OPTIMISM, HEALTH LOCUS OF CONTROL, AND QUALITY OF LIFE OF
WOMEN WITH RECURRENT BREAST CANCER

THESIS

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

Gina M. Graci
Denton, Texas
December, 1998

The purpose of the present study was to examine the role that specific factors play in the quality of life (QL) for women with recurrent breast cancer. Twenty-one women with recurrent breast cancer were recruited from doctors' offices and/or cancer support groups. Correlational analyses were used to assess the relationships between variables. The results indicate that optimism was found to relate to better functional and psychological QL. For late stages of cancer, perceptions of internal control were positively associated with psychological QL. A negative association was found to exist between perceptions of internal control and functional QL for early cancer stages. A strong positive association was found between these variables for late stages of cancer.
OPTIMISM, HEALTH LOCUS OF CONTROL, AND QUALITY OF LIFE OF WOMEN WITH RECURRENT BREAST CANCER

THESIS

Presented to the Graduate Council of the University of North Texas in Partial Fulfillment of the Requirements For the Degree of

MASTER OF SCIENCE

By

Gina M. Graci
Denton, Texas
December, 1998
ACKNOWLEDGMENTS

The author acknowledges the support of the American Cancer Society, Dallas, Texas, the North Regional Cancer Center, Plano, Texas, Parkland Hospital, Dallas, Texas, and Baylor Hospital, Dallas, Texas. The author thanks the staff of the Oncology Department of the North Regional Cancer Center, Plano, Texas. The author is also indebted to the participants who shared the information obtained.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>67</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>81</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Reasons for the study of Quality of Life (QL) in Breast Cancer (BC) Patients</td>
<td></td>
</tr>
<tr>
<td>Conceptualization of QL</td>
<td></td>
</tr>
<tr>
<td>Functional QL</td>
<td></td>
</tr>
<tr>
<td>Psychological QL</td>
<td></td>
</tr>
<tr>
<td>Health Locus of Control</td>
<td></td>
</tr>
<tr>
<td>Optimism</td>
<td></td>
</tr>
<tr>
<td>Summing up: The Present Study</td>
<td></td>
</tr>
<tr>
<td>II. METHOD</td>
<td>34</td>
</tr>
<tr>
<td>Participants</td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>Materials</td>
<td></td>
</tr>
<tr>
<td>Procedure</td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td></td>
</tr>
<tr>
<td>III. RESULTS</td>
<td>43</td>
</tr>
<tr>
<td>Descriptive Statistics</td>
<td></td>
</tr>
<tr>
<td>Demographic and Medical Information</td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td></td>
</tr>
<tr>
<td>Hypothesis Testing</td>
<td></td>
</tr>
</tbody>
</table>
IV. DISCUSSION
The relationship between Internal Health Locus of Control and Disease Stage on QL
The Relationship Between Optimism and QL
The Relationship Between Age, Marital Status, and QL
Conclusion
Implications and Suggestions

APPENDICES
Appendix A: Tables
Appendix B: Figures
Appendix C: Package of Instruments

REFERENCES
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>67</td>
</tr>
<tr>
<td>2.</td>
<td>68</td>
</tr>
<tr>
<td>3.</td>
<td>69</td>
</tr>
<tr>
<td>4.</td>
<td>70</td>
</tr>
<tr>
<td>5.</td>
<td>71</td>
</tr>
<tr>
<td>6.</td>
<td>72</td>
</tr>
<tr>
<td>7.</td>
<td>73</td>
</tr>
<tr>
<td>8.</td>
<td>74</td>
</tr>
<tr>
<td>9.</td>
<td>75</td>
</tr>
<tr>
<td>10.</td>
<td>76</td>
</tr>
<tr>
<td>11.</td>
<td>77</td>
</tr>
<tr>
<td>12.</td>
<td></td>
</tr>
</tbody>
</table>
QL for individuals less than 65 years and individuals 65 years and older

13. Correlation matrix between Marital status and QL
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Quality of life model illustrating the four traditional Quality of life domains</td>
<td>81</td>
</tr>
<tr>
<td>2. The multidimensional aspects of the quality of life construct</td>
<td>82</td>
</tr>
<tr>
<td>3. Items composing the Revised Life Orientation Test (LOT-R)</td>
<td>83</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

Reasons for the Study of Quality of Life (QL) in Recurrent Breast Cancer (BC) Patients

Cancer is a general term used to describe over 100 diseases that are characterized by the spread of abnormal cells in the body (Aaronson, 1989; Anderson, 1992; Ganz, Hirji, Sim, Schag, Fred, & Polinsky, 1993; Zimpfer, 1992). Breast cancer (BC), the most common neoplasm in women, is the number one cancer killer of women aged 30-50 and the second most common cause of death, after cardiovascular disease, for women over age 50 (Ganz et al., 1993; Royak-Schaler, 1992). In 1995, an estimated 150,000 women were diagnosed with BC and 46,000 women died of the disease (Wingo, Tong, & Bolden, 1995).

Approximately one in nine American women who live to the age of sixty-five years develops BC. The diagnosis and treatment of cancer initiates a period of turmoil, uncertainty, and psychological distress for the patient; this is especially true when it is a diagnosis of recurrent cancer (Mahon & Casperson, 1995). Not only does the disease threaten the life of the patient, but also a cancer diagnosis holds further implications for psychological, physical, and
functional well-being in addition to the changes in social experience. Given the wide range of emotional and physical repercussions, BC and its treatment is believed to seriously affect the lives of women bearing the illness.

Advances in medical treatments during the last two decades have not only increased survival time but also improved the quality of life for BC patients. More than 50% of BC patients are in remission for at least five years after a primary treatment with surgery and chemotherapy, radiation therapy, or hormones. These treatments are often quite toxic and many compromise a patient’s physical, psychological, and social well-being. Side effects of these treatments can also increase pain as well as debilitation, limiting an individual’s ability to function at work, regulate mood, sleep and participate in physical activities and social relationships (Cleeland, 1990 as cited in Ahles, 1993).

It is estimated that more than eight million Americans have a family history of cancer (American Cancer Society, 1995), with a personal cancer history recognized to be a serious risk factor for subsequent cancers in individuals. Exact estimates of BC recurrence are not available; however, many women with a history of BC experience a recurrence (Mahon et al., 1995). Neither the needs, perceptions, nor psychosocial concerns of patients with recurrent BC have received adequate exploration (Mahon et al., 1995). Aside from the psychological and physical distress, BC patients have to confront serious issues related, but not limited to: health insurance, finances, employment, and interpersonal relationships. Additionally, many BC patients have to revise their
initial optimism and hope for a cure after a recurrence diagnosis since the average length of survival decreases significantly with repeated episodes of the disease (Worden, 1989). Patients having been in remission for a long (e.g., ten years), as compared to a short length of time (e.g., two years), may be especially susceptible to the stress associated with a BC recurrence diagnosis (Mahon et al., 1995; Worden, 1989), as these long-term survivors may again view themselves as being healthy.

Although progress in cancer treatment continues, recurrence of BC is still considered to be a poor prognostic sign (Worden, 1989). Treatment goals for recurrent BC may differ from treatment goals for a first diagnosis of BC. The goal, from a medical and psychological perspective, in treating recurrent BC cancer may be to increase patient’s quality of life by helping patients adjust and cope with the disease, increase compliance and treatment, and to detoxify death by helping patients to face their potential loss(es) (Mahon et al., 1995) with long-term cure and long-term survival being less likely for recurrent BC patients.

**Conceptualization of QL**

Prior to the 1970s, health outcome of cancer treatment generally referred to the length of survival, treatment toxicity (Cella, 1992), and progression/severity of the disease/illness. These were not considered to be adequate measures of psychological, social, functional, and physical domains of a patient’s life. Researchers thus began to include the physical, emotional, and social dimensions of well-being (Aaronson, 1980; Ganz, 1994; Ringdal, 1996) as
quality-of-life related outcome variables within the World Health Organization's definition of health as not just being the absence of disease but including treatment toxicity and health outcome. Cella (1996) also incorporated a health related QL concept to his discussion of cancer treatment and health outcome. He defined health related QL as the effect of a medical condition and its treatment upon one's actual or perceived mental, physical, and social well-being. Cancer research has broadened to incorporate not only the basic issues of treatment and length of survival, but also issues related to quality of life (QL).

These QL issues may include functional, psychological, social, and physical status; all variables that are difficult to operationalize, undergo repeated conceptual revision, and contribute to a vague definition of the QL construct. As a result, QL may mean many different things to various professionals within multiple settings (Lindley, 1992). Wellisch (1983) reviewed approximately 100 articles and found that few authors agreed on a working definition of the QL construct. However, two key aspects of QL are often employed in defining the construct: subjectivity and multidimensionality (Aaronson, 1989; Cella, 1992; 1994; Ganz, 1994; Ringdal, 1996). Subjectivity refers to understanding QL from the patient's own perspective (Cella, 1992; 1994) rather than being based on objective medical, physiological, or functional measures. This information may include perception of illness, perception of treatment, expectations of self, and appraisal of risk/harm. Measurements of overt behavior failed to account for the "underlying cognitive processes that mediate patient perceptions of QL that are
often neglected" (Cella, 1994, p. 187) and provide an incomplete assessment of
the QL construct. In this context, QL may be best understood as representing the
gap between patients’ self-perceived functional level and their ideal health
standard.

The second component of the QL concept, multidimensionality, assesses
multiple domains of patient functioning (Aaronson, 1989; Barofsky, 1984; Cella,
1994; de Haes, 1985; Ganz, 1994; Lindley, 1992; Ware, 1984). These domains
have been partitioned into four quality of life as illustrated in Figure 1. The areas
include: (a) Functional Status, including ratings of mobility, self care, physical
activities, and role activities, such as employment or household responsibilities
(Aaronson, 1989; Ganz, 1994); (b) Psychological status, including levels of
anxiety, depression or other nonspecific forms of distress that may be secondary
to the disease itself or its progression and/or treatment (Aaronson, 1989; Ganz,
1994; Greer & Silberfarb, 1982; Worden & Weisman, 1984); (c) Physical
Functioning, also referred to as Disease and Treatment-Related Symptoms,
which involve specific symptoms from the disease such as pain or shortness of
breath, or side effects of drug therapy such as nausea, hair loss, impotence, or
sedation (de Haes & Knippenber, 1985; Ganz, 1994); and (d) Social Functioning,
including the ability to maintain social interactions (Ganz, 1994). The social
dimension not only provides overt and subjective measures of health/behaviors;
it also provides more extensive information involving patient functioning.
These four domains of QL affect all aspects of an individual's life. QL must take into account these domains because each one has a unique influence in how a person interacts with others and life and copes with adversity. The importance of the QL construct becomes apparent because the four domains have significant influence on how satisfied an individual is with their life from a psychological, functional, social, and disease-treatment related perspective.

The theoretical relationship of these indicators of QL is shown together in Figure 2, with the original model being adapted from Tchekmedyian, Hickman, Siau, Greco, and Aisner (1990). This model was initially revised by deleting health care related, life satisfaction variables, and adding more relevant life satisfaction variables as indicators of psychological well-being. Psychological and functional status variables have also been retitled psychological QL and functional QL and will be referred to as such from this point on. Quality of life is modeled as the construct of interest and is causally determined by Psychological QL, Social Functioning, Functional QL, and Disease-Treatment-Related Symptoms. These four influential constructs are composites of the variables shown.

Additional considerations that are important in the evaluation of QL include: religiosity (Ganz, 1994; Ringdal, 1996), family functioning, sexual functioning and body-image, satisfaction with health care (Aaronson, 1989; Cella, 1994; Ganz, 1994; Ganz et al., 1993; Ware, 1993). Several researchers...
suggest that these additional factors are separate, independent dimensions of quality of life and only affect overall QL under specific circumstances (Aaronson, 1990; Cella, 1992).

The concept of QL involves more than individual components such as physical well-being, disease progression, and/or pain at any given point. QL is not accepted as a patient's response to disease and treatment, but measures of QL are most effective when they address the related domains of functional, psychological, and social status. Each of these factors contribute to the general sense of well-being and help constitute quality of life. QL, therefore, refers to patients' appraisal of, and satisfaction with, their current level of functioning when compared to what they perceive is possible or ideal (Cella & Cherin, 1988). This value-based rating has utility because it provides a patient's subjective opinion about the stress related to treatment and disease. Only a multidimensional assessment of quality of life can capture both subjective and objective perceptions of patient illness and pinpoint the actual level of disability experienced within multiple domains.

Cella (1992) poignantly illustrates this “level of actual disability” experienced. He proposes that, although two patients may experience the same degree of nausea, they may experience very distinct disruptions in social or daily living. This difference could be due to differences in the emotional reaction to the nausea, or to differences in patient role. One patient may be able to function
adaptively with the nausea, while the other's adaptive capacity is severely weakened.

Lastly, it is important to realize that components of QL overlap with each other; they are interdependent as opposed to independent (Cella, 1992, 1994). For instance, a patient's experience of depression may affect their rating within both psychological and physical domains of QL. Thus, a valid measurement of QL must account for the interdependence of these variables and the influence of contextual factors such as phase of treatment and frequency of remission. The QL construct is becoming more valued as an indicator of life satisfaction across multiple life domains and during all phases of the cancer treatment cycle, from initial diagnosis through cure, extended remission, or death (Cella, 1992). Empirically, the use of a dialectical perspective, accounting for multiple factors seems most appropriate.

To date, selected researchers (Aaronson, 1989; 1990; Cella, 1992, 1994, 1996; Cella et al., 1987) have gathered information from each of the individual component domains, quantified these reports, and then used statistical procedures to develop a composite measurement of the QL construct. This operationalized, dialectical approach is believed to be useful because it incorporates a patient's overall experiences across different phases of the cancer process. A major concern regarding the use of this operationalized definition has been raised by Aaronson (1990) and Cella (1992, 1994, 1996).
They posit that the use of a composite index to assess broad, often subjective experience can result in inaccurate, unreliable, and incomplete data.

The general findings in the literature do not provide much information on the separate components of QL, such as functional and psychological QL, because composite scores are typically used. In terms of functional QL, it appears plausible that BC patients with higher functional abilities will be more protected from fatalistic and hopelessness perceptions than individuals with lesser functional abilities. Furthermore, it is difficult to determine if symptoms are related to psychological disturbance or are directly related to the disease and treatment. When assessing QL, physical and psychological QL may have overlapping constructs, which can confound measurement of reported QL domains. While composite scores may be useful for a global QL assessment, they do not provide insight into areas of an individual's experience, which influence their QL scores. For instance, a person may report good social and functional QL, while their physical or psychological health is poor, resulting in an average QL score. It is apparent that composite scores do not provide information that is helpful in improving the areas of a patient's health that is unsatisfactory. Additionally, Aaronson (1989) cautions the researcher from using instruments that rely heavily on physical symptoms (i.e., tiredness, loss of appetite) to identify psychological QL. This especially relates to patients with late stage cancers because in addition, the physical effects of illness may have psychological effects (Burgess, Morris, & Pettingale, 1988).
Lastly, Cella (1996) suggests that assessing the psychological, physical, functional, and social domains of QL may be difficult to cover in a single brief questionnaire. Since QL research has important implications for cancer patients, and since measurement issues pose problems, investigating a couple of QL domains and applying it to a cancer population holds significant clinical importance. Although combining measures of QL domains to approximate a single index of QL has been suggested (Stewart, Ware, & Brook, 1981), Cella (1996) cautions the researcher because not many validity studies have been performed on many of the existing QL measures and measurement issues must be taken into consideration.

The diversity of the different components of QL is essential when discussing overall satisfaction with life or general sense of patient well-being. This discussion of QL domains will be limited to psychological and functional components. Psychological and functional QL are used interchangeably with psychological and functional quality of life.

Psychological/emotional well-being and the ability to function in everyday life have not been thoroughly investigated in the literature, and research into these separate QL components can promote a greater understanding of how a recurrent BC patient evaluates and manages life. Due to the small population of recurrent BC patients, researchers are likely to find clinically significant relationships of more interest than statistical relationships. Further research should thus focus on factors that will be clinically significant and useful in
interventions. Based on this, the theoretical formulations of factors having most significance for clinical intervention are functional and psychological QL. Since the physical dimension may overlap considerably with the psychological and functional QL domains, it is difficult to isolate the factors involved in the latter 2 domains. Additionally, medical treatment can be provided to alleviate many of the physical symptoms associated with cancer disease, but treatment may not appropriate for someone who has lost functional abilities. Research suggests that lose of role functioning, for instance, can produce psychological symptoms such as depression. Therefore, investigating these two domains will bring about greater insight in understanding how cancer affects a person’s life both from a psychological perspective, as well as a functional one, and promote useful interventions.

Functional QL. The functional dimension of quality of life is correlated with but sufficiently different from the physical dimension because many of the physical symptoms (i.e., treatment side-effects or bodily function or disruption) overlap with psychological QL (Aaronson, 1989; Cella, 1992; Hays & Stewart, 1990; Stewart et al., 1981). Functional QL incorporates an individual’s personal needs, ambitions, and social role. At the most basic level, these abilities include instrumental activities of daily living (IADLs), which are walking, feeding, bathing, and dressing oneself. Additionally, it also incorporates an individual’s ability to carry out responsibilities not only inside the home but those with family, friends, and colleagues (Cella, 1992). Physical and functional components of QL can be
independent of one another, especially when an individual is able to continue to function in his/her work environment effectively despite physical discomfort and/or weakness caused by treatment.

Cancer tends to limit both functional ability and role performance and this can affect patients' expectations of themselves as the disease progresses. While pain may be a component of disease symptoms, it is relevant to discuss because pain affects an individual's functional QL. For instance, many studies have found pain to significantly influence a patient's ability to function, which, in turn, affects overall QL. Besides recovery, the primary goal for patients is to maximize their function in everyday life and to achieve the highest level of psychological well-being. Both functional QL and psychological well-being are highly valued by patients and these are essential outcomes of medical care (Stewart et al., 1989; Ware, 1989). The goal of maximum functioning may hold even greater importance for recurrent cancer patients. Silberfarb, Mauer, and Crouthome (1980) compared functional QL of BC patients undergoing either primary treatment, recurrent treatment, or palliative care (therapy aimed at relieving discomfort, not curing illness). The results from this study will center on the comparisons between palliative and recurrent treatment. Silberfarb et al. found recurrent BC patients in active treatment needed more help with functioning than did the terminal patients in the palliative care group. The recurrent BC patients also had more reported difficulties with daily routine issues and with depression than did the palliative group.
Employment status, as the proportion of patients who are working, is also affected by type of cancer and treatment. Barofsky (1984) reported that blue-collar workers are less able to sustain their previous level of activity than are higher paid white-collar workers. Thus, the burden of cancer and its treatment can differentially impact the functional domain of an individual’s life independent of disease severity. These differences may involve a patient’s cancer status or their role functioning. For example, physical limitations may not affect role performance (employment status), and there may be occasions of role dysfunction in the absence of physical limitations (Stewart et al., 1981).

Few studies have examined the relationship between age and QL in women with BC (Ganz, Lee, Sim, Polinsky, & Schag, 1992; Vinokur, Threatt, Vinokur-Kaplan, & Satarino, 1990). The general literature for mental health and aging research indicates a positive relationship between age and better QL in women newly diagnosed with BC. However, Ganz et al. (1992) found that age did not predict QL in newly diagnosed BC patients. Ganz et al. did report a weak relationship between age for elderly, newly diagnosed BC patients and QL, indicating evidence for better QL with advancing age. It seems plausible that the relationship between age and QL may be a complex multivariate relationship.

Problems in QL research rest on the notion that if a disease does not cause behavioral dysfunction then it does not have personal/social implications. Ware (1983) reported that role functioning is only very weakly related to emotional functioning (mental health). However, psychological distress has been
found to impact functional QL, specifically at the level of personal and role functioning. A BC patient may not be experiencing significant psychological distress but may have limitations on her functional ability. Bloom (1983) suggests adjustment to the cancer disease include both a psychosocial component, involving the patient's re-evaluations of self and a behavioral component, demonstrating acceptance of the change in self or loss of a body part or its functioning. Thus, re-evaluation of self and adaptation to changes caused by a cancer recurrence and any physical damages caused by the treatment for cancer must be addressed psychosocially.

**Psychological QL.** The psychological dimension of QL is also correlated but distinct from the physical dimension, that is fatigue, nausea, or vomiting (Cella, 1992; Hays & Stewart, 1990). Psychological QL refers to the mental health status or feeling states of an individual reflecting the impact of the cancer diagnosis, disease progression, or side-effects of treatment (Greer & Silberfarb, 1982; Worden & Weisman, 1984). Common psychological feelings include volatility of emotion, progressive reduction in stamina, resurfacing of unresolved issues, negativity, and strong attempts to remain in control (Mahon, 1995).

The diagnosis, course, and treatment of cancer have extensive psychosocial repercussions for the BC patient and her family. There is considerable evidence that early stages of BC and its treatment are associated with psychological distress, sexual dysfunctioning, and social morbidity (Fallowfield, Baum, & Maguire, 1986; Morris, Greer, & White, 1977; Morris &
Ingham, 1988). Unfortunately, less research has focused on the psychosocial aspects of recurrent cancer.

There is general support for the relationship between disease progression and severity of treatment and psychological well-being (Anderson, 1992). Cella et al. (1987) examined psychological distress in lung cancer patients and found that the extent of disease and physical impairment from treatment based on composite scores was a predictor of magnitude of mood disturbance. DeHaes, Van Oostrom, and Welvaart (1986) reported overall QL was related to extent of treatment for BC: radical surgery or breast conserving surgery. Patients undergoing breast-conserving surgery reported higher QL than patients receiving radical treatment. However, patients receiving breast-conserving surgery reported more fears of cancer recurrence. Additionally, Cassileth, Lusk, and Tenaglia (1983) examined women receiving radical and partial mastectomies and found that the depth of the indentation in scar tissue caused distress (Cassileth, Lusk, & Tenaglia, 1983).

Few studies have examined the relationship between age, psychosocial adaptation, and QL in women with BC (Ganz, Lee, Sim, Polinsky, & Schag, 1992; Ganz, Schag, & Heinrich, 1985; Vinokur, Thraett, Vinokur-Kaplan, & Satarino, 1990). Several researchers have found that groups of older individuals with chronic medical conditions and cancer report better mental health than younger individuals (Cassileth et al., 1984; Feinson, 1985; Ganz, Lee, Sim, Polinsky, & Schag, 1992; Ganz, Schag, & Heinrich, 1985). Ganz et al. (1992)
investigated the relationship between age and psychological and social status in newly diagnosed BC patients and reported a weak, negative relationship with younger women fairing slightly better. However, post hoc analyses revealed a positive relationship between age and better psychological and social status in married women. Married women were also found to have less mood disturbance with increasing age as annual household income declined. The authors offered no explanation for these possible chance findings.

Research studies show that many cancer patients suffer considerable distress from the implications of their recurrent diagnosis as well as from the progression and treatment of their disease. deHaes and Welvaart (1985) reported older BC patients, after primary treatment, reported less fear of recurrence and death than younger patients. Additionally, Worden (1989) assessed the emotional and psychological QL of patients with recurrent cancer. Younger recurrent patients were found to be more distressed than older patients. These younger patients were also more likely to blame themselves for their disease recurrence. The time from initial diagnosis to recurrence and the time from last treatment to recurrence was not found to be significantly correlated with distress levels. This finding is somewhat contrary to the research of Mahon et al. (1995) and Worden (1989). Welsman and Worden (1986) also found no evidence that a recurrent cancer diagnosis is more distressing than the initial diagnosis.
Health Locus of Control

Health is an important factor to individuals, and it can influence their behavior with respect to their health (Smith & Wallston, 1992). The meaning of health can be an ambiguous term because health can refer to an individual’s predisease state, or it may refer to a person’s current experience with disease (Dahnke, Garlick, & Kazoleas, 1994). In addition, individuals may also believe that they can influence their health through either personal factors, such as willpower to cure a cold, or by using external resources, such as visiting a doctor to alleviate symptoms of a cold. In this sense, health may be perceived as a variable that is controllable. The belief that an individual’s health is or is not determined by behavior is a health locus of control belief (Wallston & Wallston, 1978). Health locus of control is defined as the beliefs an individual has over the control of their health (Wallston, Greer, Pruyn, & Van Den Borne, 1990; Wallston, Stein, & Smith, 1994). A person can believe that personal internal, factors or situational, external, factors control health. Wallston et al. (1994) reported health locus of control orientation is not only mediated by an individual’s behavior but it is an "indirect determinant of health status" (p. 535). These researchers assert that health beliefs are learned over the course of an individual’s lifetime and become the function of prior health status and health-related experiences.

The health locus of control belief system was adapted from Rotter’s (1966) locus of control theory. Locus of control is defined as the belief that an individual has personal control over a variety of life circumstances (Danke et al.,
Locus of control is a personality variable derived from Rotter's (1966) social learning theory. He cites that individuals have various psychological resources and among these resources are certain beliefs in either an internal or external locus of control playing an active role in an individual's appraisal of an event. Locus of control is commonly referred to as being an expectancy belief because it involves dealing with the source of the control over an outcome (Smith, Wallston, & Smith, 1995; Wallston, 1991). This belief of control can determine how a person will react to social, physical, and emotional stressors and can serve as a coping strategy for an individual in a life crisis (Folkman, 1984). Coping becomes an important strategy for a woman afflicted with cancer. Her coping strategies may be influenced by her beliefs regarding the personal control she has over her health/cancer.

Both the locus of control and health locus of control construct are composed of an internal or external orientation. For example, a BC patient may actively search for a causal explanation of her disease. Depending on her control beliefs, she may believe her state of health is internally or externally controlled. An individual with an internal view regarding health believes that if she remains in good health or if her disease progresses, it is the result of her behavior. In comparison, an individual with an external health locus of control orientation believes that other factors, such as luck, chance, or fate determine the state of health. Additionally, individuals may feel that their health is
influenced by other powerful factors (e.g., health professionals) over which they have little control (Smith, et al., 1995; Wallston et al., 1978; Wallston et al, 1994).

Unlike the locus of control construct, the health locus of control construct is viewed as a multidimensional construct (Wallston, 1991; Wallston, et al., 1994; Wallston et al, 1978). While both constructs are composed of internal and external poles, the health locus of control orientation is composed of internal, powerful others, and chance factors. The saliency of the health locus of control belief system (i.e., health controlled by self, powerful others, or chance factors such as fate) becomes apparent because it invariably plays an integral role in contributing to cancer patients’ perception of QL.

Wallston et al. (1994) theorizes that people with varying health conditions may hold different locus of control beliefs about their health condition than about their general health status. For instance, a cancer patient may hold an external orientation regarding her cancer while at the same time believe that she can influence other aspects of her health. She may believe that a "powerful other" is in control of the fate of her disease, yet maintain that she can control her arthritis by resting often, eating properly, and limiting stressful activities.

Dahnke et al. (1994) challenge the stability of the health locus of control construct, suggesting that the construct might fluctuate at different points/stages in an individual’s disease. They also suggest that an individual’s perception of disease control in earlier stages maybe different from perception of disease control in later stages. For example, a BC patient diagnosed with Stage I cancer
might have an internal orientation regarding her health; whereas, a BC patient diagnosed with a Stage IV (late/terminal stage) cancer may perceive her health as being controlled by external factors (powerful others, God).

Little is known about the meaning of experienced personal control or its relationship to QL in cancer patients, especially late-stage patients (Lewis, 1982; Weisman, 1979). The literature presents contradictory findings regarding cancer and control beliefs. Lewis (1982) reported that patients who take an active, decisive role in their cancer treatment and disease are believed to maximize their sense of control and experience higher levels of psychological QL. This higher level of QL reported appears to be a function of a generalized sense of control over an individual's life and not necessarily control over their health. However, Lewis (1982) also suggests that patients may relinquish concern over maintaining control of their health in late stages of cancer. Relinquishing of control maybe perceived as a coping strategy because the cancer patient does not bear the burden of failing to control her disease. Additionally, relinquish of control may also enhance/preserve her quality of life and aid in accepting the course of cancer (e.g., acceptance of death).

Individuals who believe they can control their environment or their health often attempt to do so (Dabbs & Kirsch, 1971). Lewis, Haberman, and Wallhagen (1987) reported cancer patients with an internal health locus of control orientation tended to believe that the following domains were under their control: adjustment to treatment, cancer, daily activities, ownership-responsibility
for disease, pain, and externalizing control. Caplan (1981) and Antonovsky (1981) found individuals who attempted to cognitively control their health by imparting meaning or purpose to it, also created a world that was in their control. Taylor, Lichtman, and Wood (1984, as cited in Taylor & Armor, 1996) reported that asymptomatic BC patients often perceive having control over their cancer and believe they can prevent it from coming back. Taylor et al. (1984, as cited in Taylor et al., 1996) also reported that many BC patients asserted having a high degree of personal control over their cancer, despite the fact that their medical records revealed a poor prognosis. This belief in personal control over cancer was positively associated with psychological adjustment. These perceptions of personal control over the cancer may have served as a coping strategy.

Watson, Greer, Pruyn, and Ven Den Borne (1990) reported cancer patients with high internal control beliefs over the course of their illness were associated with a positive, "fighting" attitude toward the disease. This finding was largely confined to those patients with relatively good prognosis whose disease was either in remission or at an early stage. Additionally, Pruyn et al. (1988) examined head and neck cancer patient's internal control over the cause of their illness and internal control over the course of their illness, (i.e., how their cancer will progress). Patients with high internal locus of control regarding the course of their illness experienced less loss of control and were more likely to show health-related behavior, received more social support, showed higher self-esteem, experienced less physical complaints, had less anxiety, less depression,
and less psychological and physical complaints. In comparison, cancer patients with high internal locus of control regarding the cause of their illness reported more loss of control, suggesting that patients attributing personality characteristics for the cause of their cancer may have heightened levels of anxiety and may be preoccupied with their disease. Furthermore, individuals with early-staged cancers and who believe that the course of their disease is under their control may have a more optimistic, fighting attitude toward the disease. However, if the cancer progresses and the prognosis becomes poor, psychological well-being may become compromised.

If psychological well-being should become compromised, it is postulated that individuals may switch their health locus of control orientation (Dahnke, 1994, Ringdal, 1996). Lewis et al. (1987) examined late-stage cancer patients who relinquished control of their disease and reported that patients were satisfied with their decision. These patients were hopeful that their "powerful others" (i.e., physicians) would help them gain their health back. Similarly, Surla (1984) discovered that late-stage cancer patients, who relied on their physician's management of their cancer treatment and prognosis, did not want to assume or participate in trying to establish control over their treatment protocol (as cited in Lewis et al., 1987). Thompson and Spacapan (as cited in Taylor et al., 1996), in their study of men with advanced stages of AIDS reported a high degree of control over their day-to-day medical care and treatment, but only a mild degree of control over the course of their illness. Stage of disease, whether a patient is
symptomatic, disease prognosis, and cognitive coping strategies appear to be some of the mediating factors which may account for differences found in cancer patients regarding health locus of control orientation.

Wagner, Armstrong, and Laughlin (1995) report contradictory findings regarding an internal health locus of control orientation. They investigated coping styles and quality of life ratings after onset of cancer in a sample of men diagnosed with different types of cancer. Their findings revealed that at the time of the cancer diagnosis, the stronger a person's motivation to control the effects of cancer, the poorer was the patient's quality of life perception. Also, the more motivated the patients were to control their cancer, the lower was their quality of life rating. The researchers suggest that patients with greater levels of motivations to preserve their quality of life became more dissatisfied with setbacks, such as cancer progression. Additionally, Dahnke et al. (1994) also suggest that patients who suffer a loss of personal control (i.e., cancer progresses) also may experience a decrement in quality of life.

Although the research reports contradictory findings regarding quality of life and health locus of control beliefs, one cannot ignore the fact that control does appear to be an important predictor of quality of life. Control also appears to serve as a coping strategy and may buffer against the deleterious effects (e.g., psychological/functional) of cancer (Friedman et al., 1992, Friedman et al., 1994; Taylor et al., 1996). Relinquish of disease control may be an important factor for late-stage cancer patients in trying to improve/restore quality of life.
The theory that health locus of control beliefs fluctuate as cancer progresses, is an area worthy of investigation.

**Optimism**

Many individuals believe that positive thinking leads to a more enriched life and can aid individuals in adverse situations. When individuals are faced with adversity, they can either continue to strive or give up and turn away (Scheier & Carver, 1992; Scheier et al., 1989). Optimistic behavior is regarded as the continued striving of an individual who perceives an outcome as being attainable. This type of individual will additionally strive toward achieving the desired outcome even when obstacles arise (Friedman et al., 1992; Friedman et al., 1994; Scheier & Carver, 1992). Conversely, pessimistic behavior is regarded as giving up and turning away, occurring when individuals perceive outcomes as unattainable. These individuals will withdraw their effort and disengage themselves from pursuit of the established goal/outcome. Carver et al. (1992) postulate that individuals who believe that their goals are attainable experience positive affect and those who view their goals as unattainable experience negative affect. Positive affect often includes enhanced psychological well-being of an individual whose emotions can range from pride to gratitude to simple relief. In contrast, negative affect can encompass feelings of shame, anger, resentment, depression, and mood disturbance.

Optimism is defined as the tendency to believe or the expectation that things will work out positively (Scheier & Carver, 1985; 1986; 1992). A
fundamental disposition toward generally positive or negative outcomes constitutes an individual's life orientation. This life orientation construct allows for the observation of whether an individual's expectation of an outcome will be good or bad, rather than internally or externally controlled (Knapp, 1993). Carver et al. (1993) suggest that by defining optimism in this mannerism, predictions can be made about an individual's overt action because expectancies become a major determinant of behavior. Carver and Scheier (1992) have labeled dispositional optimism as the personality variable that affects how individuals cope with stressors/adversity. Dispositional optimism is defined as the tendency to believe that an individual will generally experience good vs. bad outcomes in life (Scheier et al., 1985). Additionally, dispositional optimism is perceived as a stable personality trait that exists across time and context (Scheier & Carver, 1985; 1992; Scheier et al, 1989; Scheier, Weintraub, & Carver, 1986).

Reker and Wong (1985) have suggested that hope and optimism be used as interchangeable constructs. In terms of psychological and functional aspects of QL, hope and optimism may be of significant benefit to illness. The general literature suggests that optimism, or dispositional optimism, may be influential in adaptation to illness because it may provide some protection against illness and disease. This protection is hypothesized to be influenced by dispositional optimism, which is perceived as being a determinant/mediator of a person's ability to cope with or respond to stress (Carver et al., 1993; Scheier & Carver,
Dispositional optimism may act as a buffer against adversity and lower the psychological distress associated with the adversity.

The effect of optimism on psychological well-being and overall reported QL has been a topic of research interest. Taylor and Armor (1996) suggest that unrealistic optimism may aid an individual in coping with a traumatic event or health-related event because it provides an individual with a sense of mastery over their life. However, Taylor and Armor assert that once unrealistic optimism is disconfirmed, an individual may experience severe psychological distress.

Stanton and Snider’s study (as cited in Lauver & Tak, 1995) of coping and emotional outcomes of women undergoing breast biopsies reported that optimism was associated with less avoidance strategies (e.g., wishing it would go away) and less emotional distress.

Similarly, Carver et al. (1993) studied the relationship of optimism to coping and emotional adjustment in a sample of BC patients undergoing cancer treatment. Carver et al. interviewed these patients at different time periods: one day prior to surgery, ten days, three months, six months, and a year postsurgery. They found optimism to be associated with greater levels of active planning and acceptance, and lower levels of psychological disengagement (e.g., denial) during initial treatment. Acceptance of breast cancer in early treatment was associated with less psychological distress (e.g., anxiety, depression, and anger) than in later treatment. Psychological and behavioral disengagement in early treatment was associated with greater levels of psychological distress.
Additionally, Carver et al. (1994) investigated the relationship of optimism to emotional and functional outcomes of coping in BC patients undergoing cancer treatment at three time periods: one day prior to surgery, six-to-eight days, and six months postsurgically. Optimism was associated with higher ratings of quality of life prior to surgery, and at the six-month follow-up period.

Scheier et al. (1989) interviewed male coronary artery bypass surgery patients regarding optimism, coping tactics, mood, and quality of life at three points in time: one day prior to surgery, six-to-eight days, and six months postsurgery. Presurgical optimists reported lower levels of depression and hostility than did pessimists. This same group also reported making plans for their future and setting goals for their recovery more often than did pessimists. Optimists also reported being less focused on the negative aspects of the surgery (i.e., emotional distress and physical symptoms) than pessimists. At the one-week postsurgery time period, optimists reported greater feelings of relief and happiness, greater satisfaction with the level of medicare received and more emotional support from friends than pessimists. They also were more likely to report seeking out and requesting information from their physician regarding the recovery process and were less likely to suppress thoughts about their physical symptoms than pessimists. At the six-month follow-up, optimists reported higher quality of life ratings than did pessimists. The researchers suggest that the differences found in quality of life ratings at the six-month follow-up were due to the different coping strategies utilized by the patients.
Scheier, Matthews, Owens, Magovern, and Carver (1990), in a five-year follow-up study from the same group of male patients in the Scheier et al. (1989) study, found that optimists felt more rested following sleep and were less likely to waken in the early morning. Optimists also rated their lives as more interesting and diverse, and free from pressures and annoyances when compared to pessimists. Lastly, optimists reported greater employment satisfaction and reported higher quality of life ratings than pessimists.

To date, no research has been conducted on the affects of optimism on quality of life with recurrent BC patients. While optimism has been shown to positively influence psychological QL, the prognosis of the disease, severity of pain, duration of the disease, and a patient's dispositional orientation must be taken into account when discussing quality of life. It is possible that a recurrent BC patient may have an overly optimistic outlook on her disease and may become psychologically distressed if her beliefs are shattered. Silberfarb et al. (1980) suggest that psychological turmoil is predictable if a disease progresses and yields a poor prognosis. However, employing active coping strategies may act as a buffer against experiencing psychological turmoil (Friedman et al., 1992, Friedman et al., 1994; Taylor & Armor, 1996). The relationship of optimism to coping and quality of life appears to play a pivotal role in patients with chronic or terminal illness (Carver et al., 1994; Carver et al., 1993; Friedman et al., 1992; Lauver & Tak, 1995; Sheier et al., 1989; 1992; Scheier et al., 1994; Scheier &
Carver, 1986). Although coping style may be a salient factor in reported quality of life, it will not be investigated in this study.

The literature presents conflicting findings regarding the effect of optimism on chronic and terminally ill patients. Unrealistic optimism is theorized to encourage coping disadvantages (Scheier et al., 1992). For example, a person may believe that through divine intervention their cancer will go into remission (a positive outcome). In this example, an individual may simply sit and wait for something to happen without putting forth any effort to achieve the goal. If the positive outcome does not occur, the person may experience emotional/psychological distress.

The contradictory findings regarding optimism and quality of life appear to revolve around issues of controllability. Optimism has been reported to be harmful in situations when the outcome is not achievable or alterable (Carver, 1986; Scheier et al., 1992). For example, if an optimist holds positive expectations or assumptions regarding something that is perceived as being controllable or alterable, and if these expectations are disconfirmed, psychological distress might result (Taylor et al., 1996). When optimistic beliefs are shattered, lower quality of life ratings may occur. If a BC cancer patient believes that her cancer is getting better or does not believe she has a poor prognosis, she may experience severe psychological distress if the cancer spreads. In comparison, if an optimist views a stressor as being controllable, changeable, or alterable, then higher ratings of quality of life are reported.
In order to compensate for the psychological distress associated with the shattering of beliefs, a BC patient may cognitively restructure her belief system. This restructuring of beliefs may take on the form of acceptance, viewing the cancer in a more realistic light, or positively reframing the situation (i.e., the cancer has caused me to grow closer to my family) (Scheier, 1994). Lastly, Taylor and Armor (1996) assert that individuals, who experience personal tragedies or setbacks and respond with adaptive coping methods, report higher levels of psychological QL.

Thompson and Pitts (1993) suggest that positively reframing a traumatic event, such as a cancer diagnosis, may aid optimists in viewing the consequences of traumatic events in a positive light. By concentrating on the positive side of a cancer experience, individuals may reduce the negativity associated with cancer or the pain encountered from the disease, producing feelings that life is still meaningful (Thompson & Pitts, 1993). Thus, restructuring of beliefs may be perceived as an adaptive coping strategy, promoting higher ratings of quality of life.

Conclusion

Health is generally reported to be a central factor in an individual’s perception of QL. Although some aspects of QL may be significantly impaired during cancer treatment, an optimistic outlook can enhance psychological and functional quality of life. More specifically, optimism may act as a psychological resource that promotes health and lessens the effects of illness. Additionally, the
general literature suggests functional QL may be a causal participant to optimism. However, the literature suggests a bidirectional relationship between optimism and psychological QL. That is, optimism and psychological QL of a BC patient are mutually independent.

Cancer patients have been found to be better adjusted if they perceive themselves to have some personal control over their life (Lewis, 1982; Taylor, 1982). Chronic illness may even produce a shift toward an external locus of control over one’s life (Reid, 1989). Every form of cancer treatment carries with it some degree of physical and emotional morbidity and issues of QL become critical. QL becomes even more important in late stages of cancer because psychological and functional QL, as well as physical and social functioning, become more impaired. The more impaired an individual becomes, the more QL has an impact in the way an individual copes with everyday life events. QL can act as a buffer against the pain and discomfort caused by the disease, thereby enhancing a woman’s satisfaction with her well-being or current level of functioning.

Since recurrent cancer research is still in its early exploratory stages, one can only speculate about the relationship between QL, optimism, and health locus of control beliefs because research has not been conducted in these areas. The present study was designed to examine the relationship of these variables and how these variables affect the quality of life in recurrent BC patients. The general literature can help formulate predictions regarding breast
cancer patients reported quality of life, optimism, and/or health locus of control orientations, but these predictions may not be applicable to a recurrent BC population.

There were three main goals of this study of women with recurrent breast cancer. The first goal addressed how health locus of control beliefs and disease stage relate to QL. The second goal examined the relationship between optimism and QL. The third goal examined the relationship between participant's age, marital status, and QL.

**Hypotheses**

Seven major hypotheses, with subhypotheses, were investigated:

Hypothesis 1. Internal health locus of control beliefs will be a significant predictor of psychological QL. There will be a negative relation between internal health locus of control beliefs over the onset of the illness and psychological quality of life (i.e., greater internal HLOC will relate to lower QL).

Hypothesis 2. Internal health locus of control beliefs will be a significant predictor of functional QL. There will be a positive relation between perceptions of internal control over the general course of the illness and functional quality of life (i.e., greater internal HLOC will relate to higher QL).

Hypothesis 3. Stages I or II recurrent BC cancers will be a significant predictor of higher quality of life than women classified within more advanced cancer (i.e., advancement in cancer stage will relate to lower QL).
Hypothesis 4a. Optimism will be a significant predictor of psychological and functional QL. There will be a positive relation between optimism and psychological quality of life.

Hypothesis 4b. There will be a positive relation between optimism and functional quality of life.

Hypothesis 5a: Age will be a significant predictor of psychological and functional QL. There will be a positive relation between age and psychological quality of life.

Hypothesis 5b: There will be a negative relation between age and functional quality of life.

Hypothesis 6. The strength of the relationship between the restriction of routine activities due to cancer and psychological QL will differ based on age. For individuals less than 65 years of age, the relation between restriction of routine activities and psychological QL will be stronger than this relation of those 65 and older (i.e., individuals at 65 years of age and older will report more restriction of activities and distress).

Hypothesis 7. Marriage or having a significant other will be a significant predictor of higher quality of life than women without a significant other (i.e., having a significant other will relate to higher QL).
CHAPTER II

METHOD

Participants

Twenty-one female participants with recurring breast cancer classified in Stage I through Stage IV were recruited from doctors' offices and/or cancer support groups in the Dallas-Fort Worth area. According to the National Institute of Health, the stage of cancer refers to the degree of how far the cancer has spread. In Stage I, the size of the tumor is not larger than 2 cm and the cancer is localized in the breast only. Stage II cancer involves three possible situations: a) the tumor is not larger than 2 cm but has spread to the lymph nodes; b) the tumor is between 2-5 cm, but may or may not have spread to the lymph nodes; and c) the tumor is not larger than 5 cm and has spread to the lymph nodes. In Stage III, the cancer is larger than 5 cm and has definitely spread to the lymph nodes, and possibly the chest wall, ribs, and chest muscles. Lastly, in the advanced stage, Stage IV, the cancer has spread out to other distant sites of the body such as the bones.

Information on stage of cancers were obtained directly from participants. A diverse group of participants were chosen to identify the range and magnitude of functional and psychosocial issues associated with a recurrence of
malignancy. Data collection was completed during a 6-month period of late 1997 and early 1998.

Recurrent malignancy is operationally defined in two ways: 1) the clinical state in which a woman with breast cancer has successfully completed a course of treatment therapy, and 2) the patient has been without signs and symptoms of the clinical disease for a period of at least 6-months but is found to have further evidence of malignancy (Mahon et al., 1995). Criteria for inclusion are that the participants: (a) have recurring breast cancer; (b) be able to speak, read, and write in English; (c) be able to give informed consent; (d) be able to complete a data collection instrument; and (e) be 18 years of age or older.

Design

This is a cross-sectional study with two major dependent variables and multiple independent variables. The constructs being investigated are presented in Table 1. In this study, the focus is on the major dependent variable of interest, QL, consisting of two components: psychological and functional QL. Psychological QL represents an individual's overall mental state that influences their quality of life. Anxiety, fear, depression, denial, distress, sense of well-being and/or hope are the factors of psychological QL. Functional QL represents an individual's task-oriented ability which includes self-care and the physical and intellectual efforts of accomplishing things in the home, community and at work.

The independent variables of major interest are health locus of control beliefs and optimism. Health locus of control refers to an individual's belief that
their health is or is not determined by their behavior. Optimism refers to an individual's expectation that things will work out positively. The other independent variables that are assumed to affect the QL are the age and stage of cancer.

Questionnaires were distributed to cancer patients via their doctor's office or a cancer support group. The questionnaire was composed of several standardized measures.

Materials

A demographic survey (Appendix C) was used to obtain basic information regarding participant's age, ethnicity, marital status, education, and occupational status. Educational level and occupation will indicate socioeconomic status. Medical and treatment information was also included in the demographic survey such as stage of disease, first diagnosis, duration of remission, the type of medical treatment, and the duration of the treatment.

A modified form of the Functional Living Index-Cancer (FLIC) was used as the dependent measure to assess QL (Appendix C). The original FLIC (Schipper, Clinch, McMurray, & Levitt, 1984) consists of 22 questions that are designed to assess overall functional quality of cancer patients' life. The four domains of QL are included in the FLIC and it is designed for self-administration. It has a visual analogue scale that is divided into 7 equal intervals. The numbers at the two ends of the scale (1 and 7) represent polar opposites. Subjects are
instructed to place a slash mark on the scoring line at the point that best represents their responses to questions.

One major modification of the original FLIC has been made for the current study. The M-FLIC includes a more conventional response format, requiring participants to respond to questions by circling the numbers that best represent their responses. Wei (1993) conducted, in a sample size of ten BC patients, a rank-order correlation between the original FLIC and the (M-FLIC) and reported a correlation of .99. Additionally, Schipper, Clinch, McMurray and Levitt (1984) conducted a factor analysis of the FLIC items and reported strong factor loadings of .5 and higher. Even though the M-FLIC consists of 22 items, the scoring process will include only those items that loaded strongly on the psychological and functional domains.

The following psychometric data were provided by the test authors (Schipper et al., 1984). The FLIC has been validated on 837 patients in two cities over a 3-year period. Criteria for validity include stability of factor analysis and concurrent validation studies against other established measures such as the Cancer Rehabilitation Evaluation System (CARES). The index is also uncontaminated by social desirability issues. Additionally, Morrow, Lindke, and Black (1992) psychometrically analyzed the FLIC. They tested the construct validity of the FLIC and reported a five-factor solution, which accounted for 70% of the variance and 68% in a cross-replication sample. Convergent-discriminant validity was also reported using independent measures of symptoms and
anxiety. Cronbach’s alpha for was reported to be in the acceptable range (i.e., .64 and higher for a five-factor solution).

Optimism was assessed by the revised 13 item Life Orientation Test (LOT-R) designed to measure respondents’ level of optimism in terms of general outcome expectancies (Scheier & Carver, 1985) (Appendix C). In the original Life Orientation Test (LOT) and (LOT-R), four items are fillers, which are included to obscure the central theme of the (LOT) and (LOT-R)(Figure 3). These items will not be included in the scoring process. In the original 8 item (LOT), half of the items were stated in a positive manner, such as “I’m a believer in the idea that every cloud has a silver lining”, and the other half were stated in a negative manner. However, the authors of the (LOT), Scheier & Carver (1985), identified 2 problematic items: “I always look on the bright side of things” and “I’m a believer in the idea that every cloud has a silver lining”. These items were identified as mediators of optimism effects (e.g., engaging in positive reinterpretation and growth). Scheier et al. (1994) assert that any correlations between optimism, as assessed by the (LOT), and other scales/instruments measuring these identified mediators will be suspect because of these 2 items on the (LOT) that measure positive reinterpretation (e.g., looking at things in a better light) and growth.

The (LOT-R) eliminates these two items (when scoring), resulting in only two positively worded items. In order to avoid difficulty of computing separate scores for positively and negatively worded items, Scheier et al. (1994) added in
one new positively worded expectancy item. The revised scoring process now includes three positively and negatively worded items. Scheier et al. also suggest eliminating from the scoring process, one of the negatively worded items (Figure 3).

Thus, items used to derive an optimism score on the (LOT-R) include only six items. Three items are keyed in the positive direction and three are keyed in the negative direction. A five point Likert scale ranging from “strongly agree” (scored as 0) to “strongly disagree” (scored as 4) will be used. After reverse scoring for the negative items, total scores will range from 0 to 24, with higher scores indicating greater optimism. Items 1, 3, 5, 8, 12, and 13 are used to compute an overall optimism score.

The following psychometric data were provided by Scheier et al., 1994. Factor analysis of the LOT-R supported its unidimensionality (i.e., the scale items measure a single underlying construct). Cronbach’s alpha was .78 on a combined sample of 2,055 and test-retest reliability with a sample of 187 over 28 months was .68 (4 months), .60 (12 months), .56 (24 months), and .79 (28 months). Additionally, the test authors tested the LOT-R against other measures of personality traits. Significant positive correlations were reported with original (LOT) and self-esteem, as were significant negative correlations with trait anxiety, neuroticism, and depression, hopelessness, perceived stress, and social anxiety. These findings provided support for the construct validity of the LOT-R.
Additionally, the correlational findings between the (LOT-R) and (LOT) suggest the two instruments are assessing similar characteristics.

In order to assess the participant's beliefs about their control over their health, 18 items of the Multidimensional Health Locus of Control – Form C (MHLC-C) (Wallston, 1988) was incorporated into the survey (Appendix C). The (MHLC-C) is a disease specific version of the Multidimensional Health Locus of Control scale (MHLC) (Wallston, Wallston, & DeVellis, 1978). The (MHLC-C) measures control beliefs among individuals having a variety of medical conditions (e.g., cancer, diabetes). It is designed so that the researcher can substitute a specific disease for the word condition. For example, "If my cancer worsens, it is my own behavior which determines how soon I feel better again". The (MHLC-C) was designed to allow optimal flexibility of investigating health locus of control beliefs under a variety of health conditions.

The (MHLC-C) consists of 18 items measuring the belief of internal control over the onset of a disease-specific condition. 6 items assess each dimension of internal and chance factors and two separate 3 item subscales for the powerful others dimension. The powerful others dimension contains items relating to doctors and other people, which is different from the original (MHLC, Forms A & B). Responses will be offered on a six-point Likert scale, ranging from "strongly disagree" (scored as 1) to "strongly agree" (Scored as 6).

The following psychometric data were provided by Wallston et al. (1994). The (MHLC-C) was administered to participants in an arthritis and chronic pain...
study. Factor analysis of the measure supported its unidimensionality. Cronbach’s alpha was greater than .70 on a combined sample of 588 and reliably yielded a four-factor solution. Additionally, the test authors assessed the (MHLC-C) against another disease specific version of (MHLC – Forms A/B). The subscales of the (MHLC-C) correlated significantly with similar subscales and did correlated significantly with dissimilar ones on Form B. Wallston et al. reported that these findings demonstrate considerable convergent as well as discriminant validity. The correlations between Form B and Form C subscales did not exceed 43% shared variance.

Procedure

Breast cancer patients diagnosed with cancer recurrence were recruited through doctors’ offices and/or cancer support groups. They were requested to participate in the study from a nurse or support group facilitator after having questions answered and completing the informed consent (Appendix C). Each potential participant agreeing to participate in the research project was administered a questionnaire packet. They were be directed to read/keep the contents of the cover letter, including a brief introduction of the study and a request for participants’ assistance. All participants were informed of the confidentiality of their responses. Participants were instructed to place completed questionnaires in an envelope and seal it to ensure confidentiality. Approximately thirty minutes was required to complete each questionnaire.

Power
Since power (the probability of detecting an effect if one is present) is a concern, a power analysis was conducted to estimate the sample size necessary to detect an effect of disease stage on the relation of functional QL. Cohen (1988) has suggested that .80 is a good standard for the minimum power necessary before beginning a study (as cited in Aiken & West, 1991). Chang (1993) reported a significant negative correlation between cancer stage and QL ($r = -.15$). The sample size was one hundred and five female participants. Using power tables, a sample size of 85 participants should be sufficient to detect a small effect ($r = -.15$). With 21 participants a correlation of $r = -.52$ should be detected with power of .80.

Originally, recurrent BC participants were to be recruited from a large radiation facility; however this facility would not allow the study to be conducted because it underwent organizational restructuring. Several large cancer organizations, (e.g., Komen Breast Cancer Foundation) also would not allow the study to be conducted. Due to practical considerations, a small sample size ($N = 21$ participants) was utilized. Effect sizes will be reported with all statistical analyses (Schmidt & Hunter, 1997). Reader should be directed toward clinical significance and not statistical significance of findings (Kirk, 1996).
CHAPTER III

RESULTS

Descriptive Statistics

Demographic and medical information. The purpose of the study was to investigate the variables affecting recurrent BC patients’ quality of life. Tables 2 and 3 summarize the descriptive information on all the major variables included in the following analyses. SES could not be calculated because only a small number of participants included information about employment status.

The mean age of participants was 54.29 years (SD = 11.1). Almost half of the participants (47.6%) had some college experience, 38.1% received high school degrees, 4.8% received college degrees, and 4.8% had some graduate or professional school experience. Participants’ marital status demonstrates that 38.1% were married, 38.1% were separated or divorced, and 23.8% were widowed. Most of the participants were Caucasian (76.2%), some were African Americans (19.0%), and one reported “other” ethnicity (4.8%). The majority of women (33.3%) were employed full-time, 4.8% were employed part-time, 28.6% were currently not working due to illness, and 9.5% were currently not working outside the home.
The descriptive information on medical information in Table 3 shows that there were more women (n = 17) with Stage 4 (33.3%) than women with Stage I (19.0%), Stage II (14.3%), and Stage III (14.3%) cancer. Approximately one-third (33.3%) of the participants also reported having additional, that is more than 2, recurrent cancer diagnoses. There were more participants (28.6%) who received multi-treatment (surgery and chemotherapy) for their first-time and recurrent treatment modalities than those who had only one treatment modality (23.8% reported surgery for an initial cancer treatment and 14.3% reported surgery for a recurrent treatment modality).

**Reliability**

Cronback’s alpha coefficients were run for each scale in the analyses. Results demonstrated that reliabilities were adequate. The alpha for the psychological subscale of the M-FLIC was .71. The alpha for the functional subscale of the M-FLIC was .91. The alpha for the psychological and functional subscales was .86. Additionally, an alpha of .94 was calculated for the M-FLIC. The LOT-R demonstrated an alpha of .35. Analyses were also reported on the original LOT and demonstrated an alpha of .64. The alpha for the MHLOC was .77. The alpha for the internal MHLOC subscale was .62.

**Hypothesis Testing**

The working hypotheses in the current analysis were analyzed via Pearson Product Moment Correlation Coefficients (r). Prior to conducting the correlations, the assumptions underlying Pearson’s r were tested. The results
demonstrated no substantial violations of assumptions with the exception of stage of cancer, which demonstrated a slight curvilinear trend. Therefore Spearman correlations were conducted on stage of cancer. It must be noted that due to a small sample size although demonstrating a moderate association, many correlations were not statistically significant. Therefore, the magnitudes of the correlations will be reported even when nonsignificant. The reader must be advised to attend to the magnitudes of the correlations rather than the probability values; even though the majority of hypotheses were not supported. Table 4 displays statistical values for all hypotheses being tested.

The first set of hypotheses involved internal health locus of control, quality of life, and stage of cancer. Specifically, it was hypothesized that health locus of control would be positively correlated with functional QL in later stages of cancer and negatively correlated with psychological QL in later stages. In earlier stages of cancer, it was hypothesized that both psychological and functional QL would be positively correlated with internal health locus of control beliefs. Additionally, it was hypothesized that in general, internal health locus of control beliefs would be negatively correlated with stage of cancer. Table 5 displays a correlation matrix between internal health locus of control beliefs and QL at early stages of cancer; Table 6 displays the correlation matrix between internal health locus of control and QL at later stages of cancer. Results for the earlier stages of cancer were somewhat ambiguous presumably due to a small sample size. These correlations did not support the hypotheses. For the earlier stages of cancer, the
correlation between internal health locus of control beliefs and psychological QL was quite small ($r = .02, p = .48$). The correlation between internal health locus of control beliefs and functional QL was somewhat larger and negative ($r = -.23, p = .31$) (Table 5).

The results for later stages of cancer were somewhat clearer. Internal health locus of control demonstrated a moderate positive correlation with psychological QL ($r = .49, p = .07$) and a strong, significant positive correlation with functional QL ($r = .71, p = .01$). Over all stages of cancer, internal health locus of control demonstrated a minimal correlation with psychological QL ($r = .08, p = .36$) and a moderate positive correlation with functional QL ($r = .28, p = .11$) (Table 7). Internal health locus of control and stage demonstrated a small negative correlation (Spearman's $r = -.19, p = .23$) (Table 8).

Additionally, an independent samples t-test was conducted to analyze mean differences in quality of life between those in early and those in late stages of cancer (Table 9). It was hypothesized that those in early stages would report a higher quality of life. Results demonstrated that the differences between means for a composite quality of life score, psychological QL, and functional QL were nonsignificant (Composite $t(15) = .61, p = .55$; Psychological QL $t(15) = -.66, p = .52$; Functional QL $t(15) = 1.26, p = .23$) (Table 7). Although nonsignificant, the functional QL demonstrated a medium effect (Cohen's $d = .64$) with those in early stages of cancer reporting higher quality of life.
The second set of hypotheses involved optimism and psychological and functional QL. Specifically, it was hypothesized that optimism would be positively correlated with both psychological and functional QL. Table 10 displays a correlation matrix between optimism and psychological and functional QL. These correlations did support the hypotheses. The correlation between optimism and psychological QL was moderate and positive ($r = .42, p = .03$). The correlation between optimism and functional QL was somewhat larger and positive ($r = .54, p = .01$).

The third set of hypotheses involved age, quality of life, and marital status. It was hypothesized that age would be positively correlated with psychological QL and negatively correlated with functional QL. Additionally, it was hypothesized that individuals at sixty-five years of age and older will report lower functional and psychological QL. More specifically, psychological and functional QL would be negatively correlated with individuals at sixty-five years of age and older compared to those less than sixty-five. Table 11 displays a correlation matrix between age and psychological QL, as well as the correlation matrix between age and functional QL. The hypothesis for age and psychological QL was supported; the hypothesis for age and functional QL was not supported. The correlation between age and psychological QL was small ($r=.27, p = .12$). The correlation between age and functional QL was quite minimal ($r = .01, p = .48$). Table 12 displays a correlation matrix between psychological QL and functional QL in individuals less than sixty-five years of age. Individuals less
than sixty-five years of age demonstrated a moderate, positive correlation ($r = .48, p = .04$). A strong, positive correlation was demonstrated between psychological QL and functional QL in individuals sixty-five years of age and older ($r = .69, p = .04$). These correlations did not support the hypotheses. Even when the samples were combined, the hypothesis was not supported ($r = .50, p = .01$). Lastly, Table 13 displays a correlation matrix it was hypothesized that marriage or having a significant other would be positively correlated with QL. Marital status demonstrated a minimal correlation with QL ($r = .07, p = .39$). The hypothesis was not supported.
CHAPTER IV

DISCUSSION

The Discussion section is organized into three parts, referring to the three main research goals. The first one addresses how health locus of control beliefs and disease stage relate to QL. The second question concerns the relationship between optimism and QL. Lastly, the third examines the relationship between participant's age, marital status, and QL.

The relationship between Internal Health Locus of Control and Disease Stage on QL

In the literature review, it was observed that many studies have shown evidence that advanced stages of cancer are associated with decreased ratings of QL. The hypothesis that perceptions of internal health locus of control would be negatively associated with psychological QL over all stages of cancer was not supported. It is plausible that a recurrent cancer diagnosis is threatening and distressing at all cancer stages. Regardless of disease stage, perceptions of life expectancy may be viewed negatively because a recurrent diagnosis is usually associated with a poor prognosis. Contrary to this study's findings, Watson et al. (1990) found a positive relationship between internal health locus of control beliefs and psychological QL. However, his sample was composed of
patients with relatively good prognoses, that is, participants were either in remission or diagnosed with an early cancer stage.

Perhaps, health locus of control beliefs, regardless of an internal or external orientation, do not play an integral role in contributing to recurrent cancer patients' perceptions of QL. Additionally, recurrent BC patients may not believe that their environment or their health is controllable. With these perceptions, the lack of an association between health locus of control and psychological QL would be expected.

To test this hypothesis further, disease stage was divided up into early and late stages. It was hypothesized that in earlier stages of cancer, psychological QL would be positively associated with an internal health locus of control orientation. The results demonstrate that a minimal association was found. Again, it is plausible that a recurrent diagnosis, regardless if it is in an early stage, is threatening. An individual may cope with their cancer diagnosis and treatment more effectively if they do not view their cancer as being controllable by any factor(s). Additionally, having a minimal association with control over health may be an adaptive coping strategy. The recurrent BC patient can accept the diagnosis and treatment and focus on the outcome (i.e., health and longevity) without rationalizing why it happened to her and what she could have done to prevent it. By removing the control element, the BC patient can see it as a medical event and not, for example, bad karma, God's punishment, or due to some personal, psychological characteristic.
However, a moderate association between internal health locus of control and psychological QL was reported for more advanced stages of cancer ($r = .49$). This positive relationship was not expected. The literature review presented that patients having a high degree of personal control over their cancer, despite having a poor prognosis reported higher psychological QL. Having a high internal locus of control in advanced cancer stages may cause a woman to experience less loss of control, be more likely to show health-related behavior (attend treatments or doctor appointments), receive more social support, and have higher self-esteem. Additionally, internal orientations may cause women to experience less physical complaints, anxiety, and less depression and other psychological complaints. Lastly, if psychological well-being is being compromised, switching health locus of control orientations may enhance psychological QL. It may be more advantageous psychologically for a recurrent BC patient, with a late stage cancer, to have an internal health locus of control orientation because it may increase her optimism and promote a “fighting” attitude toward the cancer. These patients are able to maximize their sense of control and experience higher levels of psychological QL. It is plausible that the more control a patient perceives over her health regardless of disease stage, psychological adjustment will be enhanced.

Additionally, it was hypothesized that in both early and late stages of cancer, there would be a positive relationship between internal health locus of control perceptions and functional QL. In early stages of cancer, the hypothesis
was not supported. A negative correlation was found to exist between these two constructs. It is plausible that the stress experienced from receiving a recurrent diagnosis, as well as the side-effects of active treatment, negatively affect an individual's daily routine and self-care activities. Having a loss of role functioning can be an extremely distressing event and may render an individual to feel and act helpless. In addition to the distress caused by loss of role functioning, an individual with an internal orientation may experience even more distress because health is viewed as being something that is controllable. Therefore, it is plausible that individuals having perceptions of control over their health are likely to report decreased ratings of functional QL. Lastly, women having an internal orientation may be more likely to refuse social support and assistance from others. An internal orientation may lend individuals to reject help from others, thereby decreasing their functional abilities.

Role dysfunction has implications at both the functional level and psychological level. Being psychologically distressed has been found to impact functional QL, specifically at the level of personal and role functioning. Having an internal orientation may decrease an individual's rating of functional QL because having a loss of role functioning may be extremely distressing; thus an individual may feel and act helpless.

Additionally, the hypothesis that in late stages of cancer, a positive relationship between internal health locus of control perceptions and functional QL was confirmed. Having an internal health orientation may be more
advantageous, in terms of functional QL, because the more control assigned to 
one's health/abilities, the more an individual may be able to accomplish. This 
internal orientation may be quite adaptive and serve as a coping strategy. For 
example, as cancer progresses, functional abilities will decline, but the belief in 
personal control over an individual's health may decrease the physical and 
psychological burden associated with cancer and its treatment, thereby 
improving functional abilities.

In the literature review it was observed that the stability of the health locus 
of control construct is questionable. It appears that the construct may fluctuate 
at different points/stages in an individual's disease. It is apparent from these 
findings that an individual's perception of disease control may change in early 
versus later cancer stages. The differences found in the relationship between 
internal health locus of control and functional QL in both early and late stages 
support this notion. It should be noted that this study is the first one to 
investigate health locus of control orientations and its relationship to functional 
QL. Although the hypothesis was not supported in early stages of cancer, the 
results have implications for future research that is to identify if early stages of 
cancer have a negative influence on functional QL.

These findings must be interpreted with caution because they are based 
on a small sample size (N = 7) because participants were not knowledgeable as 
to their stage of cancer. Future research should investigate the relationships 
between internal health locus of control beliefs and psychological and functional
QL over all stages of cancer. Increasing the sample size may increase the magnitude and strength of the relationships between variables. It may also change the direction of some of the relationships between variables, which will greatly influence the interventions designed to improve the quality of life and needs of individuals afflicted with a recurrent BC diagnosis.

The Relationship Between Optimism and QL

The main hypotheses were confirmed showing a positive relationship between both psychological QL and functional QL with optimism. As reported in the literature review, optimism may act as a buffer against adversity and lower the psychological distress associated with adversity (e.g., cancer diagnosis). In the literature review, it was also observed that optimism may be harmful in situations when the outcome is not achievable or alterable. A recurrent BC patient may experience shattered beliefs if her cancer is to progress and may experience psychological distress. A BC patient may have to cognitively restructure her belief system in order to alleviate the distress. While still maintaining an optimistic orientation, her beliefs can be restructured reflecting a more realistic view of cancer and acceptance of the cancer. She may even positively refraime the situation, such as creating the belief that cancer has caused her to take time to experience things she has not experienced. One patient wrote, "My cancer has caused me to live life fuller, grow closer to my family, and enrich my relationship with God." Another patient wrote, "While the cancer experience has not been pleasant, it has caused me to grow and
appreciate things in life that I have overlooked.” These individuals have positively reframed the situation and have responded with adaptive coping methods and reported higher QL.

Lazarus and Folkman (1984) suggest two coping styles in which individuals respond to stress: problem-focused and emotion-focused coping. Problem-focused coping is defined as the behavior of an individual that is oriented toward removing one or more stressor(s). Emotion-focused coping is defined as the attempt at reducing or eliminating the emotional distress associated with a stressful situation. Problem-focused coping usually occurs in situations where individuals believe that something can be done about their stressor(s). Emotion-focused coping, on the other hand, usually occurs when individuals believe that the stressor is one that must be endured. Either coping strategy has been reported to ameliorate a stressor/adversity. However, problem-focused coping is often regarded as the more adaptive coping strategy. While this study was not designed to measure these two coping styles, they hold relevance when discussing optimism and QL. Positive-reinterpretation has been an example. It is plausible that the majority of women in this study employed problem-focused coping strategies, which reflected higher QL ratings.

Additionally, problem-focused coping has been associated with active coping methods such as, positive reinterpretation (looking at things in a better light), producing elaborate plans for coping, expectation of seeing a positive change, and seeking social support (Carver et al., 1993, Folkman & Lazarus,
Conversely, emotion-focused coping has been associated with avoidance coping methods such as, denial, distancing, disengagement, emotional discharge (focus on and ventilate feelings), and self-isolation (Carver et al., 1993; Folkman & Lazarus, 1985; Lauver et al., 1995; Scheier et al., 1986; Scheier et al., 1989; 1992). The adaptability of problem-focused versus emotion-focused coping has been challenged especially when the stressor is maintained over time.

The literature presents various studies demonstrating the affect that emotion-focused coping has on psychological QL. Optimists have been reported to engage in problem-focused coping and pessimists to engage in emotion-focused coping (Lauver & Tak, 1995; Scheier, Carver, & Bridges, 1994; Scheier & Carver, 1986; Scheier et al., 1989; Scheier et al., 1992). Scheier and Carver (1986) suggest that disengagement, denial, or distancing may prevent an individual from actively coping with a stressor. Taylor and Armor (1996) suggest that unrealistic optimism may aid an individual in coping with a traumatic event or health-related event because it provides an individual with a sense of mastery over their life. Recurrent BC patients may have unrealistic optimism regarding their health, especially in late stage cancer; it may serve as a buffer against psychological distress. Interestingly, the majority of women in the current study were in Stage 4 diagnostically and yet optimism was positively related to QL.

Researchers have reported that individuals may use more adaptive emotion-focused coping strategies (e.g., acceptance, use of humor) when
problem-focused coping is not available or the situation is viewed as uncontrollable (Carver et al., 1993; 1994; Scheier et al., 1994; Scheier & Carver, 1986). For example, recurrent BC patients may find it easier to cope with their diagnosis and endure the course of the disease, if they accept the cancer and remain optimistic about other life events. In this sense, emotion-focused coping may be a more adaptive strategy because the individual expects the worst to happen. If an increase in fatalism occurs, it is not so devastating because the individual was expecting the worst to happen.

Furthermore, a recurrent BC patient may be better off accepting rather than denying her disease. Acceptance, therefore, aids an individual in adopting a more accurate view of reality and allows for compensation to begin (Scheier et al., 1992). Thus, the effects of denial can be seen as being a less effective coping strategy because denial keeps a person from dealing with the stressor (i.e., it keeps the problem active) and does not allow for personal growth (e.g., cognitive restructuring regarding the stressor). Lauver and Tak (1995) suggest that an optimistic disposition may produce greater psychological well-being when coping with a health-related stressor, such as breast cancer. Results of this study suggest that optimism is not only advantageous in terms of psychological well-being but also with functional abilities. Having an optimistic attitude may lessen the burden associated with functional and physical limitations. An individual is more likely to cope better and rate their QL higher
when they believe they have a chance at promoting wellness and increasing longevity.

Although all attempts were made at collecting an ethically diverse population, the sample was predominately Caucasian. The literature presents differences in optimism for different ethnicities. For instance, the literature presents that African Americans tend to be more fatalistic/pessimistic regarding cancer diagnoses than Caucasians. Future research is directed in obtaining a more diverse sample and investigating differences in optimism based on ethnicity.

The Relationship Between Age, Marital Status, and QL

The hypothesis that age would be positively associated with psychological QL was supported. As observed in the literature review, older women are more likely to experience less distress with their cancer and be more accepting of their disease. Older women are also more likely than younger women to have raised their families and experienced more of life, including living out their dreams and meeting their goals. Having experienced more of life, older women may not experience the same level of psychological distress as would a younger woman diagnosed with a recurrence. Additionally, with advancing age, cancer is not the only threat that individuals confront. For instance, Alzheimer's disease, cancer, and osteoporosis usually occur in an elderly population. The elderly may be more likely to accept a cancer diagnosis/recurrence than someone younger who is not accustomed to age associated illnesses. Thus, as women get older and
are afflicted with cancer, their ratings of psychological QL will be higher compared to those of younger women because the disease is not as threatening to someone younger who has a family to raise, employment commitments, and other responsibilities.

The hypothesis that age would be negatively associated with functional QL was not supported. A plausible explanation for this result would involve the level of social and emotional support received by older cancer patients. Perhaps family members and friends are assisting these older cancer patients so that they are not experiencing too much role dysfunction. Also, if they are not experiencing much psychological distress, they may have more adaptive coping strategies, which aid them in buffering the effects of losing functional abilities. These patients may not negatively be affected by their loss of functional abilities as compared to elderly women, living alone with no social or emotional support.

To test the hypotheses that age impacts the relationship between psychological and functional QL, age was divided up into two groups, that is individuals less than sixty-five years and those of sixty-five years and older. The hypothesis that for individual less than 65 years of age, the association between restriction of routine activities and psychological QL will be stronger than this relation of those 65 and older was not only supported but contradicted. Regardless of age, individuals did not report a decrease in QL. It is plausible that both groups of women receive adequate emotional support and assistance to buffer the deleterious effects of the diagnosis, treatment, and cancer
progression. Younger women tend to be in physically better health than older women; they may not have the functional role loss that older women experience from treatment and/or cancer progression. If functional abilities become compromised, younger women may be more willing to engage help from others. For example, younger women may need help with care-taking for their children. Assistance from others, not only helps them cope better because they are not forsaking their responsibilities, but it lessens the functional/physical burden (e.g., side-effects from treatment) associated with the cancer experience. This assistance may enhance their psychological well-being. If a person is able to self-care (regardless of their age or if assistance was necessary), psychological well-being may not be compromised.

Additionally, adaptive coping methods may be employed, by both age groups, to enhance psychological QL. In this sample, younger women were less likely to have advanced cancers, suggesting a better prognosis. Younger women diagnosed with earlier stages may also be more optimistic about their prognosis, reflecting higher QL ratings. Younger women may also engage in more problem-focused coping, which preserves their psychological QL. It is plausible to suggest that the psychological and functional dimensions of QL can both independently and jointly buffer the deleterious affects of the cancer process. Based on this statement, one may see how a positive relationship between these variables would exist.
Although prior research suggests that as individuals advance in age, they will experience health problems that will cause decrements in their functional abilities. Older women may adaptively cope with their role dysfunction or decrease in functional abilities because they are more accepting of the possibility of death. The acceptance of death may cause less psychological distress because they realize that death is imminent. The older an individual gets, he/she is more likely to realize their morbidity. Additionally, older women may be more accepting of their disease because they do not have the responsibility of raising a family and the fears associated with abandoning their family if they should die. It is reasonable to suggest that accepting the ailments associated with old age may have a buffering effect against psychological distress associated with recurrent cancer and the loss of some functional abilities in older women. Thus, a positive relationship would exist between psychological and functional QL in women sixty-five and older.

Lastly, it was hypothesized that women who were married or having a significant other would report higher QL ratings. This hypothesis was not supported. This finding would suggest that the cancer experience is distressing at all levels and may be just as distressing to a marriage or significant relationship as it is to someone who is single. One woman wrote, "While I am thankful of the cancer because it has brought me closer to God, it has destroyed my family. The loss of my right breast was more than my husband could bear. I
find myself abandoned, being a single mother, and having to raise two small children."

The social support theory that marriage or having a significant other can buffer stressful situations may not always be adaptive. For instance, the cancer experience may negatively impact a husband and wife. It may affect the communications between two individuals, as well as affect the intimacy shared. Cancer, especially a recurrence, can create emotional chaos in a household and lower QL. On the other hand, it is plausible that women who are separated, divorced, or widowed have strong social support systems, equaling the support received from a husband or significant other. This explanation would seem more reasonable because many women rely on support groups to vent their anger, share their emotions, fears, and concerns regarding the experience of recurrent BC.

Lastly, establishing SES was not possible because the majority of participants did not provide information regarding their occupations, which was necessary for calculating SES. Differences in SES regarding psychological and functional QL domains would have been interesting to explore. Future research should focus on gathering SES information and determining if SES status impacts QL.

Conclusion

The present study was designed to explore the relationship between optimism, health locus of control, and quality of life of women with recurrent
breast cancer. Although most of the results were not statistically significant due to a small sample size, one cannot ignore the importance that these variables play in terms of clinical significance, and this study's findings can improve the quality of life for women afflicted with recurrent breast cancer. The results indicate that no association was found between perceptions of internal health locus of control and psychological quality of life over all stages of cancer. However, for later stages of cancer, perceptions of internal health locus of control were positively associated with psychological QL. A negative association was found to exist between perceptions of internal health locus of control and functional QL for early stages of cancer. Additionally, the association was the strongest for late stages of cancer.

The results indicate that optimism is positively related to psychological and functional QL. Age was found to be positively associated with psychological QL. Regardless of age, a positive association was found between psychological QL and functional QL. No association was found between marital status and QL.

Implications and Suggestions

The evidence from the present study, though not conclusive, clearly points to a relationship between optimism, health locus of control, and quality of life. Although statistical significance was not obtained for the majority of analyses, clinical significance was obtained, and it will aid in developing a needs assessment and intervention plan for recurrent BC patients. The major limitation of this study was the small sample size and that the majority participants were
not able to include information for stage of cancer. The logical next step would be to increase the sample size and investigate whether clinically meaningful relationships change in magnitude and if they reach statistical significance. A hierarchical multiple regression also may be utilized to analyze formulated predictions regarding the relationships between variables. Adding a comparison sample, that is first-time diagnosed BC patients, would help determine if the needs, expectations, and/or experiences are the same or different between these two populations. The needs of recurrent BC patients may differ from individuals with a first-time cancer diagnosis because recurrent BC patients face even greater health challenges than individuals experiencing cancer for the first time. In addition to these health challenges, age, attitude toward cancer, level of functional disability, and a host of other factors can greatly impact the functional and psychological well-being of BC patients. An age-matched comparison study should be implemented to see if differences exist across conditions that are held constant, that is age and ethnicity.

In the future research of quality of life, development of subscales of each of the QL dimensions, in addition to a global measure like the M-FLIC, will be beneficial in investigating an overall quality of life score to each dimension. Obtaining participants within one to two weeks after being informed of a recurrent diagnosis would be useful and may provide a more accurate measure of quality of life, optimism, and perceptions of health locus of control.
Finally, in terms of clinical implications, the study has provided further evidence that recurrent BC patients have psychosocial needs that should be attended to. This study is the first to investigate some of the dimensions of quality of life. While a person may report adequate quality of life ratings in the psychological dimension, an individual may report lower ratings in the functional dimensions. A total QL score may not reflect such differences. By separating out the QL dimensions and analyzing them, a more effective treatment plan can be implemented to aid the psychosocial needs of recurrent BC patients.
APPENDIX A

TABLES
Table 1

Constructs that are being investigated in this study.

<table>
<thead>
<tr>
<th>CONSTRUCT</th>
<th>MEASURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Locus of Control</td>
<td>MHLOC-C scale (18 items)</td>
</tr>
<tr>
<td></td>
<td>Internal HLOC subscale</td>
</tr>
<tr>
<td></td>
<td>Powerful Others HLOC subscale</td>
</tr>
<tr>
<td></td>
<td>Chance Factors HLOC subscale</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>M-FLIC (22 items)</td>
</tr>
<tr>
<td>Functional QL</td>
<td>FLIC – Functional items</td>
</tr>
<tr>
<td>Psychological QL</td>
<td>FLIC – Psychological items</td>
</tr>
<tr>
<td>Optimism</td>
<td>LOT-R</td>
</tr>
<tr>
<td></td>
<td>(13 items but only 6 are scored)</td>
</tr>
</tbody>
</table>
Table 2

Frequencies and Percentages of Demographic Variables

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some High School Experience</td>
<td>1</td>
<td>4.8%</td>
</tr>
<tr>
<td>High School Degree</td>
<td>8</td>
<td>38.1%</td>
</tr>
<tr>
<td>Some College</td>
<td>10</td>
<td>47.6%</td>
</tr>
<tr>
<td>College Degree</td>
<td>1</td>
<td>4.8%</td>
</tr>
<tr>
<td>Some Graduate/Professional Experience</td>
<td>1</td>
<td>4.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>21</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

| **Marital Status**  |           |         |
| Married             | 8         | 38.1%   |
| Separated/Divorced  | 8         | 38.1%   |
| Widowed             | 5         | 23.8%   |
| **Total**           | 21        | 100.0%  |

| **Ethnicity**       |           |         |
| Caucasian           | 16        | 76.2%   |
| African American    | 4         | 19.0%   |
| Other               | 1         | 4.8%    |
| **Total**           | 21        | 100.0%  |

| **Employment**      |           |         |
| Currently Employed Full-Time | 7         | 33.3%   |
| Currently Employed Part-Time  | 1         | 4.7%    |
| Currently Not Working Due To Illness | 6    | 28.6%   |
| Currently Not Working Outside The Home | 2    | 9.5%    |
| Missing Data        | 5         | 23.8%   |
| **Total**           | 21        | 100.0%  |
Table 3

Frequencies and Percentages of Medical Demographic Variables

<table>
<thead>
<tr>
<th>Cancer Stage</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>7</td>
<td>33.0%</td>
</tr>
<tr>
<td>Stage II</td>
<td>3</td>
<td>14.3%</td>
</tr>
<tr>
<td>Stage III</td>
<td>3</td>
<td>14.3%</td>
</tr>
<tr>
<td>Stage IV</td>
<td>7</td>
<td>33.0%</td>
</tr>
<tr>
<td>Missing Data</td>
<td>4</td>
<td>19.0%</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Cancer Diagnoses</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>7</td>
<td>33.3%</td>
</tr>
<tr>
<td>No</td>
<td>11</td>
<td>52.4%</td>
</tr>
<tr>
<td>Missing Data</td>
<td>3</td>
<td>14.3%</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment Received During First Diagnosis</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>5</td>
<td>23.8%</td>
</tr>
<tr>
<td>Radiation</td>
<td>1</td>
<td>4.8%</td>
</tr>
<tr>
<td>Surgery and Chemotherapy</td>
<td>6</td>
<td>28.6%</td>
</tr>
<tr>
<td>Surgery, Chemotherapy and Radiation</td>
<td>4</td>
<td>19.0%</td>
</tr>
<tr>
<td>Surgery and Radiation</td>
<td>4</td>
<td>19.0%</td>
</tr>
<tr>
<td>Missing Data</td>
<td>1</td>
<td>4.8%</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment Received During Recurrent Diagnosis</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>3</td>
<td>14.3%</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>1</td>
<td>4.8%</td>
</tr>
<tr>
<td>Radiation</td>
<td>2</td>
<td>9.5%</td>
</tr>
<tr>
<td>Surgery and Chemotherapy</td>
<td>6</td>
<td>28.6%</td>
</tr>
<tr>
<td>Surgery, Chemotherapy and Radiation</td>
<td>2</td>
<td>9.5%</td>
</tr>
<tr>
<td>Surgery and Radiation</td>
<td>3</td>
<td>14.3%</td>
</tr>
<tr>
<td>Tamoxifen</td>
<td>1</td>
<td>4.8%</td>
</tr>
<tr>
<td>Surgery and Tamoxifen</td>
<td>2</td>
<td>9.5%</td>
</tr>
<tr>
<td>Chemotherapy and Radiation</td>
<td>1</td>
<td>4.8%</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>100%</td>
</tr>
</tbody>
</table>
Table 4

Summary of all hypotheses and statistical values

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Statistical Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Greater internal HLOC will relate to lower psychological QL</td>
<td></td>
</tr>
<tr>
<td>For early stages:</td>
<td>$r = .02$, $p = .48$ Hypothesis Not Supported</td>
</tr>
<tr>
<td>For later stages:</td>
<td>$r = .49$, $p = .07$ Hypothesis Not Supported</td>
</tr>
<tr>
<td>Over all stages:</td>
<td>$r = .08$, $p = .36$ Hypothesis Not Supported</td>
</tr>
<tr>
<td>2. Greater internal HLOC will relate to higher functional QL</td>
<td></td>
</tr>
<tr>
<td>For early stages:</td>
<td>$r = -.23$, $p = .31$ Hypothesis Not Supported</td>
</tr>
<tr>
<td>For later stages:</td>
<td>$r = .71$, $p = .01$ Supported</td>
</tr>
<tr>
<td>Over all stages:</td>
<td>$r = .28$, $p = .11$ Hypothesis Not Supported</td>
</tr>
<tr>
<td>3. Advancement in cancer stage will relate to lower QL</td>
<td>Mean differences not significant between stages</td>
</tr>
<tr>
<td>4a. Optimism will relate to higher psychological QL</td>
<td>$r = .42$, $p = .03$ Supported</td>
</tr>
<tr>
<td>4b: Optimism will relate to higher functional QL</td>
<td>$r = .54$, $p = .01$ Supported</td>
</tr>
<tr>
<td>5a: Age will be associated with higher psychological QL.</td>
<td>$r = .27$, $p = .12$ Supported; Not Statistically Signif.</td>
</tr>
<tr>
<td>5b: Age will relate to lower functional QL.</td>
<td>$r = .01$, $p = .48$ Hypothesis Not Supported</td>
</tr>
<tr>
<td>6. Individuals at sixty-five years of age and older</td>
<td>$r = .48$, $p = .04$ Hypothesis Not Supported Significant Findings</td>
</tr>
<tr>
<td>will report more restriction of activities and distress.</td>
<td></td>
</tr>
<tr>
<td>Individuals $&lt; 65$ years</td>
<td></td>
</tr>
<tr>
<td>$r = .69$, $p = .04$ Hypothesis Not Supported; Significant Findings</td>
<td></td>
</tr>
<tr>
<td>Individuals $\geq 65$ years</td>
<td></td>
</tr>
<tr>
<td>7. Having a significant other will relate to higher QL</td>
<td>$r = .07$, $p = .39$ Hypothesis Not Supported</td>
</tr>
</tbody>
</table>
Table 5

Correlation Matrix between Internal Health Locus of Control and Psychological QL and Functional QL at early stages of cancer

<table>
<thead>
<tr>
<th></th>
<th>Stages I and II</th>
<th>HLOCINT</th>
<th>Psych. QL</th>
<th>Funct QL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HLOC INT</strong></td>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>.022</td>
<td>-.231</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.</td>
<td>.482</td>
<td>.309</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td><strong>Psych. QL</strong></td>
<td>Pearson Correlation</td>
<td>.022</td>
<td>1.000</td>
<td>.553</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.482</td>
<td>.</td>
<td>.099</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td><strong>Funct. QL</strong></td>
<td>Pearson Correlation</td>
<td>-.231</td>
<td>.553</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.309</td>
<td>.099</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>
Table 6
Correlation matrix between Internal Health Locus of Control and QL at later stages of cancer

<table>
<thead>
<tr>
<th></th>
<th>Stages III &amp; IV</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HLOCINT</td>
<td>Psych QL</td>
<td>Funct QL</td>
</tr>
<tr>
<td>HLOCINT</td>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>.493</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.074</td>
<td>.011</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Psych QL</td>
<td>Pearson Correlation</td>
<td>.493</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.074</td>
<td>.060</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Funct. QL</td>
<td>Pearson Correlation</td>
<td>.711*</td>
<td>.525</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.011</td>
<td>.060</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 significance level.
Table 7

Correlation between Internal Health Locus of Control and Psychological and Functional QL over all disease stages

<table>
<thead>
<tr>
<th>HLOCINT</th>
<th></th>
<th>Psych. QL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>.084</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
<td>.359</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Psych. QL</th>
<th></th>
<th>HLOCINT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson Correlation</td>
<td>.084</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.359</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HLOCINT</th>
<th></th>
<th>Funct. QL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>.279</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
<td>.111</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Funct. QL</th>
<th></th>
<th>HLOCINT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson Correlation</td>
<td>.279</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.111</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>
TABLE 8

Correlation between disease stage and Internal Health Locus of Control

<table>
<thead>
<tr>
<th>STAGE</th>
<th>HLOC INT</th>
<th>STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spearman's rho Correlation</td>
<td>-.189</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.467</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>17</td>
</tr>
<tr>
<td>HLOC INT</td>
<td>Spearman's rho Correlation</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>17</td>
</tr>
</tbody>
</table>
Table 9

Independent Samples t-test demonstrating mean differences in quality of life between those in early and those in late stages of cancer

<table>
<thead>
<tr>
<th></th>
<th>t-test for Equality of Means</th>
<th>t</th>
<th>df</th>
<th>Sig. 1-tailed</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>QL</td>
<td>Equal variances assumed</td>
<td>.606</td>
<td>15</td>
<td>.553</td>
<td>.3443</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>.661</td>
<td>14.832</td>
<td>.519</td>
<td>.3443</td>
</tr>
<tr>
<td>Psych. QL</td>
<td>Equal variances assumed</td>
<td>-.655</td>
<td>15</td>
<td>.522</td>
<td>-.3200</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>-.750</td>
<td>12.641</td>
<td>.467</td>
<td>-.3200</td>
</tr>
<tr>
<td>Funct. QL</td>
<td>Equal variances assumed</td>
<td>1.256</td>
<td>15</td>
<td>.228</td>
<td>1.009</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td>1.334</td>
<td>14.963</td>
<td>.202</td>
<td>1.009</td>
</tr>
</tbody>
</table>
Table 10

Correlation between Lot and Psychological and Functional QL

<table>
<thead>
<tr>
<th>LOT</th>
<th></th>
<th>LOT</th>
<th>Psychological QL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>.423*</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td></td>
<td>.028</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Psychological QL</td>
<td>Pearson Correlation</td>
<td>.423*</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)</td>
<td>.028</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (1-tailed).
Table 11

Correlation between Age and Psychological QL and Age and Functional QL

<table>
<thead>
<tr>
<th></th>
<th>Psych. QL</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych. QL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>.269</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>.269</td>
<td>1.000</td>
</tr>
<tr>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>AGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.120</td>
<td>.</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>.120</td>
<td>.</td>
</tr>
<tr>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>AGE</th>
<th>Funct. QL</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>.014</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>.014</td>
<td>1.000</td>
</tr>
<tr>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Functional QL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.475</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>.475</td>
<td>.</td>
</tr>
<tr>
<td>N</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>
Table 12

Correlation between Psychological QL and Functional QL for individuals less than 65 years old and individuals 65 years and older

<table>
<thead>
<tr>
<th>Individuals less than 65 years</th>
<th>Psych. QL</th>
<th>Funct. QL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych. QL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>.483*</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td></td>
<td>.040</td>
</tr>
<tr>
<td>N</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Funct. QL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.483*</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>.040</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individuals &gt; 65 years</th>
<th>Psych. QL</th>
<th>Funct. QL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych. QL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>.689</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td></td>
<td>.040</td>
</tr>
<tr>
<td>N</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Funct. QL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.689</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>.040</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>
Table 13

Correlation between Marital Status and QL

<table>
<thead>
<tr>
<th></th>
<th>Marital Status</th>
<th>QL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marital Status</strong></td>
<td><strong>Pearson Correlation</strong></td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td><strong>Sig. (1-tailed)</strong></td>
<td>.390</td>
</tr>
<tr>
<td></td>
<td><strong>N</strong></td>
<td>21</td>
</tr>
<tr>
<td><strong>QL</strong></td>
<td><strong>Pearson Correlation</strong></td>
<td>.065</td>
</tr>
<tr>
<td></td>
<td><strong>Sig. (1-tailed)</strong></td>
<td>.390</td>
</tr>
<tr>
<td></td>
<td><strong>N</strong></td>
<td>21</td>
</tr>
</tbody>
</table>
APPENDIX B

FIGURES
Figure 1

Quality of Life Model illustrating the four traditional quality of life domains
Figure 2

The multidimensional aspects of the quality of life construct. Adapted from Tchekmedyian, Hickman, Siau, Greco, and Aisner (1990).
Figure 3

Items composing the Revised Life Orientation Test (LOT-R)

1. In uncertain times, I usually expect the best.
2. It's easy for me to relax. [Filler Item]
3. If something can go wrong for me, it will.
5. I'm always optimistic about my future.
6. I enjoy my friends a lot. [Filler Item]
7. It's important for me to keep busy. [Filler Item]
8. I hardly ever expect things to go my way.
9. Things never work out the way I want them to. [Not Scored] – [Negative Word Item]
10. I don't get upset too easily. [Filler Item]
11. I'm a believer in the idea that "every cloud has a silver lining." [Not Scored] – [Positive Word Item]
12. I rarely count on good things happening to me.
13. Overall, I expect more good things to happen to me than bad.
APPENDIX C

PACKAGE OF INSTRUMENTS
Dear Patient,

Your doctor has agreed to present you with the opportunity to participate in a study assessing mental and physical factors that affect women with recurrent breast cancer. We hope to use this information to better understand the factors that affect the recurrent cancer experience and to provide insight to develop interventions to improve the quality of life for recurrent cancer patients like you. Your participation will involve completing a questionnaire that will take approximately 30 minutes. Participation is voluntary and anonymous. Completion of the questionnaire will be considered your consent to participate. All information will be kept completely confidential. We ask that you do not identify yourself in any way on the questionnaire. When the questionnaire is completed, place it in the enclosed envelope, seal it, and return it to Julia.

You are free to stop participation at any time without penalty. If you chose not to participate or to stop and withdraw from the study, it will not affect you or the services you receive in any way. We hope you will participate, as this information will increase our understanding of factors that influence how women perceive a cancer recurrence. If you desire, we will provide your support group with a summary of findings when completed.

You might experience minimal psychological upset as the content of items in the questionnaire that deal with cancer and health. If you should experience upset from the content of the questionnaire, the researcher, a doctoral student in Clinical Psychology, would like to help and discuss these concerns with you. If you experience any distress as a result of participating in this study or if you would like further information about the study or its results, please contact the researchers, Gina Graci, at (940) 484-1123 or the supervisor, Dr. Charles Guarnaccia, at the University of North Texas Department of Psychology (940) 565-2671. Thank you in advance for your consideration.

Gina M. Graci, B.A., B.S.  
Researcher

Charles A. Guarnaccia, Ph.D.  
Research Supervisor

THIS PROJECT HAS BEEN REVIEWED BY UNIVERSITY OF NORTH TEXAS COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS
(Phone: 940- 565-3940).
INFORMED CONSENT

Dear Support Group Participant,

Your group has agreed to present you with the opportunity to participate in a study assessing the mental and physical factors that affect women with recurrent breast cancer. We hope to use this information to better understand the factors that affect the recurrent cancer experience and to provide the insight to develop interventions to improve the quality of life for recurrent cancer patients like you. Your participation will involve completing a questionnaire that will take approximately 30 minutes. Participation is voluntary and anonymous. Completion of the questionnaire will be considered your consent to participate. All information will be kept completely confidential. We ask that you do not identify yourself in any way on the questionnaire. When the questionnaire is completed, place it in the enclosed envelope, seal it, and return it to your support group facilitator.

You are free to stop your participation at any time without penalty. If you chose not to participate or to withdraw from the study, it will not affect you or the services you receive in any way. We hope you will participate as this information will increase our understanding of factors that influence how women perceive a cancer recurrence. If you desire, we will provide your support group with a summary of findings when completed.

You might experience minimal psychological upset as the content of items in the questionnaire that deal with cancer and health. If you should experience upset from the content of the questionnaire, the researcher, a doctoral student in Clinical Psychology, would like to help and discuss these concerns with you. If you experience any distress as a result of participating in this study or if you would like further information about the study or its results, please contact the researchers, Gina Graci at (940) 484-1123 or the supervisor, Dr. Charles Guarnaccia at the University of North Texas Department of Psychology (940) 555-2671. Thank you in advance for your consideration.

Gina M. Graci, B.A., B.S.
Researcher

Charles A. Guarnaccia, Ph.D.
Research Supervisor

THIS PROJECT HAS BEEN REVIEWED BY UNIVERSITY OF NORTH TEXAS COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS
(Phone: 940- 585-3940).
DEMOGRAPHIC SURVEY

Please answer these questions regarding your personal history as well as some medical information. Do not write your name on this form or identify yourself in any way.

Your age: __________

Stage of Cancer (Stage I, II, III, IV) _________

I. Please check the one that applies to you in each item:

1. Marital Status:
   Married _____ Separated/Divorced _____ Widowed _____ Single (never married) _____

   Relationship To You Of Those In Your Household?

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Age</th>
<th>Relationship</th>
<th>Age</th>
<th>Relationship</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship</td>
<td>Age</td>
<td>Relationship</td>
<td>Age</td>
<td>Relationship</td>
<td>Age</td>
</tr>
<tr>
<td>Relationship</td>
<td>Age</td>
<td>Relationship</td>
<td>Age</td>
<td>Relationship</td>
<td>Age</td>
</tr>
</tbody>
</table>

2. Your Ethnicity:
   White _____ African American _____ Hispanic _____ Asian American _____ Other _____

3. Spouse/Partner's Ethnicity:
   White _____ African American _____ Hispanic _____ Asian American _____ Other _____

4. Your Education:
   Eighth Grade _____ High School Diploma _____ Trade School _____ Some College _____
   College Degree _____ Some Graduate/Professional School _____ Graduate/Professional Degree _____

5. Spouse/Partner's Education:
   Eighth Grade _____ High School Diploma _____ Trade School _____ Some College _____
   College Degree _____ Some Graduate/Professional School _____ Graduate/Professional Degree _____

6. Employment:
   Currently Employed Full-Time ________
   Currently Employed Part-Time ________
   Currently Not Working Due To Illness ______
   Currently Not employed outside of the home ________
   If Currently Not Employed, Is This Due To Illness? Yes _____ No ______
   When Did You Stop Working? ____________________________
   Current/Past Employment ____________________________
   Retired _____ When? ____________________________
7. **Spouse/Partner's:**
   Current/Past Employment
   Retired _____ When?

8. **Medical Information:**
   Number of Cancer Diagnoses _____
   I. Date of First Diagnosis
   Type of Cancer (First Diagnosis)
   Treatment Received For First Diagnosis (Check All That Apply)
   - Surgery ______
   - Chemotherapy ______
   - Radiation Therapy ______
   - Bone Marrow Transplant ______
   - Other (Please Specify) __________________________
   - How Long Did Treatment Last? __________________________

II. Date of Second Diagnosis
Type of Cancer (For Second Diagnosis)
Treatment Received For Second Diagnosis (Check All That Apply)
- Surgery ______
- Chemotherapy ______
- Radiation Therapy ______
- Bone Marrow Transplant ______
- Other (Please Specify) __________________________
- How Long Did Treatment Last? __________________________
- Is this treatment still on-going? Yes ______ No ______

III. Any Additional Diagnosis? Yes ____ No ______
Type __________________________
Treatment Received __________________________

---

8. How Has Your Cancer Impacted Your Life? __________________________

---

M-FLIC

Please answer all the following questions by circling the number that best represents your response. Remember there are no right or wrong answers.

1. Most people experience some feelings of depression at times. Rate how often you feel these feelings.

   1  2  3  4  5  6  7

   Never  All The Time

2. How well are you coping with your everyday stress?

   1  2  3  4  5  6  7

   Very Poorly  Very Well

3. How much time do you spend thinking about your illness?

   1  2  3  4  5  6  7

   Never  Constantly

4. Rate your ability to maintain your usual recreation or leisure activities.

   1  2  3  4  5  6  7

   Not Able  Very Able

   At All

5. Has nausea affected your daily functioning?

   1  2  3  4  5  6  7

   Not At All  A Great Deal

6. How well do you usually feel?

   1  2  3  4  5  6  7

   Extremely Bad  Extremely Well

7. How often do you feel well enough to make a meal or do minor household chores?

   1  2  3  4  5  6  7

   Never  All The Time
8. Rate the degree to which your cancer has imposed a hardship on those closest to you.

   1  2  3  4  5  6  7
   No Hardship  Tremendous Hardship
   At All

9. Rate how often you feel discouraged about your life.

   1  2  3  4  5  6  7
   Never  Always

10. Rate your satisfaction with your jobs and work around the house since the diagnosis.

    1  2  3  4  5  6  7
    Very Satisfied
    Dissatisfied

11. How uncomfortable do you usually feel?

    1  2  3  4  5  6  7
    Very Comfortable
    Uncomfortable

12. Rate in your opinion, how disruptive your cancer has been to those closest to you since the diagnosis?

    1  2  3  4  5  6  7
    Not Disruptive  Totally Disruptive
    At All

13. How much is pain or discomfort interfering with your daily activities?

    1  2  3  4  5  6  7
    Not At All  A Great Deal

14. Rate the degree to which your cancer has imposed a hardship on you (personally) since the diagnosis.

    1  2  3  4  5  6  7
    No Hardship  Tremendous Hardship
    At All
15. How much of your usual household tasks are you able to complete?

1 2 3 4 5 6 7
None All

16. Rate how willing you are to see and spend time with those closest to you?

1 2 3 4 5 6 7
Very Unwilling Very Willing

17. How much nausea did you have (or do you have) during chemotherapy?

1 2 3 4 5 6 7
None 2 3 4 5 6 7 A Great Deal

18. Rate the degree to which you are frightened of the future.

1 2 3 4 5 6 7
Not Afraid At All Constantly Afraid

19. Rate how willing usually you are to see and spend time with friends.

1 2 3 4 5 6 7
Very Unwilling Very Willing

20. How much of your pain or discomfort you have had since the diagnosis is related to your cancer?

1 2 3 4 5 6 7
None All

21. Rate your confidence in your prescribed course of treatment.

1 2 3 4 5 6 7
Not Confident At All Very Confident

22. How well do you usually appear?

1 2 3 4 5 6 7
Extremely Bad Extremely Well
LOT-R

For the next set of questions, please try to 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.

1. In uncertain times, I usually expect the best.
   0  I agree a lot
   1  I agree a little
   2  I neither agree nor disagree
   3  I DISagree a little
   4  I DISagree a lot

2. It's easy for me to relax.
   0  I agree a lot
   1  I agree a little
   2  I neither agree nor disagree
   3  I DISagree a little
   4  I DISagree a lot

3. If something can go wrong for me, it will.
   0  I agree a lot
   1  I agree a little
   2  I neither agree nor disagree
   3  I DISagree a little
   4  I DISagree a lot

4. I always look on the bright side of things.
   0  I agree a lot
   1  I agree a little
   2  I neither agree nor disagree
   3  I DISagree a little
   4  I DISagree a lot
5. I'm always optimistic about my future.
   0 I agree a lot
   1 I agree a little
   2 I neither agree nor disagree
   3 I DISagree a little
   4 I DISagree a lot

6. I enjoy my friends a lot.
   0 I agree a lot
   1 I agree a little
   2 I neither agree nor disagree
   3 I DISagree a little
   4 I DISagree a lot

7. It's important for me to keep busy.
   0 I agree a lot
   1 I agree a little
   2 I neither agree nor disagree
   3 I DISagree a little
   4 I DISagree a lot

8. I hardly ever expect things to go my way.
   0 I agree a lot
   1 I agree a little
   2 I neither agree nor disagree
   3 I DISagree a little
   4 I DISagree a lot

9. Things never work out the way I want them to.
   0 I agree a lot
   1 I agree a little
   2 I neither agree nor disagree
   3 I DISagree a little
   4 I DISagree a lot
10. I don't get upset too easily.

0 I agree a lot
1 I agree a little
2 I neither agree nor disagree
3 I DISagree a little
4 I DISagree a lot

11. I’m a believer in the idea that “every cloud has a silver lining.”

0 I agree a lot
1 I agree a little
2 I neither agree nor disagree
3 I DiSagree a little
4 I DiSagree a lot

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

0 I agree a lot
1 I agree a little
2 I neither agree nor disagree
3 I DiSagree a little
4 I DiSagree a lot

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

0 I agree a lot
1 I agree a little
2 I neither agree nor disagree
3 I DiSagree a little
4 I DiSagree a lot
MHLC-C

Each item blow is a belief statement about your medical condition, with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item we would like you to circle the number that represents the extent to which you agree or disagree with each statement. The more you agree with a statement, then the higher will be the number you circle. The more you disagree with a statement, then the lower will be the number you circle. Please make sure that you answer EVERY ITEM and that you circle ONLY ONE number per item. This is a measure of your personal beliefs; obviously, there are no right or wrong answers.

1 = STRONGLY DISAGREE (SD)  4 = SLIGHTLY AGREE (A)
2 = MODERATELY DISAGREE (MD)  5 = MODERATELY AGREE (MA)
3 = SLIGHTLY DISAGREE (D)  6 = STRONGLY AGREE (SA)

1. If my cancer worsens, it is my own behavior which determines how soon I feel better again.
2. As to my cancer, what will be will be.
3. If I see my doctor regularly, I am less likely to have problems with my cancer.
4. Most things that affect my cancer happen to me by chance.
5. Whenever my cancer worsens, I should consult a medically trained professional.
6. I am directly responsible for my cancer getting better or worse.
7. Other people play a big role in whether my cancer improves, stays the same, or gets worse.
8. Whatever goes wrong with my cancer is my own fault.
9. Luck plays a big part in determining how my cancer improves.
10. In order for my cancer to improve, it is up to other people to see that the right things happen.
11. Whatever improvement occurs with my cancer is largely a matter of good fortune.

12. The main thing which affects my cancer is what I myself do.

13. I deserve the credit when my cancer improves and the blame when it gets worse.

14. Following doctor's orders to the letter is the best way to keep my cancer from getting any worse.

15. If my cancer worsens, it's a matter of fate.

16. If I am lucky, my cancer will get better.

17. If my cancer takes a turn for the worse, it is because I have not been taking proper care of myself.

18. The type of help I receive from other people determines how soon my cancer improves.
Thank you for taking the time to complete this questionnaire. We would like to hear any comments you may have. Please address any concerns on the space provided. Again, thank you for your participation.
REFERENCES


