reported by Folkman, Lazarus, Dunkel-Schetter, DeLongis, and Gruen (1986) for the eight scales used were: confrontive coping = .70, distancing = .61, self-controlling = .70, seeking social support = .76, accepting responsibility = .66, escape-avoidance = .72, planful problem-solving = .68, and positive reappraisal = .79. The WOC has been used in previous research with breast cancer survivors (e.g., Wonghongkul, Dechaprom, Phumivichuvate, & Losawatkul, 2006; Cohen, 2002). For the current study, Cronbach’s alpha for the eight subscales were as follows: confrontive coping = .52, distancing = .63, self-controlling = .60, seeking social support = .74, accepting responsibility = .59, escape-avoidance = .70, planful problem-solving = .68, and positive reappraisal = .80.

Posttraumatic Growth Inventory (PGI). The PGI (Tedeschi & Calhoun, 1996), a self-report scale with 21 items measuring positive outcomes for those who have experienced traumatic events was used to examine positive changes following a diagnosis of breast cancer. Five factors were measured with these items: relating to others (e.g., “a sense of closeness with others”), new possibilities (e.g., “I established a new path for my life”), personal strength (e.g., “knowing I can handle difficulties”), spiritual change (e.g., “a better understanding of spiritual matters”), and appreciation of life (e.g., “an appreciation for the value of my own life”). Each item was rated on a 6-point Likert scale (0 = “I did not
experience this change as a result of my crisis”, 5 = “I experienced this change to a very great degree as a result of my crisis”) (see Appendix G).

Internal consistency reported by Tedeschi and Calhoun (1996) was $\alpha = .90$. For the five factors, internal consistency was found as follows: new possibilities = .84, relating to others = .85, personal strength = .72, spiritual change = .85, and appreciation of life = .67. Test-retest reliability over 2 months was tested with a resulting $r = .71$. The PGI has been used in previous research with breast cancer survivors (e.g., Cordova et al., 2007; Bellizzi & Blank, 2006). For the current study, Cronbach’s Alpha was .96. The reliability for the five factors was as follows: relating to others = .92, new possibilities = .88, personal strength = .86, spiritual change = .82, and appreciation of life = .89.

**Changes in Outlook Questionnaire Short Form (CiOQ-S).** The CiOQ-S (Joseph, Linley, Shevlin, Goodfellow, & Butler, 2006), a shortened version of the Changes in Outlook Questionnaire (CiOQ), contains 10 self-report items measuring changes in perception following a traumatic event. The CiOQ-S was used for the study to measure changes following a diagnosis of breast cancer. The scale consisted of two subscales: Positive Changes in Outlook Short Form (CiOP-S; e.g., “I value my relationships much more now”) and Negative Changes in Outlook Short Form (CiON-S; e.g., “I don’t look forward to the future anymore”). Each item was rated on a 6-point Likert scale (1 = “strongly disagree”, 6 = “strongly agree”) (see Appendix H).

Internal consistency reliability of the two short form subscales was acceptable with Cronbach’s alpha .78 for CiOP-S and .83 for CiON-S (Joseph et al., 2006). Joseph et al. (2006) also demonstrated internal consistency reliability and convergent validity with the full Changes in Outlook Questionnaire. The CiOQ-S is a relatively recent variation of the CiOQ
and has therefore not been widely administered to date in research studies. The full CiOQ, however, has been used in research with populations that have experienced trauma, such as terrorist attacks (e.g., Butler et al., 2005; Linley, Joseph, Cooper, Harris, & Meyer, 2003). Internal consistency as measured by cronbach’s alpha for the current study was .89 for CiOP-S and .76 for CiON-S.

The Life Orientation Test Revised (LOT-R). The LOT-R (Scheier, Carver, & Bridges, 1994), a self-report scale with 10 items, was used to measure optimism. Four items were filler items (e.g., “it’s easy for me to relax”) and six items contributed to the optimism score (e.g., “in uncertain times, I usually expect the best”). Each item was rated on a 5-point Likert scale (0 = “I disagree a lot”, 4 = “I agree a lot”) (see Appendix I).

An acceptable level of internal consistency was demonstrated by Cronbach’s alpha reported by Scheier et al. (1994) of .78. Test-retest reliability correlations ranged from .56 to .79. Both convergent and discriminant validity have been demonstrated (Scheier et al., 1994). The original Life Orientation Test (LOT) has been described as the most frequently used measure for assessing optimism and has been deemed a scale of choice for assessing hope and optimism (Steed, 2002). The LOT-R has been used in research with breast cancer survivors (e.g., Schou, Ekeberg, Karesen, & Sorensen, 2008; David et al., 2006). Cronbach’s alpha for the current study was .82.

Qualitative investigation. Participants were able to provide detailed comments on their experiences with breast cancer at the end of the survey. The qualitative portion of the study consisted of these additional comments to the survey. In total, 121 participants (43.7% of total number of respondents) opted to leave a comment upon completion of the study. Of these comments, 11 comments were directed solely at survey feedback and 10 comments
consisted of gratitude for conducting the research. The remaining 100 comments contained detailed information regarding participants' specific experiences following a diagnosis of breast cancer. The demographic variables of those who opted to leave a comment were compared to the demographic variables of those who did not. The participants who left a comment only differed significantly on one demographic variable: employment status. A chi-square test of independence was performed to examine the relation between leaving a comment and employment status, $\chi^2(1, N = 276) = 5.97, p < .05$. Participants who were not employed at the time of the study were more likely to leave a comment than those who were employed. This finding may be related to the likelihood that those who were not working had more time to spend on the survey than those who were employed.

**Data Analysis**

Several steps were used to analyze the study data. First, the descriptive statistics of questionnaire variables were examined in order to determine the distribution of the sample for each of the following variables: posttraumatic growth, optimism, changes in outlook, coping, and quantity of use of psychosocial interventions. The outcome variable for the majority of the research questions was posttraumatic growth (as measured by PGI) and as such it was necessary to determine whether the distribution of scores for this variable were normal. Results from previous studies (e.g., Morrill et al., 2008) suggest that PGI distributions are often skewed. The research questions and an overview of their respective analyses follow.

**Research Question 1: Are demographic characteristics and breast cancer variables related to posttraumatic growth?** This question was addressed by correlation analyses of all demographic variables and breast cancer related variables with the total score
on the PGI. Since the variables used in these analyses were measured on various measurement scales (i.e., categorical, ordinal, and continuous), several correlation analysis techniques were utilized. Since the distribution for PGI was assumed to be skewed, this violated the requirement of normality for Pearson product-moment correlation. Therefore, this parametric measurement of association was not used. Instead, Spearman’s rho was used for correlations with continuous variables with the dependent variable of PGI. Point Biserial correlation was used as a measure of association between dichotomous variables (e.g., relationship status) and PGI. Kendall’s tau-b was used as a measure of association between ordinal variables (e.g., education) and PGI. Cramer’s V was used to measure the strength of association between categorical variables with more than two categories (e.g., education) with other categorical variables. To measure the relationship between a categorical and a continuous variable (e.g., stage of breast cancer and PGI), a one-way ANOVA analysis was used with the square root of effect size (eta squared; $\eta^2$) as a proxy of a correlation coefficient. Since $\eta^2$ is a measure of the amount of variance explained, it is similar to $r^2$, which is a squared correlation coefficient.

**Research Question 2: What are the demographic characteristics of breast cancer survivors who access psychosocial interventions?** Descriptive statistics of demographic variables of women who attended one or more psychosocial intervention(s) and those who did not attend any psychosocial intervention were examined to address this question.

**Research Question 3: Are types of coping strategies, dispositional optimism score, and quantity/and or type of psychosocial interventions accessed related to posttraumatic growth for breast cancer survivors?** Correlation analyses addressed this question with WOC subscales, LOT-R, total count of psychosocial interventions, and type of
interventions accessed correlated with the total score for PGI. As described earlier, since the data contained a variety of data types, several different measures of association were utilized including Spearman’s rho, Kendall’s tau-b, Point Biserial correlation, and Cramer’s V. In addition, Phi was used for correlations between dichotomous variables (e.g., relationship status and use of psychotherapy).

**Research Question 4: Are types of coping strategies used and dispositional optimism score for breast cancer survivors related to quantity and type of psychosocial interventions accessed?** This question was addressed with correlation analysis. WOC subscales and LOT-R were correlated with both quantity of psychosocial interventions and type of interventions accessed. Again, a variety of correlation analysis techniques were used depending on the nature of the variables correlated including Spearman’s rho, Kendall’s tau-b, Point Biserial correlation, and Cramer’s V.

**Research Question 5: What are the predictors of posttraumatic growth following a diagnosis of breast cancer?** Based on previous research it was anticipated that the outcome variable of posttraumatic growth (as measured by PGI) would not be normally distributed. Therefore, multiple regression analysis that requires the assumption of normality was not a feasible analytic option. Instead, the semi-parametric technique of generalized linear modeling (GZLM) was used. Of note, transformation of skewed data was ruled out as this would not guarantee that the variable of PGI would be normalized and interpretations would have been more difficult.

Generalized linear models were introduced by Nelder and Wedderburn (1972). A definition of GZLM follows:
The term Generalized Linear Model, refers to a family of statistical models that extend the linear parametric methods such as ordinary least-squares (OLS) regression and analysis of variance, to data types where the response variable is discrete, skewed, and/or non-linearly related to the explanatory variables. (Hutcheson & Sofroniou, 1999, p. 2)

In GZLM a researcher is required to specify the distribution for the dependent variable, in this case PGI, and the link function. The gamma distribution was selected as PGI was assumed to be positively skewed and to have positive values. The link functions that are associated with the gamma distribution are log or identity. The link function is “the nonlinear function that transforms the relationship between the mean of your dependent variable and the linear combination of your predictor variables so that it is linear” (Norusis, 2007, p. 246).

The demographic and breast cancer variables selected as possible predictors of posttraumatic growth were chosen based on previous studies and strength of correlations in the above research questions with the PGI total score.
Chapter Three:  
Results

The study results are presented in three sections: descriptive statistics for measures, inferential statistics answering the research questions, and the qualitative investigation of comments.

Descriptive Statistics

As a first step in statistical analyses, descriptive statistics were examined for all scale variables. Distribution normality of variables was of interest as this is an assumption of parametric statistical analyses. The mean, median, standard deviation, range, skewness, and kurtosis for all of the study measures are detailed in Table 4.

Table 4

Descriptive Statistics for Scales

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<tr>
<th>Scale</th>
<th>Subscales</th>
<th>N</th>
<th>M</th>
<th>Mdn</th>
<th>SD</th>
<th>Skew</th>
<th>Kurtosis</th>
<th>Range Obtained</th>
<th>Range Possible</th>
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<td>CiON-S</td>
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54
Table 4 (continued)

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<th>SD</th>
<th>Skew</th>
<th>Kurtosis</th>
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<td>8. Positive Reappraisal</td>
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<td>4.72</td>
<td>-0.05</td>
<td>-0.58</td>
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</table>

Note. PGI = Posttraumatic Growth Inventory; LOT-R = Life Orientation Test- Revised; CiOQ-S = Changes in Outlook Questionnaire Short Form; WOC = Ways of Coping Questionnaire; CiOP-S = Positive Changes in Outlook Questionnaire Short Form; CiON-S = Negative Changes in Outlook Questionnaire Short Form.

The mean score on the PGI was 62.40 (SD = 25.08) and when averaged across items, was close to 3 (M = 2.97), corresponding to a “moderate” degree of positive change following breast cancer. The LOT-R mean score was 17.95 (SD = 4.90) and the median was 18. The mean score for the subscale of positive change in outlook (CiOP-S) was 23.45 (SD = 5.13) and when averaged across items was close to 5 (M = 4.69), corresponding to “agree” with positive changes following breast cancer. The subscale of negative change in outlook (CiON-S) mean for the current study was 8.84 (SD = 4.23) and when averaged across items was close to 2 (M = 1.77), corresponding to “disagree” with negative changes following breast cancer.

Five of the WOC subscale scores when averaged across items were close to 1, corresponding to these categories of coping as being “used somewhat” (confrontive coping M = .72; distancing M = 1.06; self-controlling M = 1.09; escape-avoidance M = .76; and planful problem solving M = 1.38). Two of the subscale scores when averaged across items were between 1 and 2, corresponding to these categories of coping as being between “used somewhat” and “used quite a bit” (seeking social support M = 1.45 and positive reappraisal M = 1.45). One subscale score when averaged across items was between 0 and 1, corresponding to the category of coping of accepting responsibility as “not used” and “used somewhat”.

Normality was examined for all scale variables by assessing skewness and kurtosis. Of note, many of the scales were non-normally distributed. Both PGI and LOT-R were highly negatively skewed with women endorsing higher levels of posttraumatic growth and optimism. Of the five PGI subscales, relating to others, personal strength, and appreciation for life were also highly negatively skewed with women rating higher levels of positive change in these areas following their diagnosis of breast cancer. The PGI subscales of new possibilities and spiritual change were not skewed, however, kurtosis values suggested that the distribution of scores were clustered within two standard deviations of the means of these subscales. The CiOP-S distribution was highly negatively skewed with women reporting higher levels of positive changes in outlook and with kurtosis indicating a high concentration of scores near the mean. The CiON-S distribution was highly positively skewed with women reporting lower levels of negative changes in outlook and with kurtosis again indicating a high concentration of scores near the mean. With the exception of seeking social support and planful problem-solving, the subscales of the WOC were non-normally distributed. Several of the WOC subscales were highly positively skewed including distancing, self-controlling, accepting responsibility, and escape-avoidance with women endorsing lower levels of these coping strategies. Confrontive coping was also highly positively skewed with women endorsing lower levels of this coping strategy and the kurtosis value indicated that the scores were highly concentrated around the mean. The subscale, positive reappraisal, was not skewed, however the kurtosis value suggested that scores were clustered within two standard deviations of the mean for this subscale.
Participants answered a single item on satisfaction with social support and the majority of participants (84.5%) endorsed either “Extremely Satisfied” (45.1%) or “Satisfied” (39.4%) response categories. A single item measuring overall quality of life indicated that over half of respondents rated their quality of life as “Very Good” (54.2%) and almost a third of respondents rated their quality of life as “Good” (32.5%).

Examination of the Use of Psychosocial Support Questionnaire revealed that the vast majority of breast cancer survivors used some form of psychosocial support (91%). One quarter of respondents (26.4%) reported utilizing one form of support, 22% indicated that they participated in two different forms of support, 19.5% participated in three different types, and 11.9% participated in four different types of support. A smaller percentage of participants accessed more than four types of support: 7.2% participated in five different types of support, 2.5% accessed six types, and 1.1% accessed seven. Some participants (23.8%) reported that there was a support they had wanted to access, but a barrier prevented them from accessing the support. Barriers reported included inaccessible hours or location, support group at capacity, feeling too unwell to attend, no support offered for younger women with breast cancer, dislike of the dynamics of a specific support (i.e., disorganized or too much focus on the negative impact of breast cancer), or being unaware of available resources. Over half of the respondents (61%) utilized recreational supports (e.g., dragon boat teams for breast cancer survivors) and the majority of those who participated attended 10 or more sessions (51.3%). In-person support groups were accessed by almost half of the participants (44.8%); 19.9% attended 10 or more support group sessions and 14.1% attended 2-5 sessions. One third of respondents utilized telephone support (33.9%) and 2-5 telephone sessions were most often used (13.4%). Individual therapy was accessed by 27.1% of
respondents. Specifically, 31% of participants utilized counselling sessions, 14.1% took part in psychotherapy sessions, and 7.6% attended sessions with a psychiatrist. Few participants reported participating in an internet support group (18.1%), retreat (10.5%), or other form of support (16.2%; e.g., art therapy, yoga classes for breast cancer survivors).

Research Questions

**Research Question 1: Are demographic characteristics and breast cancer variables related to posttraumatic growth?** Correlation analyses were conducted to determine whether relationships existed between demographic and/or breast cancer variables and posttraumatic growth. As detailed earlier, different correlation techniques were conducted to correspond to the nature of the variables (e.g., categorical, ordinal, and continuous). The correlations of each demographic or breast cancer variable and posttraumatic growth are presented in Table 5. All PGI correlations with demographic and breast cancer variables were small in terms of effect size. Since a large number of correlations were examined, a Bonferroni corrected alpha level of .001 was used to control for Type I error. Women who were affiliated with religion were more likely to experience posttraumatic growth (Point Biserial correlation = .21, \( p < .001 \)). Higher levels of education were associated with lower levels of posttraumatic growth (Kendall’s tau-b = -.17, \( p < .001 \)). Posttraumatic growth was only significantly correlated with one breast cancer variable; as the number of years increased since the diagnosis of breast cancer, so did the likelihood of experiencing posttraumatic growth (Spearman’s rho = .20, \( p < .001 \)).
### Table 5

**PGI and Demographic Correlations**

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<th>11</th>
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<tr>
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<td>-</td>
<td>.07(^a)</td>
<td>.12(^b)</td>
<td>-17(^b)</td>
<td>.21(^b)</td>
<td>-17(^*)</td>
<td>-.04(^b)</td>
<td>.00(^b)</td>
<td>-.08(^b)</td>
<td>.20(^*)</td>
<td>.18(^f)</td>
<td>.05(^b)</td>
<td>.10(^b)</td>
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<td>2. Age</td>
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<td>-.06(^b)</td>
<td>.05(^b)</td>
<td>.16(^b)</td>
<td>-.06(^c)</td>
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<td>.07(^b)</td>
<td>.40(^*)</td>
<td>.14(^f)</td>
<td>.06(^b)</td>
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<td>-.15(^e)</td>
<td>.09(^d)</td>
<td>-.04(^e)</td>
<td>.12(^e)</td>
<td>.12(^e)</td>
<td>.05(^b)</td>
<td>.18(^d)</td>
<td>.05(^e)</td>
<td>-.06(^e)</td>
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<td>-</td>
<td>-.02(^e)</td>
<td>.05(^d)</td>
<td>-.14(^e)</td>
<td>.07(^e)</td>
<td>.03(^e)</td>
<td>-.05(^b)</td>
<td>.10(^d)</td>
<td>.08(^e)</td>
<td>.12(^e)</td>
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<td>.00(^e)</td>
<td>.00(^e)</td>
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<td>.09(^d)</td>
<td>.09(^d)</td>
<td>.00(^e)</td>
<td>.09(^d)</td>
<td>.05(^d)</td>
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<td>7. Employment</td>
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<td>8. Country</td>
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<td>.13(^b)</td>
<td>.08(^d)</td>
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<td>10. Years Since Diagnosis</td>
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<td>.33(^*)</td>
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<td>.16(^d)</td>
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<td>12. Finished Treatment</td>
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</table>

**Note.** *p < .001. PGI= Posttraumatic Growth Inventory.  
\(^a\) Spearman’s rho  
\(^b\) Point Biserial  
\(^c\) Kendall’s tau-b  
\(^d\) Cramer’s V  
\(^e\) Phi  
\(^f\) Proxy of r computed as a square root from effect size (\(\eta\) – amount of variance explained in ANOVA)
Research Question 2: What are the demographic characteristics of breast cancer survivors who access psychosocial interventions? First of all, the demographic variables of those who accessed one or more psychosocial supports were compared to those who did not access any support. The participants who did not access services differed significantly on two demographic variables: employment status and level of education. A chi square test of independence was performed to examine the relation between not accessing support and employment status, \( \chi^2 (1, N = 272) = 5.21, p < .05 \). A smaller number of women were employed who did not access services than those who did use services. The relation between not accessing support and education level was also investigated with a chi square test of independence, \( \chi^2 (2, N = 273) = 8.57, p < .05 \). Those who did not access support had lower education levels (high school or less) than women who did access support.

Since the majority of participants (91%; \( N = 277 \)) accessed one or more psychosocial support(s) related to breast cancer, the demographic characteristics of women who access supports will be similar to that of the entire study (please refer to participants and procedures section). Therefore, the 9% \( (N = 21) \) of women who did not access any supports were examined.

The age range of women who did not access psychosocial interventions was from 36 to 78 years \( (M = 55.10, SD = 10.06) \). Most identified as White/Caucasian (90.5%). The majority reported they lived in Canada (76.2%), in an urban area (66.7%) and were in a relationship (76.2%). These women had a range of education with the highest education received as follows: high school (33.3%), some post-secondary (33.3%), and university graduate/graduate degree (33.3%). More than half were not employed (61.9%) and identified with religion (71.4%). In regards to breast cancer variables, the majority of these women
were diagnosed with the following stage of breast cancer: stage 0 or 1 (38.1%) or stage 2 (33.3%). The range of number of years passed since diagnosis with breast cancer was 1-20 years ($M = 6.38, SD = 6.03$). Approximately half of the women were in remission at the time of the study (47.6%) and over half had finished treatment (61.9%).

**Research Question 3: Are types of coping strategies, dispositional optimism score, and quantity/and or type of psychosocial interventions accessed related to posttraumatic growth for breast cancer survivors?** Correlation analyses were conducted to determine whether a relationship existed between coping strategies, dispositional optimism, and quantity/and or type of psychosocial interventions with posttraumatic growth. Since a large number of correlations were examined, a Bonferroni corrected alpha level of .001 was used to control for Type I error. The correlations of each scale variable and posttraumatic growth are presented in Table 6.
Table 6

*PGI and Questionnaire Correlations*

<table>
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<td>-.19&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.33&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.07&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.19&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.26&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.14&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.08&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.30&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>.03&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.15&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.17&lt;sup&gt;**&lt;/sup&gt;</td>
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<td>.18&lt;sup&gt;**&lt;/sup&gt;</td>
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<td>-</td>
<td>.46&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.02&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>8.</td>
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<td>WOC6</td>
<td>-</td>
<td>.07&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>-</td>
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<tr>
<td>13.</td>
<td>WOC8</td>
<td>-</td>
<td>-</td>
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*Note.* *p < .001. PGI = Posttraumatic Growth Inventory; Supp = quantity of psychosocial interventions accessed; LOT-R = Life Orientation Test-Revised; CiOP-S = Positive Changes in Outlook Questionnaire Short Form; CiON-S = Negative Changes in Outlook Questionnaire Short Form; WOC1 = Confrontive Coping subscale of Ways of Coping Questionnaire; WOC2 = Distancing subscale; WOC3 = Self-controlling subscale; WOC4 = Seeking Social Support subscale; WOC5 = Accepting Responsibility subscale; WOC6 = Escape-avoidance subscale; WOC7 = Planful Problem-solving subscale; WOC8 = Positive Reappraisal subscale.

<sup>a</sup> Kendall’s tau-b

<sup>b</sup> Spearman’s rho
PGI total score was significantly correlated with LOT-R in a positive direction and to a small degree suggesting that those who are more optimistic are more likely to experience posttraumatic growth. PGI was correlated to a large degree and in a positive direction to a measure of positive changes in outlook (CiOP-S) suggesting that those with more positive changes in outlook are more likely to experience posttraumatic growth. Negative changes in outlook (CiON-S) was correlated in a negative direction and to a small degree to posttraumatic growth suggesting that higher levels of negative changes in outlook were associated with less posttraumatic growth. Three of the WOC subscales were significantly correlated with PGI in a positive direction and to a small degree suggesting that the higher that women scored on the following coping strategies, the more likely they were to experience posttraumatic growth: confrontive coping, seeking social support, and planful problem-solving. In addition, PGI was strongly associated with the WOC subscale of positive reappraisal, suggesting that women who utilized this coping strategy were more likely to experience posttraumatic growth.

The correlations between type of psychosocial intervention and PGI are detailed in Table 7. Participation in one type of intervention was significantly related to PGI to a small degree and in a positive direction: Recreational support. Therefore women who accessed psychosocial support for breast cancer in the form of attending a recreational activity such as dragon boating were more likely to experience posttraumatic growth than women who accessed other types of interventions.
Table 7
Scale measures and type of psychosocial support Point Biserial correlations

<table>
<thead>
<tr>
<th></th>
<th>Sup1</th>
<th>Sup2</th>
<th>Sup3</th>
<th>Sup4</th>
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<td>.20*</td>
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<td>.14</td>
<td>.05</td>
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</table>

Note. *p < .001. PGI = Posttraumatic Growth Inventory; LOT-R = Life Orientation Test- Revised; CiOP-S = Positive Changes in Outlook Questionnaire Short Form; CiON-S = Negative Changes in Outlook Questionnaire Short Form; WOC1 = Confrontive Coping subscale of Ways of Coping Questionnaire; WOC2 = Distancing subscale; WOC3 = Self-controlling subscale; WOC4 = Seeking Social Support subscale; WOC5 = Accepting Responsibility subscale; WOC6 = Escape-avoidance subscale; WOC7 = Planful Problem-solving subscale; WOC8 = Positive Reappraisal subscale; Sup1 = psychotherapy; Sup2 = counselling; Sup3 = psychiatry; Sup4 = in-person group; Sup5 = internet group; Sup6 = retreat; Sup7 = telephone; Sup8 = recreational; Sup9 = other.

Research Question 4: Are types of coping strategies used and dispositional optimism score for breast cancer survivors related to quantity and type of psychosocial interventions accessed? Correlation analyses were conducted to answer this research question. For correlation values between coping strategies, dispositional optimism, and quantity of psychosocial interventions accessed refer to Table 6 and for correlation values between coping strategies, dispositional optimism, and type of psychosocial intervention refer to Table 7. Since a large number of correlations were examined, a Bonferroni corrected alpha level of .001 was used to control for Type I error.

Four of the WOC subscales were significantly related in a positive direction and to a small degree to quantity of interventions utilized including confrontive coping, seeking social support, accepting responsibility, and escape-avoidance.
LOT-R was significantly related in a negative direction and to a small degree to the use of one psychosocial intervention: internet support group. This finding suggests that those who are less optimistic are more likely to access support via logging in to an internet support group.

Four of the WOC subscales were significantly correlated to a small degree with the use of one or more psychosocial interventions. Confrontive coping was significantly correlated in a positive direction to psychotherapy. Seeking social support was significantly related in a positive direction to the use of several of the psychosocial interventions including psychotherapy, counselling, psychiatry, and in-person group. Accepting responsibility was significantly correlated in a positive direction to three of the psychosocial interventions: counselling, internet group, and telephone support. Escape-avoidance was significantly related in a positive direction to two of the interventions: counselling and internet support.

**Research Question 5: What are the predictors of posttraumatic growth following a diagnosis of breast cancer?** The demographic and breast cancer variables selected as possible predictors of posttraumatic growth were chosen based on previous studies and strength of correlations in the current study with the PGI total score. Although the PGI consists of five posttraumatic growth factors, the overall total score was used since the five factors were highly correlated with each other (ranging from spearman’s rho = .58, \( p = .01 \) to spearman’s rho = .75, \( p = .01 \)). The resulting exploratory demographic and breast cancer variables included level of education, affiliation with religion, years passed since diagnosis of breast cancer, and stage of breast cancer. Other independent variables selected as possible predictors included satisfaction with social support, quality of life, quantity of different types of psychosocial interventions received, optimism score (LOT-
R), and four WOC scales: seeking social support, accepting responsibility, escape-avoidance, and planful problem-solving. Of note, the CiOQ-S subscale of positive changes in outlook (CiOP-S) has been determined to have convergent validity with the PGI (Joseph et al., 2006). Since CiOP-S is a similar measure to PGI, CiOP-S was not chosen as a predictor for this analysis. In contrast, the negative changes in outlook subscale (CiON-S) has not been found to be related to PGI and for this reason was omitted from the analysis.

As reported in the descriptive statistics section, the PGI distribution was examined in regards to assumptions of normality for multiple regression analysis. Since the PGI distribution was skewed, the technique of generalized linear modeling (GZLM) was the preferred model for analysis. To investigate which factors predict posttraumatic growth a GZLM with the reversed PTG scores as a dependent variable and level of education, affiliation with religion, number of years passed since diagnosis of breast cancer, stage of breast cancer, satisfaction with social support, quality of life, quantity of different types of psychosocial interventions received, optimism score (LOT-R), and four WOC scales: seeking social support, accepting responsibility, escape-avoidance, and planful problem-solving as predictors was conducted. Categorical predictors were specified as factors and continuous predictors as covariates in the GZLM model. The model was specified using the gamma probability distribution and the identity link function.

The results of this analysis indicate that the selected model had good fit with the data, the values of the Deviance and Pearson Chi-Square model fit indices divided by degrees of freedom were equal to .39 and .27 respectively (note: values less than 1 indicate good fit; SPSS Version 15.0). Of all predictors specified in this model, level of education, affiliation with religion, stage of breast cancer, number of years passed since diagnosed with breast
cancer, optimism score, seeking social support, escape-avoidance, and planful problem-solving were significantly related to the reversed PGI total scores. Parameter estimates for individual predictors are reported in Table 8. As detailed in Table 8, the predictors affiliated with religion and stage of breast cancer were positively related to the dependent variable indicating that religious women who were diagnosed with breast cancer in stages 0 or 1 in comparison to those who did not know the stage of their breast cancer, were likely to experience posttraumatic growth. In contrast, the level of education predictor and number of years passed since diagnosis were negatively related to the dependent variable indicating that less educated women who had more time pass since diagnosis were likely to experience posttraumatic growth. The predictors affiliated with optimism and coping subscales of seeking social support, escape-avoidance, and planful problem-solving were negatively related to the dependent variable indicating that those who were more optimistic and endorsed higher levels of the abovementioned coping strategies were likely to experience posttraumatic growth.
Table 8

*Generalized Linear Model Parameter Estimates*

<table>
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<tr>
<th>Parameter</th>
<th>B</th>
<th>SE</th>
<th>Wald Chi-Square</th>
<th>df</th>
<th>Significance</th>
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<td>3.76</td>
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<td>.715</td>
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<td>22.84</td>
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*Note.* LOT-R = Life Orientation Test Revised; WOC = Ways of Coping Questionnaire.

To further investigate the effect of categorical predictors on PTG, pairwise Bonferroni comparisons were requested from GZLM. The results of these analyses showed that of the three categories of education, only university or graduate degree ($M = 63.15, SE = 5.52$) was significantly different than the categories of high school ($M = 48.90, SE = 6.28$) or some postsecondary ($M = 50.40, SE = 5.46$). Note that the higher mean equals higher lack of posttraumatic growth since the PGI distribution was reversed for the purpose of analysis. Of the four categories of stage of breast cancer, only the category of “don’t know” ($M = 73.51$,
$SE = 9.05$) was significantly different from all of the other categories. The mean for the
category of stage 0 and 1 was 47.57 ($SE = 5.13$),
the mean for stage 2 was 49.10 ($SE = 5.43$), the mean for stage 3 and 4 was 46.41 ($SE = 5.44$).

In summary women who were religious and less educated, had more years since their
diagnosis, knew the stage of their breast cancer diagnosis, were more optimistic and utilized
more coping strategies in the form of seeking social support, escape-avoidance, and planful
problem solving were most likely to experience PTG.

**Qualitative Responses**

Narrative responses of participants were analyzed via content analysis. The comments
were independently read by both the researcher and a second reader, and themes were
marked. The researcher and the second reader came to an agreement on themes and
categories. Five main themes were identified: cancer diagnosis information, cancer treatment,
impact of cancer, coping with cancer, and support accessed. The first two themes, cancer
diagnosis information and cancer treatment, are presented as an overview. The content of the
final three themes, impact of cancer, coping, and support accessed are categorized and
analyzed in depth. For the purpose of protecting anonymity as guaranteed in the consent form
comments of participants were paraphrased rather than directly quoted.

**Cancer diagnosis information and cancer treatment.** Approximately one third of
the women who submitted comments (32%) provided specific information regarding how
and when they discovered they had breast cancer, specific type of breast cancer, information
about reoccurrences, and/or other concurrent conditions that have impacted their health (e.g.,
chronic fatigue, bipolar disorder). Information pertaining to cancer treatment was provided
by 27% of the women. The cancer treatment comments contained the following: mention of the team or hospital where care was provided (positive and negative comments), oncologist’s beliefs regarding remission (i.e., a disbelief in the term remission), decisions made regarding treatment and type of surgery (e.g., single vs. double mastectomy), type of treatment and corresponding side effects, surgery type and corresponding date(s) and/or timeline between diagnosis and surgery.

**Impact of breast cancer.** Almost half of the participants (41%) provided comments regarding the impact of their experience with breast cancer, both focused on the short-term impact (41.7%) and long-term impact (56.2%). A few participants (12.5%) commented that they did not experience a significant impact on their lives as a result of breast cancer (i.e., they did not experience a difficult time or find that they had changed following the diagnosis).

The short-term or immediate impact of breast cancer (including the impact of diagnosis, treatment, and surgery), was described solely in negative terms. The majority of participants (80%) provided details on the short-term impact of cancer on their emotional functioning. Several women reported that their initial reaction to the diagnosis was as follows: refusing to believe she had cancer (participant #92), feeling stunned or astounded (participants #77 and #50), feeling fearful (participants #48 and #92), and generally experiencing a difficult time emotionally (participants #17, #23, #46, #75, and #109). One participant (#96) described the day that she received the diagnosis of breast cancer as the most terrible she had ever experienced. Another participant (#46) reported feeling as though her body had turned against her and let her down. During treatment, participant #31 reported that her self-assurance varied often depending on how she felt physically, participant #57
expressed experiencing a low mood, and participant #75 reported experiencing an arduous time. Two women reported feeling angry: participant #37 stated that she was infuriated with the health care system and the disrespectful ways in which she was treated and participant #91 expressed feeling enraged and isolated. Concern about the future and her mortality was described by participant #106. Other short-term impacts of breast cancer described in the comments included the physical impact of treatment (10%), financial stress (5%) and the inability to fulfill a caregiving role (5%).

While the short-term impact of breast cancer was described in negative terms by participants, the long-term impact was described in both negative and positive terms. Almost half of the long-term impact comments were reported as a positive change (40.7%) and just over half were reported as negative changes (59.2%). In terms of positive long-term changes, a couple of women described developing new friendships through support accessed following their breast cancer diagnosis (participants #14 and #73). Appreciation was a positive change evident in many of the comments. One participant (#16) reported that she appreciates and celebrates each year that passes in which she is healthy. Participant #41 commented that she feels lucky that she was not diagnosed with a more severe form of cancer and participant #47 described regularly giving thanks for positive experiences and feeling privileged that breast cancer was discovered for her in its early stages. One woman (#48) reported that she keeps in mind that many women die as a result of cancer and she therefore has a new appreciation for life. Two participants (#99 and #117) also described feeling fortunate to be alive since other family member(s) had died as a result of other types of cancer. Other long-term positive impacts included discovering new possibilities; participant #90 pursued a different career following her diagnosis and formed a new
relationship. One woman (participant #75) described feeling in better spirits than she was prior to the diagnosis of breast cancer as she no longer worries about the little things and one participant (#105) indicated that she had learned a great deal as a result of her diagnosis and subsequent treatments.

The majority of negative long-term changes following a diagnosis of breast cancer were described as impacting the individual’s emotional state (40.7%). Several women (participants #29, #31, and #92) reported that the possibility of a cancer reoccurrence is always on their mind and that they feel afraid as a result. Similarly, participant #46 expressed that she will never again feel fully secure and content as she is waiting for a reoccurrence of cancer. Experiencing a low mood was described as a result of the negative impact breast cancer has had on the life of one woman (participant #33). Another woman (participant #53) expressed feeling infuriated that young adults are diagnosed with cancer and participant #91 stated that she continues to feel irritated with friends and family members who did not provide her with support. One woman (participant #115) reported feeling resentful as a result of early retirement brought on by cancer. Participant #63 stated that her sexual desire plummeted and that she no longer views herself as feminine as a result of having breast cancer related surgery. She further expressed feeling disgraced, embarrassed and distressed and stated that her relationship with her partner has been negatively impacted as a result of her experience of having breast cancer. One woman (participant #106) expressed concern that she may lose support in the future and described her anxiety related to death. She noted that she is consumed with thoughts about her last days of living and expressed a wish to be able control her suffering via terminating her life. Other negative long-term changes commented on by participants included impact on cognitions (7.4%; e.g., thinking a lot about
cancer), physical impact (7.4%; e.g., feeling fatigued) and financial devastation (3.7%; e.g., for those without healthcare).

A minority of participants (12.5%) reported that they were not significantly impacted by their experience of breast cancer. For example, participant #39 reported that she did not experience difficulties and participant #70 described feeling the same as she did prior to the diagnosis of breast cancer.

Coping. Ways of coping with breast cancer were described in approximately half of the comments (48%). A variety of coping strategies were commented on with the most frequent being the presence of a positive attitude (27.1%). A positive attitude (such as optimism) was discussed as a way of managing the emotional impact of the cancer diagnosis. One participant (#111) reported that although facing the reality of the terminal aspect of cancer is important, she chose to view herself as having the ability to continue to live each moment to the fullest. She noted that this helped to keep her from quitting the fight against breast cancer. Another participant (#109) stated that remaining positive was important in order to continue on living after a cancer diagnosis. Participant #96 reported that an optimistic outlook has allowed her to face what has yet to come and view each day as a blessing.

Taking action was evident as a coping strategy from some of the responses (18.8%). One participant (#23) reported that she came up with a strategy following her diagnosis of breast cancer and then carried it out. She further noted that she was required to utilize strengths she did not know she had in order to gain access to health care services that she deemed necessary. Another participant (#25) stated that she approached her diagnosis of breast cancer from a take charge perspective. Participant #56 reported that she tackled her
side effects from treatment alone since support was not available for her. Similarly, participant #78 reported that she discovered ways to manage and ways to decrease the side effects of treatment by taking action. Another participant (#103) stated that she took every action that she could with the goal of reaching remission. She noted that this strategy was successful for her.

Some women discussed drawing on past experiences as being helpful in coping with a diagnosis of breast cancer (10.4%). Participant #4 reported that the previous death of a close family member impacted her at the time by changing what was most important to her in life. She explained that this equipped her to deal with her subsequent breast cancer diagnosis. Another participant (#5) stated that a previous medical diagnosis resulted in learning how to cope with a debilitating illness. She described this experience as preparing her to cope with her later diagnosis of breast cancer. One participant (#33) reported that her profession has exposed her to traumatic situations which have had an impact on her. She viewed breast cancer as another threat to her life and was able to deal with the diagnosis similarly to how she handled the workplace traumas.

Other coping strategies reported included taking control (8.3%; e.g., choosing to find ways to regain control over one’s life by researching and making decisions regarding treatment) and carrying on (8.3%; e.g., continuing forward in life without the diagnosis having a major impact on future plans). A variety of other coping strategies were mentioned as well including acceptance (6.2%), living in the moment (6.2%), spirituality (6.2%), counting blessings (6.2%), volunteering (6.2%), exercising (6.2%), making each day count (4.2%), drawing upon a role model (4.2%), keeping to oneself (4.2%), laughing (4.2%),
keeping perspective (2.1%), thinking it over (2.1%), and referral to coping strategies in general terms (4.2%).

Support accessed. Almost half of the women who provided comments (42%) described their experiences in accessing supports pertaining to breast cancer survivors. Since some women described accessing more than one support, there was a total of 56 support mentions. The majority of these supports were described as providing positive experiences (83.9%) and a minority was described as resulting in negative experiences (16.1%).

Approximately half of the supports described were categorized as recreational support such as joining dragon boat teams for breast cancer survivors or climbing a mountain with other breast cancer survivors (45.2%). Most of these comments were positive (89.5%) and described the following benefits received from this support. Participant #7 expressed that participating in physical activity allowed her to reclaim power over her body. Other participants described the reemergence of well-being and feeling healthy from a physical perspective as a result in participating in recreational support for breast cancer survivors (participants #98 and #106). Being surrounded by women who were also coping with breast cancer and the resulting impact of treatment and surgeries on their bodies provided these women with a sense of belonging, feelings of acceptance, sources of emotional support and advice, and foundations for lifelong friendships. Also mentioned was the pleasure and fun derived from recreational activity. Participant #77 reported that taking part in recreational support provided a platform to create the belief that life continues after a diagnosis of breast cancer. Participant #6 described participation in a recreational team as a fulfilling activity that has continued for many years. Negative experiences with recreational support were described by one participant (#85) who reported experiencing a fear of reoccurrence of
cancer as a result of being exposed to women whose breast cancer returned. Another participant (#59) reported perceiving team members as misdirecting negative emotions related to the emotional impact of breast cancer at one another. She stated that mediation was required to work through these struggles and she noted that for some women their negative emotions did not diminish.

Friends accounted for over one quarter of the supports mentioned (31%) and were mainly described in positive terms (69.2%). Support received from friends included the provision of affection and caring (participant #16). Several women reported that their experience of being diagnosed with breast cancer allowed them to appreciate the numerous supportive friends they were surrounded by. One participant (#5) stated that her friends were better sources of support than her family members. Participant #14 reported that she discovered that many people cared deeply about her well-being and participant #120 stated that friends who were also facing breast cancer diagnoses helped her to relieve constant worry. A few women reported negative experiences with friends. One participant (#118) reported feeling deserted when her friends could not deal with her breast cancer diagnosis. Another participant (#93) found a need to disengage from relationships that were perceived as having a negative impact on her well-being. Participant #38 stated that she realized that some of her friends did not have her best interest in heart when she found out they were treating her experience of being diagnosed with breast cancer as a conversation topic with other community members.

Approximately one quarter of the identified supports described the support or lack of support provided by family members (23.8%). In addition to providing general support, family members were described as helping to keep an optimistic outlook and as serving as
role models for the way in which the family member handled their own diagnosis with cancer (participants #51 and #64). Negative interactions with family were described by a few women and consisted of feeling disappointed and upset with the lack of support provided by family members (participants #5 and #91). Participant #106 expressed the need to act as though she was fine and hide how she was actually feeling in order to protect family members who were perceived as being unable to cope with her breast cancer diagnosis.

Volunteering in positions that supported other women coping with a breast cancer diagnosis was mentioned as also providing a support for the volunteer (16.7%) and was described in positive terms. Participant #107 described that volunteering has provided opportunities to be proactive and to keep other women dealing with breast cancer from having negative experiences with support as she had. In addition, one participant (#108) noted that she receives as much benefit as the person receiving time with her as a volunteer. Participant #22 reported that she enjoys going to the place where she volunteers and noted that she has derived support from her experience volunteering.

Other supports mentioned by participants included support received from other breast cancer survivors via the internet (4.8%), support provided by neighbours and other community members (4.8%), participation in a support group (2.4%), support provided by religious faith (2.4%), and general mention of accessing a variety of support services (2.4%).

In summary, a large number of participants submitted narrative responses detailing their personal experiences with breast cancer. While some women provided specific information regarding their diagnosis and treatment received, others provided descriptions of the impact of breast cancer, coping with cancer, and support that they accessed.
Impact of breast cancer was differentiated between the short-term and long-term impact. The short-term impact was described in negative terms and mostly focused on the negative impact of cancer on the individual’s emotional state. In contrast, the long-term impact was described in both negative and positive terms. Similarly to the short-term impact of breast cancer, the negative long-term impact also focused on the individual’s emotional state. The positive long-term impact of breast cancer, however, included descriptions of newly developed friendships, appreciation for life and health, and personal growth through new possibilities (e.g., career change).

Coping with breast cancer was the focus of many of the women’s comments. Although a variety of coping strategies were detailed, the most common were maintaining a positive attitude, taking action, and drawing on past experiences. Supports were commonly accessed by participants and the majority detailed were recreational groups (e.g., dragon boat racing for breast cancer survivors), friends, and family members. Although most of the women described positive experiences with supports, some participants reported negative experiences.

Overall, many of the participants in this study appeared interested in sharing their individual experience with breast cancer. The qualitative responses suggest that while breast cancer has a deleterious impact, especially in the short-term, there are beneficial long-term changes that arise for some women as a result of facing this life-threatening illness. Women tend to utilize a variety of coping strategies and access several sources of support to manage the negative impact of breast cancer.
Chapter Four:
Discussion

This study investigated the experience of posttraumatic growth for women who had received a diagnosis of breast cancer. Posttraumatic growth was examined in relation to demographic variables, breast cancer variables, personal characteristics, and participation in psychosocial interventions. Additionally, the qualitative experience of breast cancer was explored through detailed comments women included in their survey responses. First, the level of posttraumatic growth for the sample was compared to previous studies and the results of each research question were interpreted and compared to previous research and literature. Next, the contribution of the study results to the understanding of posttraumatic growth theory is discussed. Finally, a discussion of the strengths and limitations of the study, as well as implications and applications to provision of psychosocial resources for breast cancer survivors and future research follows.

Posttraumatic Growth in Comparison to Other Study Samples

The level of posttraumatic growth for this sample was similar in the most part to that of other breast cancer survivor studies in terms of both total score and subscale scores. For example, women with stage 0-IIIB breast cancer (Cordova et al., 2001) were reported to have a similar PGI total score. The PGI subscale scores were very similar as well with only one subscale for Cordova et al.’s (2001) sample, spiritual change, reported as a higher score than in the current study. Another study (Sears et al., 2003) of women with early stage breast cancer reported a slightly lower PGI total score, a lower new possibilities subscale score, and a lower personal strength subscale score. Again the subscale of spiritual change was higher than the current study.
Demographic Characteristics and Breast Cancer Variables Related to Posttraumatic Growth

This study predicted that minority status, younger age, and more severe stage of breast cancer would be significantly related to an experience of posttraumatic growth following breast cancer. No significant relationships between predicted variables and posttraumatic growth were confirmed. However, significant relationships were present for posttraumatic growth and the following demographic variables: affiliation with religion and lower levels of education. Only one of the breast cancer variables, increased number of years passed since the diagnosis of breast cancer, was related to posttraumatic growth. Of note, significant correlations were small in terms of strength of relationship. Therefore, caution should be used in interpretations.

**Religion.** Affiliation with religion was significantly related to posttraumatic growth, although this was not a hypothesis for the current study. The relationship between affiliation with religion and posttraumatic growth confirms Shaw, Joseph, and Linley’s (2005) review findings of religion and spirituality being associated with posttraumatic growth. Possible explanations for the relationship between religious affiliation and posttraumatic growth follow as well as discussion regarding an issue of measurement of affiliation with religion for the current study.

Although the linkages in determining causality are still unknown, religion provides meaning, purpose, and hope, all of which are beneficial in coping with the aftermath of trauma. Pargament, Desai, and McConnell (2006) suggest that spirituality facilitates positive adaption following trauma through provision of empowerment and support, meaning, and alterations in goals and priorities that change the path of one’s life. In addition, the actual
experience of trauma may lead to spiritual growth through the struggle of coming to terms with the traumatic event and its impact on the individual (Tedeschi & Calhoun, 1996).

Measurement of affiliation with religion may be of concern. The current study measured affiliation with religion via one dichotomous item requiring a “yes” or “no” response. Since participants were not asked to answer this question in relation to whether they were affiliated with religion prior to the trauma, the direction of this relationship is not clear. In one direction, those who were religious may have experienced more posttraumatic growth following their diagnosis of breast cancer. In the other direction, those who experienced posttraumatic growth (especially in the subscale of spiritual change) may have developed new religious beliefs as a result of coping with their diagnosis.

The significant relationship between affiliation with religion and posttraumatic growth confirms the findings of previous studies. Although there is evidence that a positive relationship between religiosity and posttraumatic growth exists for breast cancer survivors, the next step is to determine the direction of this relationship.

**Education.** Since there have been conflicting findings on whether there is a relationship between level of education and posttraumatic growth and in which direction the relationship would exist in, education level was not hypothesized to be related to posttraumatic growth in the current study. However, the results demonstrated that lower levels of education were significantly related to higher levels of posttraumatic growth following a diagnosis of breast cancer.

Although conflicting results exist in the literature, a few researchers have reported a significant relationship between lower levels of education and posttraumatic growth. As detailed earlier, Tomich and Helgeson (2004) reported a relationship between lower
socioeconomic status and increased benefit finding for breast cancer survivors. In a recent study, Bellizzi and Blank (2006) examined the prediction of posttraumatic growth for breast cancer survivors and also found a significant relationship between less education (did not attend college) and posttraumatic growth in the domain of relationships with others. Several explanations for the relationship between lower education levels and posttraumatic growth have been suggested. Those with lower socioeconomic levels may encounter more hardships and as a result have more experience in finding the positive aspects of these experiences (Tomich & Helgeson, 2004). Alternately, those who have received lower levels of education may have more room for growth than those who accessed higher education (Bellizzi & Blank, 2006; Weiss, 2004).

In addition, religiosity may act as a moderator for the relationship between lower levels of education and posttraumatic growth. For example, Weiss (2004) found a negative relationship between level of education and posttraumatic growth, as well as a negative relationship between level of education and religiosity for breast cancer survivors. In the current study, the majority of participants had received education beyond high school (87%). Since the sample was not representative of all levels of education, the association between level of education and religiosity was not investigated.

**Minority status.** In contrast to previous research, being of minority status was not related to posttraumatic growth for breast cancer survivors in the current study (e.g., Bellizzi et al., 2010; Helgeson, Reynolds, & Tomich, 2006; Urcuyo et al., 2005). Researchers have proposed that minority status is related to posttraumatic growth as a result of religiosity and previous trauma history. The non-significant relationship between minority status and
posttraumatic growth in the current study may be a result of the sample being primarily of Caucasian ethnocultural background.

Further research will be required with a more diverse sample in order to determine whether there is a relationship between minority status and posttraumatic growth.

**Age.** Age was not found to be related to posttraumatic growth. This contrasts with Cordova et al.’s (2007) significant findings of younger age being related to posttraumatic growth for breast cancer survivors, but is in line with several other studies that did not report age as being related to posttraumatic growth (e.g., Sears et al., 2003; Tomich & Helgeson, 2004; Weiss, 2004). In the current study, the age distribution was negatively skewed with most women being at the higher end of the age range. Since few younger women completed the survey, this may have impacted the findings.

**Breast cancer variables.** Although other studies have reported that more severe stage of disease has been related to posttraumatic growth (e.g., Calhoun & Tedeschi, 2006; Sears et al., 2003; Tomich & Helgeson, 2004), the current study did not find this. Instead, increased time since diagnosis was related to higher levels of posttraumatic growth. There are conflicting results in this area, however, a positive correlation between time passed since diagnosis and posttraumatic growth was also reported by Sears et al. (2003). Similarly, Cordova et al. (2001) reported a positive relationship between time since diagnosis and posttraumatic growth. Increased time may allow for more opportunities to process the trauma (i.e., cognitive, affective, and interpersonal processes) and these processes result in posttraumatic growth (Cordova et al., 2001).
The current study findings suggest that women who were affiliated with religion, had lower levels of education, and had more years passed since their breast cancer diagnosis, were more likely to experience posttraumatic growth following a breast cancer diagnosis. Although correlates of posttraumatic growth were found, no variables that were hypothesized to be related to posttraumatic growth were confirmed in this study. The demographic and breast cancer variables found to be related to posttraumatic growth support some previous research findings and conflict with others. These contradictory findings clearly point to a need for future investigation into the correlates of posttraumatic growth.

**Demographic Characteristics of Breast Cancer Survivors who Access Psychosocial Interventions**

Since the majority of the sample for the current study participated in one or more psychosocial interventions, the demographics for those who accessed interventions were similar to those for the entire study. Differences between breast cancer survivors who accessed services versus those who did not differed on two demographic variables. Those who accessed services were more likely to have achieved higher levels of education and were more likely to be employed.

The sample for the current study had a much higher percentage of participants who reported accessing one or more psychosocial support(s) than previous studies. For example, in an earlier study examining psychosocial support for cancer outpatients, approximately one quarter of the sample participated in psychosocial interventions (Plass & Koch, 2001). Of note, the sample was comprised mostly of breast cancer patients. In a more recent study, just over half of the sample of breast cancer patients reported that they accessed one or more psychosocial interventions (Mehnert & Koch, 2008). The higher number of breast cancer survivors accessing interventions in the current study may be partially a result of participant
recruitment and self-selection. Although a variety of recruitment strategies were used (e.g., posters in the community and messages on internet message boards), contact with support groups and recreation organizations was the most successful strategy for recruitment. In addition, breast cancer survivors recruited via other means may have chosen to volunteer for the study based on their interest in the topic.

The finding that women who accessed breast cancer related psychosocial supports had higher levels of education than those who did not access these interventions confirmed the results of previous research (e.g., Grande, Myers, & Sutton, 2006; Mehnert & Koch, 2008). One reason for this association may be that those who have higher levels of education are more accustomed to seeking out information and becoming informed of services. A study by Mehnert and Koch (2008) found that those who did not access services were both less educated and less informed. They suggested that women of lower socioeconomic status may not receive information regarding psychosocial interventions as often from their physicians as women of higher socioeconomic status.

Breast cancer survivors who accessed psychosocial supports in the current study were also more likely to be employed. This finding has not been supported in previous research (e.g., Mehnert & Koch, 2008; Plass & Koch, 2001; Steginga et al., 2008). Perhaps this result was specific to the current study sample as those who had achieved higher levels of education were also more likely to be employed.

Overall, the majority of breast cancer survivors appear to be utilizing one or more forms of psychosocial support. The women who participated in these interventions tend to have higher levels of education and be employed. Directing information regarding opportunities to engage in supports and removing barriers to participation for women who
have lower levels of education and are unemployed will be one way to foster participation in psychosocial interventions.

**Coping Strategies, Dispositional Optimism, and Psychosocial Interventions Related to Posttraumatic Growth for Breast Cancer Survivors**

This study also predicted that active coping styles, higher dispositional optimism scores, and higher levels of participation in different psychosocial interventions would be related to posttraumatic growth following breast cancer.

As expected, dispositional optimism was significantly related to posttraumatic growth after a breast cancer diagnosis. Four subscales of the Ways of Coping Questionnaire (WOC) were also related to posttraumatic growth. The ways of coping represented by all of these subscales (i.e., confrontive coping, seeking social support, planful problem-solving, and positive reappraisal) were approach or active types of coping strategies (Nes & Segerstrom, 2006). As expected, passive or avoidant strategies were not found to be associated with posttraumatic growth. In addition, participation in one type of psychosocial intervention, recreational support, was significantly related to higher levels of posttraumatic growth. In contrast to expected results, however, higher quantity of different types of interventions accessed was not related to levels of posttraumatic growth.

**Dispositional optimism.** The results of the current study confirmed many previous findings for breast cancer survivors, such as that those who are more optimistic tend to experience greater levels of posttraumatic growth (e.g., Antoni et al., 2001; Bozo, Gundogdu, & Buyukasik-Colak, 2009; Urcuyo et al., 2005).

There are many ways in which optimism influences an outcome of posttraumatic growth. Optimists tend to engage in a more effortful way when dealing with problems by using more approach and problem focused coping (Lepore & Revenson, 2006). In addition,
negative experiences are more often reframed in a positive light by those who are optimistic. Finally, optimists tend to have social relationships that are of better quality than those who are not optimistic. These qualities of optimists impact the likelihood of positive adaptation beyond pre-morbid functioning to adversity.

**Coping.** Similarly to other studies (e.g., Sears et al., 2003; Urcuyo et al., 2005), the subscales of the WOC representing approach or active styles of coping were related to posttraumatic growth in the current study. As detailed earlier, Holland and Holahan (2003) found that approach coping strategies were related to better adjustment. Specifically, the WOC scales of positive reappraisal, planful problem-solving, and seeking social support were the active strategies that were related. Since active coping strategies have long been associated with better psychological outcomes (e.g., Kershaw et al., 2004), it is not surprising that these strategies are also related to posttraumatic growth.

The high level use of active coping in the current study sample may be related to the number of years passed since breast cancer diagnosis. The average number of years since diagnosis was 6.8 years. As more time passes since diagnosis, women may use approach coping more often since immediately following diagnosis avoidance coping has been reported as most helpful (Holland & Holahan, 2003).

**Psychosocial interventions.** Posttraumatic growth was positively related to participation in recreational interventions specific to breast cancer survivors. Participation in other psychosocial interventions was not related to posttraumatic growth, nor was quantity of different types of supports accessed.
In the current study it was surprising that only the psychosocial intervention in the form of recreational support was linked to experiences of posttraumatic growth. Although quality of life has previously been positively related to psychosocial variables (Shaprio et al., 2001) and participation in psychosocial interventions such as group therapy have been linked to improved mood (e.g., Boutin, 2007), few studies have examined participation in psychosocial interventions and their impact on posttraumatic growth.

In terms of recreational support, over half of the current sample participated in this form of support and half of those who participated attended 10 or more sessions. Unlike other interventions, which are time-limited, recreational supports may be engaged in for years. Of note, total number of sessions participated in to date was not asked in the current study as the highest response option was “10 or more sessions”.

Participation in recreational support for breast cancer survivors and the facilitation of posttraumatic growth has been examined by a couple of qualitative researchers (e.g., Sabiston, McDonough & Crocker, 2007) and has yet to be investigated quantitatively. A recent qualitative study by Parry (2008) linked participation in dragon boat racing for breast cancer survivors to positive outcomes for social, emotional, physical, spiritual, and mental health. One reason suggested for this finding was that leisure activities specific to breast cancer survivors were associated with continuing on with life once treatment had been completed. The tendency to participate in recreational supports for longer spans of time than other interventions may allow for deeper and more meaningful relationships with other survivors, which in turn may help to facilitate the development of posttraumatic growth.
Although it was expected that participation in a large number of different interventions would be related to posttraumatic growth in the current study, this relationship was not found. No previous studies to date have examined this specific relationship. However, the role of support and disclosure in the development of posttraumatic growth has been a topic of interest. Interacting with other supportive people may help for processing trauma and changing narratives through being offered other perspectives (Tedeschi & Calhoun, 2004). The impact of mutual support has also been emphasized where interaction occurs with others who have been through similar experiences (Tedeschi & Calhoun, 2004). Therefore, it was expected that more opportunities to engage with supportive others and with other breast cancer survivors (e.g., in psychosocial interventions) would create more exposure to and acceptance of new narratives, thereby increasing experiences of posttraumatic growth. Since this relationship was not found, it may be that the quality of participation or the level of engagement in interventions is more important in relation to experiencing posttraumatic growth after a breast cancer diagnosis. Future research will be necessary to investigate this possibility.

In summary, breast cancer survivors who are more optimistic, who use active coping strategies, and participate in recreational forms of support following their diagnosis, are more likely to experience posttraumatic growth.

Coping Strategy Use and Dispositional Optimism Related to Quantity of Psychosocial Interventions Accessed for Breast Cancer Survivors

This study also predicted that active coping strategies and higher optimism scores would be related to a larger quantity of psychosocial interventions accessed for breast cancer survivors. This prediction was partially confirmed. The use of active coping strategies was related to larger quantities of psychosocial support. However, one subscale representative of
avoidance coping was also related to larger quantities of different support accessed. Optimism was not related to quantity of psychosocial interventions accessed. In addition, the relationship of accessing specific types of psychosocial interventions to dispositional optimism and use of coping strategies are described.

**Quantity of interventions accessed.** In the current study, optimism was not related to the number of different psychosocial interventions accessed. This result was surprising as in previous studies, women with higher levels of optimism have been found to more often access breast cancer resources (e.g., Edgar et al., 2000). The current unexpected finding presents a topic for future research in order to clarify the relationship between optimism and quantity of interventions accessed. Of note, whereas Edgar et al. (2000) examined the relationship between support seekers and non-support seekers, the current finding was related to quantity of interventions accessed. One purely speculative reason for the current finding may be that breast cancer survivors who were more optimistic may not have perceived themselves as requiring support from more than one intervention.

Four of the WOC subscales were related to the number of psychosocial interventions accessed in a positive manner. Three of the subscales were categorized as approach strategies (confrontive coping, seeking social support and accepting responsibility) and one of the subscales was categorized as an avoidant strategy (escape-avoidance). Use of approach strategies has been related to accessing psychosocial interventions for breast cancer survivors in previous research (e.g., Edgar et al., 2000). However, use of escape-avoidance coping has typically been related to use of psychosocial support in a negative manner (e.g., Edgar et al., 2000). Examining whether the relationship between higher use of escape-avoidance coping and higher numbers of interventions accessed is moderated by the amount of sessions
attended is an interesting topic for future research. A possible avoidant strategy may be to participate minimally in many different interventions (e.g., attend only one or two sessions before trying something new).

**Specific type of psychosocial support.** Coping strategies and optimism were also investigated in relation to the specific type of psychosocial support accessed. Those with lower levels of optimism were more likely to access interventions in the form of group based internet support. This finding suggests that those who have lower expectations of positive outcomes are more likely to access this less threatening form of psychosocial support. Accessing support over the internet rather than attending an in-person support allows anonymity and the opportunity to easily disengage by logging off of the site.

Four of the WOC subscales were related to use of one or more specific type of psychosocial intervention. Upon categorizing the subscales into active and passive strategies, it appeared that three of those subscales were active strategies (confrontive coping, seeking social support, and accepting responsibility) and only one was a passive strategy (escape-avoidance). Therefore, it appears that those who use active coping strategies are more likely to participate in specific psychosocial interventions. There did not appear to be any pattern of preferences for accessing specific types of psychosocial interventions based on favoured coping strategies.

In contrast to expected findings, levels of optimism for breast cancer survivors were not related to quantity of psychosocial interventions accessed. In addition, although it was expected that women using active coping strategies would access larger numbers of psychosocial supports, those who used the passive strategy of escape-avoidance coping also
accessed higher quantities of interventions. These unexpected findings highlight the need for further research in this area.

**Predictors of Posttraumatic Growth Following a Breast Cancer Diagnosis**

The final research hypothesis for this study was that posttraumatic growth would be predicted by minority status, younger age, more severe stage of disease, use of active coping, dispositional optimism, and higher level of participation in psychosocial interventions.

The results revealed that posttraumatic growth was predicted by affiliation with religion, lower levels of education, increased number of years since diagnosis, knowledge of breast cancer stage at diagnosis, higher levels of optimism, and use of the following coping strategies: seeking social support, escape-avoidance, and planful problem solving.

The relationships between the demographic variables of affiliation with religion and lower levels of education, and posttraumatic growth were discussed in detail earlier. As was the positive relationship between breast cancer variables, number of years since diagnosis, and posttraumatic growth.

The knowledge of stage of breast cancer in the prediction of posttraumatic growth has yet to be covered in the discussion. This finding was unexpected and has not been reported in previous studies. One reason for this may be that the current study included a response option of “don’t know” for stage of breast cancer and included this category in statistical analysis. Previous studies have reported that there are a number of cancer patients who do not know the stage of their cancer. For example, Lechner et al. (2003) reported that out of their sample of 83 cancer patients, only 27 provided the stage of their cancer. Although Lechner et al.’s sample had a large proportion of participants who did not know their cancer stage; this category of not knowing was not entered into their analysis. In the current study one could
speculate that those who were aware of the stage of their breast cancer were less likely to be coping with avoidant strategies such as denial. Instead, they may be using an active style of coping through gaining knowledge about their health. As reported earlier, use of active or approach oriented strategies have been more often related to posttraumatic growth and this could be the reason for the predictive nature of knowledge of stage of breast cancer.

The positive relationship between higher levels of optimism and posttraumatic growth was discussed previously. In addition, the positive relationships of approach coping strategies, including seeking social support and planful problem solving, and posttraumatic growth were also discussed in detail earlier. The positive relationship between use of escape-avoidance coping and posttraumatic growth has yet to be discussed. This finding conflicts with previous research, as escape-avoidance coping is an avoidant or passive coping strategy and typically these strategies have been negatively related to positive mental health outcomes (e.g., Holland & Holahan, 2003). In addition in the correlation results described earlier, escape-avoidance coping was not found to be related to posttraumatic growth for this sample. Unlike correlation analyses, the nature of multiple regression type analyses take into account other variables and thus the presence of other variables likely strengthened the relationship between escape-avoidance coping and posttraumatic growth. Future research will be required to clarify the role of escape-avoidance coping in the development of posttraumatic growth following a breast cancer diagnosis.

Overall, the results of this study demonstrated that a number of personal characteristics as well as health variables predicted growth experiences among breast cancer survivors. While some of these findings support previous research (e.g., affiliation with religion, less education, more years since diagnosis, higher optimism, and use of seeking
social support and planful-problem solving coping strategies), this study also found that knowledge of cancer stage and use of escape-avoidance coping strategies with other variables taken into account predicted posttraumatic growth. These findings support the need for continued research into the experience of posttraumatic growth for survivors of breast cancer.

Survivor’s Comments on their Experiences

Nearly half of the study participants provided detailed comments regarding their experiences following a diagnosis of breast cancer. The high number of breast cancer survivors who provided their personal experiences following diagnosis suggests that there was a desire to share narratives and have their stories heard. Five themes were derived from the narrative responses left by participants. These themes included cancer diagnosis information, cancer treatment information, impact of cancer, coping with cancer, and support accessed.

Cancer diagnosis information and cancer treatment. The diagnosis and treatment information that women provided tended to include details that were not covered in the response options for the questionnaire. For example, women wrote about cancer reoccurrences, concurrent mental health conditions, their oncologists or hospitals where they received treatment, and side effects of treatment. Participants may have felt that the response options provided in the quantitative portion of the study did not adequately capture their individual experiences. For example, side effects of treatment were not a focus of the current study, however, several women wrote about this negative impact of treatment (e.g., chemotherapy).
**Impact of cancer.** The impact of breast cancer was referred to by participants in terms of the short-term and long-term effects. Women in the current study described the short-term impact of breast cancer on their lives as unfavourable or negative. The immediate impact most often was reported to effect emotional functioning. The physical impact of treatment, financial stress, and inability to fulfill a caregiving role were also reported. The negative short-term impact of breast cancer confirms similar findings by previous researchers (e.g., Meyerowitz, 1980). In particular, negative emotional reactions to breast cancer have been widely researched (e.g., Hegal et al., 2006; Palmer et al., 2004).

In contrast, the long-term impact of breast cancer was described in both negative and positive terms by breast cancer survivors. This confirms Tedeschi and Calhoun’s (2004) assertion that experiences of trauma can result in co-existing negative changes (e.g., distress) and positive changes (e.g., posttraumatic growth) in survivor’s lives.

The comments related to the positive impacts of breast cancer appear to represent aspects of posttraumatic growth, although the participants did not specifically use this term. Three of Tedeschi and Calhoun’s (1996) five factors of posttraumatic growth were evident in the written experiences. These three factors were new possibilities, relating to others, and appreciation of life. The most prominent positive change was a newfound appreciation of life since diagnosis. It is important to note that while the quantitative results demonstrated strong endorsements of all five factors of posttraumatic growth for this sample, women were most compelled to provide details regarding their feelings of appreciation of life. It may be that this positive change was experienced as the most profound or important since the diagnosis of breast cancer.
Coping with cancer. Approximately half of the comments were focused on coping. Maintaining a positive attitude, taking action, and drawing on past experiences were the most mentioned coping strategies for breast cancer survivors. However, a variety of other coping strategies were described as well (e.g., taking control, carrying on, and acceptance). Although the coping strategies mentioned by participants did not fit neatly into Folkman and Lazarus’ (1988) categories of ways of coping, the strategies were almost entirely active or approach-oriented in nature. As mentioned previously, active coping strategies have been most often associated with positive mental health outcomes. Although the breast cancer survivors in the current study endorsed some use of passive coping in the quantitative portion of the study, it may be that the participants who left detailed comments did not tend to use these strategies or that the active strategies were viewed by them as being of most benefit and therefore, worthwhile to mention.

Support accessed. Many women described their experiences in accessing support following their breast cancer diagnosis. The majority of these descriptions were written about in a positive manner while only a few were negative. Recreational support was mentioned by almost half of the women who left comments. Friends, family members, and volunteering were also discussed. One reason for the prominent descriptions of recreational support may be that this type of support provides benefit beyond that derived by traditional forms of intervention (e.g., support groups, individual therapy). Indeed, women’s comments related to recreational activities for breast cancer survivors included themes of reclaiming control over one’s body and feelings of physical health. It may be that the participation in physical activity in an understanding and supportive team environment provided these extra advantages. In addition, recreational supports such as joining dragon boat teams for breast
cancer survivors may be participated in for long periods of time, even years. It was evident that this recreational activity has become a part of the lives for some survivors through the passion they expressed for this activity.

In summary, just as the results from the quantitative portion of the study demonstrated the presence of posttraumatic growth following an experience of breast cancer, many women detailed positive impacts of breast cancer in the long-term in addition to negative impacts in their narrative responses. Many breast cancer survivors also submitted detailed information regarding the active strategies that they utilized for coping and the sources of support they accessed following their diagnosis. Given that the majority of participants in the survey participated in one or more psychosocial intervention for breast cancer survivors, it was not surprising that supports accessed were frequently mentioned in the qualitative responses.

**Contribution to Theory**

The results of the current study contribute to the theoretical model of posttraumatic growth in this emerging area of study in several ways.

The breast cancer survivors in this study demonstrated both quantitatively and qualitatively that they experienced one or more factors of posttraumatic growth following their diagnosis. The comments provided by the participants particularly highlighted the factors of new possibilities, relating to others, and appreciation of life. This finding confirms Tedeschi and Calhoun’s (2004) assertion that both distress and positive change beyond initial functioning can co-occur following a traumatic experience.
Tedeschi and Calhoun’s (2004) model of posttraumatic growth focuses on the cognitive processing that occurs as a result of coming to terms with the impact of a traumatic event. As described earlier, cognitive processing involves rumination. The rumination process initially occurs automatically and then leads to more deliberate rumination in which schema change and development of narrative takes place. This cognitive engagement results in the experience of posttraumatic growth following a traumatic experience. The study findings of posttraumatic growth being related to optimism, use of active coping strategies, more years since diagnosis, and participation in recreation activities specific to breast cancer survivors contribute to this theory. Women who are optimistic are more likely to use active coping strategies and may be more deliberately thinking about their experience with breast cancer and seeking out ways in which to come to terms with what has taken place. As time passes following diagnosis, this also allows for increased opportunities to cognitively engage and process the diagnosis of breast cancer. In addition, participation in recreational activities, such as dragon boat racing, continually expose women over time to other survivors and a positive environment where women are pushing themselves emotionally and physically despite their experience of cancer. These experiences likely allow for increased opportunities to engage in rumination and to create new schemas related to their experience of cancer, eventually resulting in posttraumatic growth.

**Strengths and Limitations**

There were several strengths for the current study. First, the sample consisted of a large number of breast cancer survivors who volunteered their time to take part in the study. Secondly, posttraumatic growth was examined in relation to participation in psychosocial supports, which to date has been a limited area of study. Furthermore, until this study,
quantity of different psychosocial supports accessed following a breast cancer diagnosis had not been investigated. In addition, the opportunity for breast cancer survivors to leave responses regarding their experiences that went beyond the response options for the survey provided detailed narratives. These narratives allowed for further insight regarding the lived experience following diagnosis and the benefits of participating in psychosocial supports.

Limitations of the current study include the representativeness of the sample, low reliability for the Ways of Coping Questionnaire (WOC), lack of previous trauma information, and lack of clarity regarding the direction of association for variables associated with posttraumatic growth.

The first limitation, sample representativeness, was likely a result of participant self-selection and the recruitment strategies used. Even though numerous attempts were made to recruit breast cancer survivors via posters and advertisements in a variety of places (e.g., posters in the community and advertisements in internet forums for cancer survivors), many participants found out about the survey through their involvement in psychosocial interventions (e.g., support groups and dragon boat racing teams for breast cancer survivors). This was evident as different links for the internet based survey were provided for different recruitment strategies. Therefore, the sample did not adequately represent breast cancer survivors who chose not to participate in any psychosocial interventions. Another limitation of representativeness resides in the demographic and breast cancer information for the sample. The majority of participants were of Caucasian background and well-educated. In addition, the average number of years since diagnosis was six years. This impacts the ability to generalize the current findings to women of other backgrounds and to women who have received a diagnosis more recently.
In the current study several of the subscales of the WOC had low cronbach’s alpha levels (confrontive coping, distancing, self-controlling, accepting responsibility, and planful problem-solving). The cronbach’s alpha levels for the subscales of seeking social support, escape-avoidance, and positive reappraisal were acceptable. Despite previous researchers also reporting low cronbach’s alpha levels for some subscales, they continued to investigate coping via this measure (e.g., Folkman et al., 1986; Wonghongkul et al., 2006). Since the WOC is a frequently used measure of coping, it was included in the analyses for the current study. However, the results should be interpreted with the caveat that the reliability of findings related to coping may be limited.

Another limitation is that the trauma history of survivors in the survey is unknown. Previous trauma history has been suggested to contribute to the likelihood of experiencing posttraumatic growth following subsequent traumatic experiences. Since the participant’s trauma history is unknown in this study, the impact of this variable was not accounted for. It is possible that the presence of previous trauma history may act as a moderating variable for the relationship between minority status and lower socioeconomic status, and posttraumatic growth. In addition, the posttraumatic growth scores reported in this sample may be associated with multiple traumatic experiences rather than solely to the diagnosis of breast cancer.

A final limitation of this study is the unknown pre-morbid status of the participants prior to their diagnosis of breast cancer. This unidentified information prevents the determination of causality for the correlates of posttraumatic growth. For example, a common finding has been that women with higher levels of optimism are more likely to experience posttraumatic growth following a diagnosis of breast cancer. Since there is no
pre-trauma optimism score available for this sample, causality cannot be determined. It may be that women coped with their experience of breast cancer by developing a positive outlook which was associated with posttraumatic growth, or that their history of optimistic outlook facilitated posttraumatic growth following diagnosis.

Despite the limitations described above, the current study contributes new information to our understanding of posttraumatic growth following the diagnosis of a life-threatening illness.

**Clinical Implications and Future Directions**

The results from the current study will help to inform psychosocial interventions for women who have received a breast cancer diagnosis. The majority of women in the study detailed positive experiences and benefits from accessing psychosocial supports. In particular, recreational supports were described in a positive manner and participation in this type of support was related to experiences of posttraumatic growth.

Women who accessed psychosocial interventions in the current study were more likely to have higher levels of education and to be employed than women who did not access services. This finding suggests that there may be barriers preventing access to support for breast cancer survivors of lower socioeconomic status. It may be that these women are not as informed about services offered, or perhaps lower income associated with unemployment may prevent transportation or arrangement of childcare to participate in these services. Practitioners associated with the provision of psychosocial interventions should keep these barriers in mind in order to allow for increased accessibility of services.
In terms of content and goals for psychosocial interventions, the current study revealed relationships between active coping strategies and positive outlook, and posttraumatic growth. Although a complete understanding of these relationships have yet to be understood, it may be advantageous to foster the development of active coping strategies and positive reframing of events in interventions in order to increase the likelihood of posttraumatic growth and other positive mental health outcomes.

There are many avenues for future study in the relatively recent research investigating posttraumatic growth following the trauma of receiving a life-threatening illness. A focus of future research will be to contribute to the theoretical model of posttraumatic growth in order to increase understanding regarding the ways in which cognitive processing takes place and the development of posttraumatic growth.

Other areas of future research highlighted by the current study that are specific to breast cancer survivors include the following suggestions: investigation of test validity of the Posttraumatic Growth Inventory across cultures; exploration of the relationship between perceived efficacy of psychosocial intervention with the outcome of posttraumatic growth; examination of the possible mediation of religiosity and/or trauma history on the relationship between education and posttraumatic growth; investigation of pre- and post-measures of religiosity in order to better understanding of causality in terms of posttraumatic growth; further studies to look into the current contradictory findings of correlates of posttraumatic growth (including both demographic and medical variables); exploration of the experience of posttraumatic growth in populations that are not accessing psychosocial supports; and further investigation of the contradictory finding of escape-avoidance coping positively predicting posttraumatic growth.
References


SPSS (Version 15.0) [Computer software].


Appendix A
Online Study Recruitment Flyer

Have You Completed Treatment For Breast Cancer?

PARTICIPANTS NEEDED

For an on-line questionnaire based study
Regarding Positive Adaptation to Breast Cancer and
Use of Psychosocial Interventions

Should take approximately 30-45 minutes to complete

Participation is confidential and anonymous

As a thank-you for your participation,
a $2 donation per participant
will be made towards breast cancer research.

Please visit the following website address to complete the study:
[insert website address]

Or contact:
Amberley Buxton, Ph.D. student at OISE/University of Toronto
Email: abuxton@oise.utoronto.ca

Questions, comments, concerns? Feel free to contact me by email

Thank-you in advance for your participation.
Appendix B
Online Study Web Page

UNIVERSITY OF TORONTO
OISE | ONTARIO INSTITUTE
FOR STUDIES IN EDUCATION

Have You Completed Treatment
For Breast Cancer?

PARTICIPANTS NEEDED

For an on-line questionnaire based study
Regarding Positive Adaptation to Breast Cancer and
Use of Psychosocial Interventions

Should take approximately 30-45 minutes to complete

Participation is confidential and anonymous

As a thank-you for your participation,
a $2 donation per participant
will be made towards breast cancer research.

Please visit the following website address to complete the study:
[insert website address]

Or contact:
Amberley Buxton, Ph.D. student at OISE/University of Toronto
Email: abuxton@oise.utoronto.ca

Questions, comments, concerns? Feel free to contact me by email
Appendix C

Participant Information and Consent Form

My name is Amberley Buxton and I am a Ph.D. graduate student in the Department of Adult Education and Counselling Psychology (AECP) at the Ontario Institute for Studies in Education of the University of Toronto (OISE/UT). I am researching the experiences of women living with breast cancer. This project is being conducted in partial fulfillment of the Ph.D. requirements by the AECP Department at OISE/UT, and is being supervised by Dr. Lana Stermac.

If you have received a diagnosis of breast cancer and are interested in learning more about this study please click ‘NEXT’ to continue.

Participation in this research will involve completion of an on-line survey, where you will be asked for demographic information, and will complete questionnaires on positive adaptation, personality characteristics, and ways of coping. The survey is anticipated to take approximately 20-30 minutes.

A donation of $2 per participant will be made to Wellspring (www.wellspring.ca). Wellspring offers one-to-one peer support, support groups, and information sessions, at no charge for cancer survivors.

Participation in this study is entirely voluntary and you may withdraw at any point by clicking “Exit this survey” at the top right corner. Additionally, if you find you do not wish to answer a particular question or questionnaire, you may omit those items. Furthermore, you have the choice to discontinue participating and your data will not be used in the study. Once the data is submitted, it is anonymous and since it cannot be personally identified, cannot be removed from the study.

A potential risk of participating in the study is that as you respond to questions about your experience of living with breast cancer, you may remember painful memories or experience negative emotions. Upon completion/withdrawal of the study, referral information will be provided for psychosocial resources. Possible benefits as a result of participating in this study may include gaining awareness of potential positive life changes as a result of breast cancer, gaining awareness of psychosocial supports available to breast cancer survivors, and contribution to research on the impact of breast cancer.

Since privacy and confidentiality is of concern in using the internet, we have taken every possible precaution to reduce and eliminate this risk. For example, all survey responses on the website are secure and utilize firewall security. Additionally, security audits are performed regularly. Here are some additional steps that you should take to ensure your privacy:
1. Completion of the survey should take place in a private location.
2. Upon completion of the survey, instructions will be provided on how to erase the cache and temporary internet files on the browser.
3. Do not complete the survey in a place of employment as the employer may have access to internet usage.

Only myself and my supervisor, Dr. Stermac, will have access to the online responses. Results of this study will not contain any information that could personally identify you as a participant in the research study. The final results may be published or presented in total or in part in various psychological, academic and community sources, while maintaining the privacy of all participants.

If you would like to receive a summary of the results of this study, please visit the following website in approximately 12 months and we will post the results:

http://home.oise.utoronto.ca/~abuxton/

Your involvement in this research would be appreciated. If you would like to participate, please continue with the consent instructions below. If you have any questions, please feel free to contact me, Amberley Buxton, at abuxton@oise.utoronto.ca.

If you have any further questions about your rights as a research participant, you can contact the Ethics Review Office at 416-946-3273 or ethics.review@utoronto.ca.

Supervisor:
Dr. Lana Stermac
Department of Adult Education and Counselling Psychology
Ontario Institute for Studies in Education of the University of Toronto (OISE/UT)
7th Floor, 252 Bloor Street West, Toronto, ON
lstermac@oise.utoronto.ca

Internet participants may print this through your web browser.

Thank you for your participation.
Amberley Buxton

CONSENT (INTERNET)
I have read and understood the conditions under which I will participate in this study. I have also had the opportunity to ask questions. By clicking ‘NEXT’ I am indicating my consent to participate.
Appendix D

Demographics Questionnaire

The following questions will help us ensure that a wide variety of people have been surveyed and that the results will reflect many different experiences.

Please tell us the following things about yourself. Please note that there are no right or wrong answers, and all responses will be kept anonymous and confidential.

1. Please indicate your age in years
   ____

2. Please indicate current marital status by selecting the appropriate category
   ____ Single/Never been married
   ____ Engaged/Committed relationship
   ____ Common-law partner
   ____ Married
   ____ Separated
   ____ Divorced
   ____ Widowed
   ____ Other (please specify): ______________________

3. Please type the ethnocultural group membership that you identify with (e.g., South Asian, Eastern European, etc.) in the box below
   ______________________

4. Do you identify with a religion?
   ____ Yes
   ____ No
   If yes, please specify: ______________________

5. Please indicate the highest grade or level of education you have completed
   ____ Some elementary school
   ____ Completion of elementary school
   ____ Some high school
   ____ High school graduate
   ____ Some college
   ____ College graduate
   ____ Some university
   ____ University graduate
   ____ Some Graduate school/Medical school/Law school
   ____ Graduate school/Medical school/Law school graduate
   ____ Other (please specify): ____________________
6. Please indicate the answer that best represents your current employment status
   ____ Employed Full-time
   ____ Employed Part-time
   ____ Self-employed
   ____ On illness leave
   ____ Unemployed
   ____ Student
   ____ Homemaker
   ____ Retired
   ____ Other, please specify ____________________

7. Please specify country of residence
   ____________________

8. Please specify whether you currently live in a rural area or urban area
   ____ Rural (i.e., country)
   ____ Urban (i.e., town or city)
   ____ Other (please specify): ____________________

9. How would you describe your satisfaction with the level of social support (e.g., support from friends and family) that you receive at the present time?
   ____ Extremely Unsatisfied
   ____ Unsatisfied
   ____ Neither Unsatisfied nor Satisfied
   ____ Satisfied
   ____ Extremely Satisfied

10. How would you describe your overall quality of life at the present time?
    ____ Very Poor
    ____ Poor
    ____ Okay
    ____ Good
    ____ Very Good

We are interested in finding out about the many different experiences women have following a diagnosis of breast cancer.

Please tell us the following things about yourself. Please note that there are no right or wrong answers, and all responses will be kept anonymous and confidential.

1. Please specify the year that you were first diagnosed with breast cancer.
   ____
2. Please specify the stage of breast cancer by marking with an x.
   ____ Stage 0
   ____ Stage II
   ____ Stage II
   ____ Stage III
   ____ Stage IV
   ____ Don’t know
   ____ Other (please specify): ____________________

3. Please indicate type(s) of operation(s) you have received by marking each applicable.
   ____ No surgery
   ____ Lumpectomy
   ____ Single mastectomy
   ____ Double mastectomy
   ____ Don’t know
   ____ Other (please specify): ____________________

4. Please indicate treatment type(s) that you have received by marking each applicable.
   ____ No treatment received
   ____ Radiation therapy
   ____ Chemotherapy
   ____ Hormone therapy
   ____ Biological therapy
   ____ Alternative treatment (e.g., naturopath, acupuncture, etc.)
   ____ Don’t know
   ____ Other (please specify): ____________________

5. Have you finished treatment?
   ____ Yes
   ____ No

6. If yes, please indicate the year in which you completed treatment
   ____

7. Has your physician told you that you are in remission (there is no sign of cancer left in your body)?
   ____ Yes
   ____ No
   ____ Don’t know

8. If yes, in what year were you told you were in remission?
   ____
Appendix E

Use of Psychosocial Support Questionnaire

We would like to know about the supports you may have accessed related to and following your breast cancer diagnosis.

Please note that there are no right or wrong answers, and all responses will be kept anonymous and confidential.

Please select the category for each type of support that reflects the number of times you participated

<table>
<thead>
<tr>
<th>Support Type</th>
<th>Never</th>
<th>1 session</th>
<th>2-5 sessions</th>
<th>6-10 sessions</th>
<th>More than 10 sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychotherapy (therapy provided by a psychologist)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counselling (therapy provided by counsellor, social worker, other mental health professional)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychiatry (therapy/treatment provided by psychiatrist)</td>
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<tr>
<td>In-Person Support group</td>
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<tr>
<td>Internet Support group</td>
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<tr>
<td>Weekend retreat</td>
<td></td>
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<tr>
<td>Telephone support</td>
<td></td>
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<tr>
<td>Recreational (e.g., dragon boat racing, quilt making group etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
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</tbody>
</table>

If other, please specify the type of support you attended:

________________________________________________________

Was there a support that you would have liked to access but were unable to?

_____ Yes

_____ No

If yes, please specify what prevented you from taking part

________________________________________________________
Appendix F

Ways of Coping Questionnaire

We are interested in how you cope with stress such as the stress related to a breast cancer diagnosis. Please take a moment and answer each of the following items.

Please note that there are no right or wrong answers, and all responses will be kept anonymous and confidential.

Please read each item below and indicate, by using the following rating scale, to what extent you used it since your breast cancer diagnosis.

<table>
<thead>
<tr>
<th>Not Used</th>
<th>Used Somewhat</th>
<th>Used Quite A Bit</th>
<th>Used A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

1. Just concentrated on what I had to do next – the next step.
2. I tried to analyze the problem in order to understand it better.
3. Turned to work or substitute activity to take my mind off things.
4. I felt that time would make a difference – the only thing to do was to wait.
5. Bargained or compromised to get something positive from the situation.
6. I did something which I didn’t think would work, but at least I was doing something.
7. Tried to get the person responsible to change his or her mind.
8. Talked to someone to find out more about the situation.
9. Criticized or lectured myself.
10. Tried not to burn my bridges, but leave things open somewhat.
11. Hoped a miracle would happen.
12. Went along with fate; sometimes I just have bad luck.
13. Went on as if nothing had happened.
14. I tried to keep my feelings to myself.
15. Looked for the silver lining, so to speak: tried to look on the bright side of things.
16. Slept more than usual.
17. I expressed anger to the person(s) who caused the problem.
18. Accepted sympathy and understanding from someone.
19. I told myself things that helped me to feel better.
20. I was inspired to do something creative.
21. Tried to forget the whole thing.
22. I got professional help.
23. Changed or grew as a person in a good way.
24. I waited to see what would happen before doing anything.
25. I apologized or did something to make up.
26. I made a plan of action and followed it.
27. I accepted the next best thing to what I wanted.
28. I let my feelings out somehow.
29. Realized I brought the problem on myself.
30. I came out of the experience better than when I went in.
31. Talked to someone who could do something concrete about the problem.
32. Got away for a while; tried to rest or take vacation.
33. Tried to make myself feel better by eating, drinking, smoking, using drugs or medication, etc.
34. Took a big chance or did something very risky.
35. I tried not to act too hastily or follow my first hunch.
36. Found new faith.
37. Maintained my pride and kept a stiff upper lip.
38. Rediscovered what is important in life.
39. Changed something so things would turn out all right.
40. Avoided being with people in general.
41. Didn’t let it get to me; refused to think too much about it.
42. I asked a relative or friend I respected for advice.
43. Kept others from knowing how bad things were.
44. Made light of the situation; refused to get too serious about it.
45. Talked to someone about how I was feeling.
46. Stood my ground and fought for what I wanted.
47. Took it out on other people.
48. Drew on my past experiences; I was in a similar situation before.
49. I knew what had to be done, so I doubled my efforts to make things work.
50. Refused to believe that it had happened.
51. I made a promise to myself that things would be different next time.
52. Came up with a couple of different solutions to the problem.
53. Accepted it, since nothing could be done.
54. I tried to keep my feelings from interfering with other things too much.
55. Wished that I could change what had happened or how I felt.
56. I changed something about myself.
57. I daydreamed or imagined a better time or place than the one I was in.
58. Wished that the situation would go away or somehow be over with.
59. Had fantasies or wishes about how things might turn out.
60. I prayed.
61. I prepared myself for the worst.
62. I went over in my mind what I would say or do.
63. I thought about how a person I admire would handle this situation and used that as a model.
64. I tried to see things from the other person’s point of view.
65. I reminded myself how much worse things could be.
66. I jogged or exercised.
Appendix G

Posttraumatic Growth Inventory

After a traumatic event or crisis, such as a breast cancer diagnosis, people sometimes report feeling differently about certain areas of their lives. We are interested to know whether you personally have experienced any of the changes listed below. Please take a moment and answer each of the following items.

Please note that there are no right or wrong answers, and all responses will be kept anonymous and confidential.

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
1 = Very small degree
2 = Small degree
3 = Moderate degree
4 = Great degree
5 = Very great degree

____ 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 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.
Appendix H

Changes in Outlook Questionnaire Short Form

Each of the following statements was made by individuals who had experienced a traumatic or stressful event in their life such as breast cancer. We would like to know whether you personally have experienced any of these feelings. Please take a moment and answer each of the following items.

Please note that there are no right or wrong answers, and all responses will be kept anonymous and confidential.

Please read each statement and indicate, by clicking the appropriate box, how much you agree or disagree with it AT THE PRESENT TIME:

1 = Strongly disagree, 2 = Disagree, 3 = Disagree a little, 4 = Agree a little, 5 = Agree, 6 = Strongly agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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</thead>
<tbody>
<tr>
<td>1. I don’t look forward to the future anymore.</td>
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<td>2. My life has no meaning anymore.</td>
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<td>3. I don’t take life for granted anymore.</td>
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<td>4. I value my relationships much more now.</td>
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<td>5. I’m a more understanding and tolerant person now.</td>
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<td>6. I no longer take people or things for granted.</td>
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<td>7. I have very little trust in other people now.</td>
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<td>8. I feel very much as if I’m in limbo.</td>
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<td>9. I have very little trust in myself now.</td>
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<td>10. I value other people more now.</td>
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Appendix I

Life Orientation Test Revised

Below is a list of beliefs that people may agree or disagree with. Please read each of the following statements and indicate your level of agreement or disagreement with each one.

Please be as honest and accurate as you can throughout. Try not to let your response to one statement influence your responses to other statements. There are no “correct” or “incorrect” answers. Answer according to your own feelings, rather than how you think “most people” would answer.

A = I agree a lot
B = I agree a little
C = I neither agree nor disagree
D = I DISagree a little
E = I DISagree a lot

_____ 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.