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Subjective well-being in patients diagnosed with malignant melanoma

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The University of Arizona, 1987

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SUBJECTIVE WELL-BEING IN PATIENTS DIAGNOSED WITH MALIGNANT MELANOMA

by

Shannon Elaine Ruff Dirksen

A Dissertation Submitted to the Faculty of the

COLLEGE OF NURSING

In Partial Fulfillment of the Requirements
For the Degree of

DOCTOR OF PHILOSOPHY

In the Graduate College

THE UNIVERSITY OF ARIZONA

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THE UNIVERSITY OF ARIZONA
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As members of the Final Examination Committee, we certify that we have read the dissertation prepared by Shannon Elaine Ruff Dirksen

entitled Subjective Well-Being in Patients Diagnosed with Malignant Melanoma

and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

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Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copy of the dissertation to the Graduate College.

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SIGNED: Sharon C. Liff Dirksen

DEDICATION

FOR DAD

who created and nurtured the dream

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While journeying on the road less traveled, many individuals assisted along the way. Dr. Joyce Verran, dissertation chairperson, provided invaluable expertise in research methodology, instrumentation and data analysis. Her generous enthusiasm and encouragement in the later stages of this research project deserves special recognition. Dr. Alice Longman, committee member, offered suggestions of substantive content throughout this study, while also serving as a mentor for the past eight years which has been greatly appreciated. Dr. Pamela Reed, committee member, provided further insight and knowledge into theoretical issues while also stimulating my continued interest in well-being and spirituality.

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ABSTRACT

The purpose of this study was to test a theoretical model which predicted subjective well-being in patients who had been diagnosed with malignant melanoma.

The theoretical model was developed from empirical findings based on a review of the literature in which health locus of control, social support and self-esteem were identified as significant predictors of well-being. The specific aim of this study was to examine the strength of the predicted relationships between selected psychosocial variables and subjective well-being.

The study utilized a nonexperimental correlational design with a causal modeling approach. The convenience sample was composed of 75 individuals ($\bar{x}$ age = 52.5) who had been diagnosed with malignant melanoma. Subjects completed four instruments which measured the theoretical concepts under study. Two additional instruments were administered which indexed the variables of search for meaning and concern of recurrence. Descriptive statistics were used in examining the demographic and situational characteristics of the sample. Multiple regression techniques were utilized to empirically test the predicted theoretical relationships and to estimate predictive validity for the theoretical concepts. Graphic residual analysis was performed to assess for violations in the statistical and causal model assumptions.

Study findings revealed that social support had a direct positive impact on self-esteem (B = .27, R^2 = .06) and that self-esteem had a direct positive impact on well-being (B = .49, R^2 = .37). The two demographic variables of employment and income were found to have a direct positive impact on well-being (B = .22 and B = .26, respectively), and resulted in a 10% increase in the total explained variance in well-being. The theoretical model, which was generated to predict subjective well-being in malignant melanoma patients, explained 47% of the total variance in well-being.

Research into the variables which influence patient well-being during the cancer experience is vital if nursing is to implement therapeutic interventions which will promote an improved life quality. By intervening with nursing actions that focus on a positive self-esteem, a greater sense of well-being could be attained by individuals diagnosed with cancer.

CHAPTER I

INTRODUCTION

> What lies behind us and what lies before us are tiny matters compared to what lies within us.
>
> Ralph Emerson

Well-being is a concept that has been gaining enormous popularity among health care consumers and professionals as interest in disease is no longer focused solely on "cure". Well-being has been studied in diverse populations with the purpose of defining and isolating the factors which influence an individual's perception of life fulfillment (Burckhardt, 1985; Danoff, et al., 1983; Magilvy, 1985). Well-being is broadly defined as the individual's perception of their happiness, life satisfaction, and/or sense of life quality (Bradburn, 1969; Cantril, 1965). Sociological studies evaluating overall well-being in the American population have found that individuals perceive their satisfaction with life according to the following dimensions: health, relations with family and friends, work, material comforts, personal development and fulfillment, and recreation (Flanagan, 1982; Campbell, et al., 1976). Additional dimensions of well-being have been identified by older people who evaluate their life satisfaction in terms of zest, fortitude, mood, self-concept and health concerns (Neugarten, et al., 1961; Dupuy, 1978). One or more of these domains of well-being have been measured in the majority of research studies to date, but due

to the multidimensional highly subjective nature of the well-being concept, a consensus has yet to be reached on how or by what means well-being should be measured.

The diagnosis of a life-threatening illness may be especially disruptive to a person's sense of equilibrium as feelings of vulnerability, uncertainty and a loss of control over one's life frequently ensue (Mishel, 1984; Peck, 1972; Weisman, 1976). The diagnosis of a life-threatening illness often incapacitates the individual not only in terms of physiologic functioning but also in relation to prior psychological functioning (Cohen & Lazarus, 1979). A life-threatening diagnosis may completely change an individual's way of living and thinking about life, as the possibility of death as a final outcome tends to shatter the orderly and predictable unfolding of time (French, Rogers & Cobb, 1974; Sourkes, 1982). Common to all individuals is the underlying anxiety that life may be irreversibly altered in such a way that personal autonomy and functioning will be reduced (Krant, 1981). The occurrence of an unexpected life-threatening illness calls upon the individual to view the event in terms of its meaning to his/her overall functioning, and in relation to what else is going on in their life (Brim & Ryff, 1980). The sudden turmoil of a situation which threatens to terminate an individual's life can be a highly stressful event. The person often places their immediate well-being into the care of a physician who they often do not know, with further concerns centering on the potential disruption of relationships with family and friends.

The feelings and stress associated with a life-threatening illness are perhaps nowhere more apparent than when an individual learns that they have cancer. Prior perceptions of well-being are altered with the diagnosis of cancer, a diagnosis which is more feared than any other disease due to common beliefs that cancer mutilates before it kills and the future holds a slow and painful death (Bush, 1984; ONCOPA, 1985). The stress cancer places on a person's well-being can be lifelong, as emotional and physical hardships often continue well past the phase of successful treatment. Even when one has survived cancer, continued fears of cancer recurrence remain (Holland, 1977). One individual equated the diagnosis of cancer with LeShans' (1980) definition of a nightmare in that you have no idea how long it will last, you have no control over it, and something terrible is being done to you (Shlain, 1979). For some individuals diagnosed with cancer life is never quite the same again. Cancer is frequently used as the paradigm for viewing an illness of life-threatening properties due to the intensity of physical and psychological stress that is evoked not only at diagnosis but over an extended period of time (Mages & Mendelsohn, 1979).

Statement of the Problem

In 1985 alone, approximately 910,000 Americans learned that they had cancer, and of those diagnosed, 50% could expect to be alive in five years (American Cancer Society, 1985). The survival rate for most types of cancer has been steadily increasing since the early 1900s, when a diagnosis of cancer almost always meant death. The increased

rate in survival is mainly credited to advanced diagnostic techniques, increased public awareness regarding cancer prevention, and the improvement of conventional and experimental therapies (US News & World Report, 1985). As the medical management of cancer continues to grow more aggressive, then research must focus on the evaluation of treatment outcomes, not only in terms of "cure" and survival but also in terms of care that will improve the individual's life quality. The outcome of life quality becomes increasingly important as more persons are surviving and living with cancer, often with an outlook on life that has been altered by the experience.

Due to the increasingly large number of individuals who are cancer survivors, which currently totals three million, there is now an identified population of persons who are learning to live and learning to survive. The common sources of concern for the cancer survivor are fears of tumor recurrence (did the physician get it all? how can I be sure?) and problems of dealing with a society which continues to see cancer in terms of functional impairment and death (Holland, 1980; Shanfield, 1980). As a result of this prevailing public attitude, as graphically depicted in a (recent) Newsweek article (1985), cancer survivors may find themselves confronted with job discrimination, unavailability of health insurance, and avoidance by co-workers and friends. This places an additional stress on the already stressed individual who is often times still learning how to cope with personal health concerns.

Despite these obstacles, survivors of cancer have frequently expressed the positive side of their disease including: a heightened

sense of awareness; an emphasis on living in the here and now; and a restructuring of values and priorities (Heinrichs & Schmale, 1978; Kennedy, et al., 1976; Ruff, 1984). This added zest for living and the increased importance placed on the here and now indicates that as bad as the cancer experience was, most people are not sorry they went through it, they enjoy life more having faced death (Holland, 1985).

Stress is present in each stage of the cancer trajectory starting with the commonly expressed emotions at diagnosis of shock, disbelief, anxiety and depression (Cooper, 1984). Treatment elicits further emotional upheaval as physical distress accentuates feelings of dependency and vulnerability (Krouse, 1985). The survival stage is characterized by ongoing anxieties about cancer recurrence despite the individual's "cured" status (O'Neill, 1975). In the terminal stage of cancer the focus is on living with dying and the resolution be it peaceful or terrifying, that life is coming to a conscious end. When stress pervades all stages of the cancer experience, it is necessary to consider what the disease means to each individual as distress frequently alters perceived well-being. By assessing perceived well-being in individuals with a life-threatening diagnosis, nursing interventions may then be instigated which will promote the enhancement of life quality during each stage of the disease process.

Due to the severe stress and stigma that is attached to a diagnosis of cancer, it is important to increase the knowledge of how an individual's perception of life quality is altered due to the experience of having cancer. Given the present increase in survival rates,

it is also of vital interest to ascertain the long-term effects of the cancer experience on subsequent life quality.

The Purpose of the Study

The purpose of this study was to test a theoretical model which explains subjective well-being in individuals diagnosed with cancer. The explanatory variables in the model were identified from the literature as significant predictors of well-being and included internal locus of control, powerful others locus of control, chance locus of control, social support and self-esteem. The specific aim of this study was to examine the strength of the predicted relationships between selected psychosocial variables and perceived well-being.

Significance to Nursing

The achievement of optimal well-being for all individuals is the underlying core of meaning upon which the theoretical framework for this study was constructed. The concept of well-being has yet to be clearly defined in individuals with altered states of health. By testing a theoretical model which seeks to explain subjective well-being in individuals diagnosed with cancer, greater understanding can be gained into some of the factors which influence the perception of well-being in persons with a life-threatening illness.

The profession of nursing is in an ideal position to study and further define the concept well-being as the humanistic care approach in both nursing practice and research places an emphasis on the total well-being of the individual. If cancer is a disease to be lived with, then sensitive consideration must be given to the quality of the

lifestyle that ensues at various stages in the cancer experience. By examining the variables which have been identified to impact on well-being, therapeutic nursing interventions can then be implemented that would promote well-being for all individuals diagnosed with cancer.

Summary

This chapter discussed the importance of studying subjective well-being in a population of individuals under a special and severe stress, the experience of cancer. To guide nursing interventions in assisting the cancer patient to an improved life quality, well-being must be studied in relation to the variables which determine it and secondly, how its perception may be altered during each stage of the cancer experience. This research study investigated the impact of five factors; i.e., internal locus of control, powerful others locus of control, chance locus of control, social support and self esteem, on subjective well-being in patients diagnosed with malignant melanoma.

CHAPTER II

THEORETICAL FRAMEWORK

> The secret of health and happiness lies in successful adjustment to the everchanging conditions on this globe, the penalties for failure in this great process of adaptation are disease and unhappiness.
>
> Hans Selye

This chapter discusses the theoretical framework which underlies the research study. Also included are definitions of the constructs and concepts, designated relationships among constructs and concepts, additional variables studied, and assumptions underlying the theoretical framework.

Theoretical Structure

The theory as depicted in Figure 1 is illustrated by a three stage causal model which shows the relationships among constructs and concepts. The temporal orientation of the causal sequencing is represented by stages at the construct and concept level. The arrows between constructs and concepts represent the causal relationships which have been hypothesized to exist. The signs on the arrows indicate whether the relationship is negative or positive (Asher, 1976). The construct level is the higher degree of abstraction and is represented at the top of the model. The concept level is underneath the construct level as it is more specific empirically. The concept level

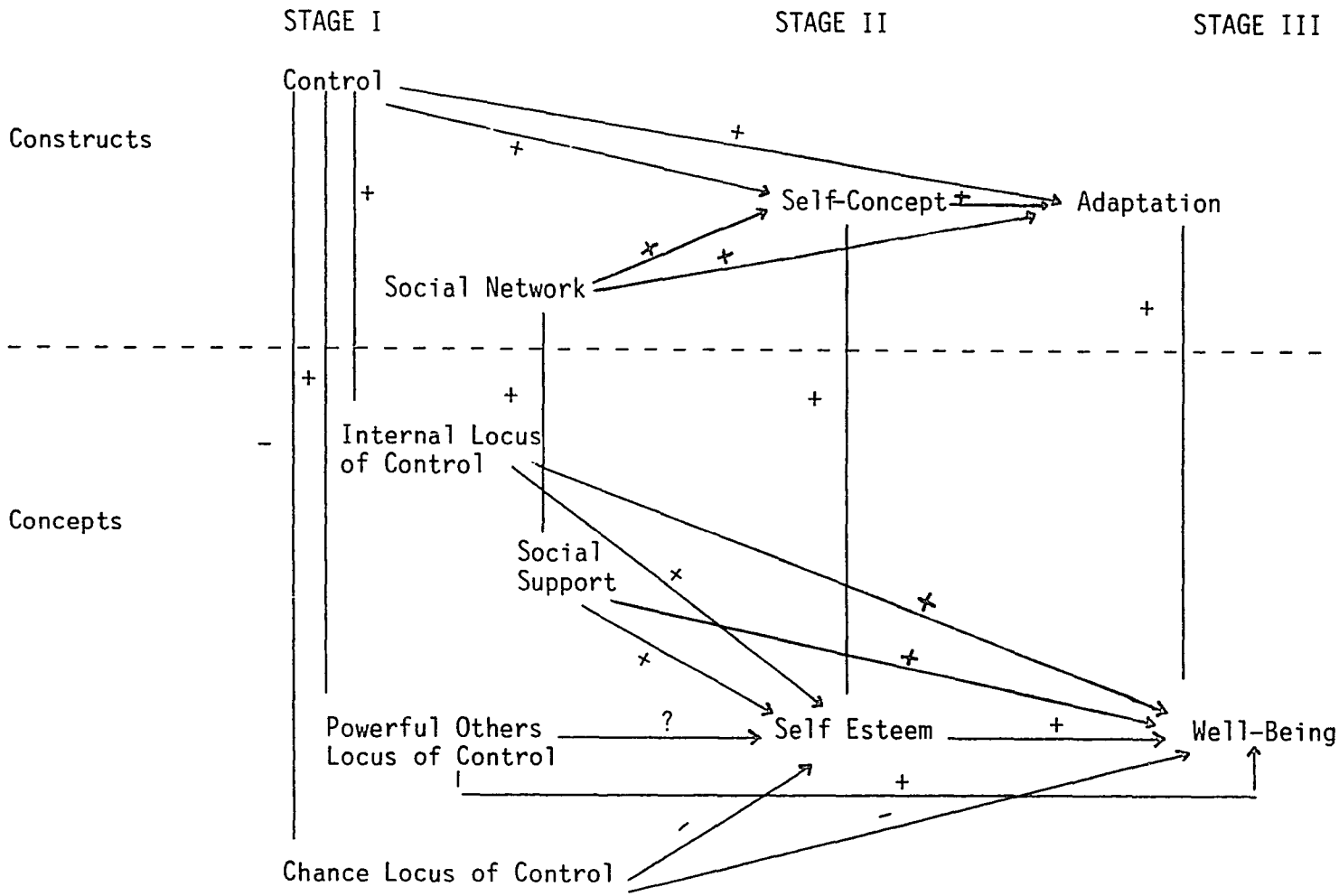


Figure 1. Theoretical Model: Subjective Well-Being in Patients Diagnosed With Malignant Melanoma

as depicted by the causal model was indexed by referents which were empirically tested in this research study. The dotted line drawn between the construct and concept levels represents the concepts as part of the construct with the relationships denoted as positive and negative (Gibbs, 1972).

The construct level is indicated by the four constructs of control, social network, self-concept, and adaptation. The concept level is represented by the six concepts of internal locus of control, powerful others locus of control, chance locus of control, social support, self esteem, and well-being. The constructs are in a causal sequence with all signs indicating a positive relationship. The concepts are also in causal sequence with direct and indirect relationships depicted as positive and negative among the terms. This framework represents a predictive theory which has as its purpose the prediction of relationships between factors which have been isolated and known to influence each other (Dickoff, James & Wiedenbach, 1968). The class of event or unit of analysis for this theory is the individual who has been diagnosed with malignant melanoma, a relatively uncommon type of skin cancer.

Theoretical Perspective

The overall perspective for this theory is adaptation which is conceptualized according to the Roy Adaptation Model of Nursing (Roy, 1976, 1981). Roy's model of adaptation is based on Helson's (1964) Adaptation-Level Theory which holds forth the premise that

individuals strive for adaptation in response to stimuli from their environment.

The Roy model of adaptation focuses on the individual as an adaptive system which responds to inputs or stimuli from the internal and external environment. The pooling of stimuli then make up what Helson (1964) describes as the person's level of adaptation. The adaptation level can be seen as a constantly changing point in relation to the range of stimuli a person is exposed to. From Roy's perspective, the outputs of the system are responses to the stimuli and are labelled as adaptive and promoting integrity, or ineffective and lacking the potential for growth and survival. Adaptation as defined by Roy (1981) can be either a process or an endpoint by which the organism responds to the environment. Helson (1964) conceptualized adaptation within a narrower focus than Roy as adaptation is viewed only in terms of the end product where dynamic equilibrium exists.

The main elements of Roy's theory (Roy, 1976, 1981; Riehl & Roy, 1980) that have been defined for nursing are based on the client as an adaptive system who is the recipient of nursing care. Implicit and explicit assumptions are rooted in the premise that man is in constant interaction with an ever changing environment which results in internal and external stress. Adaptation is the response of the individual to a changing environment and is determined by attitudes, values, judgments and emotions.

The theoretical relationships are described according to their stages at the construct and concept levels. Discussion of the model flows from Stage I to Stage III and includes the theoretical

relationships for the constructs and concepts. The definitions of the constructs and concepts in the theoretical model are summarized in Table 1.

Stage I of the Model

Control

The first construct identified in Stage I of the theoretical model is control which is defined as the extent to which an individual feels confident of their power of mastery over the environment (Averill, 1973; Lefcourt, 1976). The meaning given to the construct of control is found in the paradigm conceptualized by Rotter (1954, 1966) in his Social Learning Theory. Basic to this theory is the premise that a relationship exists between the individual's actions and the outcomes of that action. Rotter (1966) suggests that over time, individuals formulate general and situational expectancies about the determinants of reinforcement based on their learning and experiences. The potential for a behavioral response to occur is influenced by the individual's expectancy that the behavior will lead to a specific reinforcement, and by the value that particular reinforcement holds for the individual. Generalized expectancies for reinforcement accumulate with life experiences and refer to the person's overall beliefs that they are able to influence events and outcomes of importance. A history of reinforcements can result in either the general expectancy that outcomes are contingent upon resources internal to the person or to the general expectancy that outcomes are related to events or forces outside of their control. Situational expectancies for

Table 1. Definitions of Constructs and Concepts in the Theoretical Model

Constructs	Concepts	Definitions
STAGE I		
Control		The extent to which an individual feels confident of their powers of mastery over the environment (Averill, 1973; Lefcourt, 1976).
	Internal Locus of Control	The generalized belief or expectancy that rewards are contingent upon resources internal to the individual (Rotter, 1966).
	Powerful Others Locus of Control	The generalized belief or expectancy that rewards are contingent upon resources provided by powerful others (Levenson, 1973).
	Chance Locus of Control	The generalized belief or expectancy that rewards happen as a result of chance or luck and not as a consequence of anyone's behavior (Levenson, 1973).
Social Network		A unit of structure that includes all of an individual's social contacts (Gottlieb, 1981).
	Social Support	The information a person receives that leads them to believe they are cared for, loved, valued and belong to a network of mutual obligation (Cobb, 1976).

Table 1. Continued

Constructs	Concepts	Definitions
STAGE II		
Self-Concept		A person's total appraisal of their appearance and background, abilities and resources, and attitudes and feelings which culminate as a directing force in behavior (Labenne & Greene, 1969).
	Self Esteem	A positive judgment of worthiness that indicates the extent to which a person believes that they are capable, significant, successful and worthy (Coopersmith, 1967).
STAGE III		
Adaptation		The individual's maintenance of integrity and equilibrium in their environment (Roy, 1981; White, 1974).
	Well-Being	The subjective perception of life quality (Ruff, 1985).

reinforcement pertain to the extent to which a person feels they can control their response to the demands of a particular stressful situation.

In the theoretical model, control was expected to have a direct positive impact on the Stage II construct self-concept and the Stage III construct adaptation. The predicted relationship between control and self-concept is supported by Cooley (1902) who stated that the self-concept is identified only through subjective feelings of self, which are produced by the belief that one has control over events and situations. Rogers (1951) further notes that the self-concept includes only those attributes of the individual that one is aware of and can exercise control over. The maintenance of self is accomplished by the subjective feeling of control over all regions of life which are regarded as belonging to self. When feelings of control are absent then disorganization and overwhelming terror will be experienced (Rogers, 1951).

The predicted relationship between the construct control in Stage I and the construct adaptation in Stage III is supported by White's (1974) conceptualization of adaptation as behavioral responses of autonomy and mastery which dictate that in order to readjust to a changing environment, control must be exerted. The function of control in influencing the adaptation response of the individual to a life-threatening situation has been examined with findings indicating that persons who exert or believe they can exert control over noxious events will adapt to that event more successfully (Thompson, 1981). A growing number of research studies are indicating that a low sense

of control over life events is associated with feelings of powerlessness, alienation, helplessness, and a less than optimal adaptational outcome (Sarason, Johnson & Siegel, 1978; Seligman, 1975; Phares, 1976; Seeman, 1972).

The three concepts underlying the concept of control in Stage I of the theoretical model are derived from Rotter's Social Learning Theory (1966) which asserts that an individual's behavioral response to a specific situation is contingent upon the person's locus of control, which may be internal or external. Locus of control was developed as a unidimensional concept which assesses the extent to which the individual does or does not believe that they have control over the reinforcers that occur relative to their behavior (Rotter, 1966).

The internal dimension of the locus of control concept is conceptualized as a positive indicator of the construct control and is determined by the degree to which individuals perceive the events that happen to them as under their control (Strickland, 1977; Lefcourt, 1976). Research on social actions has found that individuals with an internal locus of control are more likely to take steps to change aversive life situations than those who are externally controlled (Gore & Rotter, 1963; Sanger & Alker, 1972). Gilmore (1978), in reviewing studies on locus of control as a mediator in adolescent adaptive behavior, found that internals when compared to externals function in a more positive, effective and adaptive manner to more environmental situations. The amount of health related information a person seeks is associated with their locus of control beliefs, as internally oriented persons tend to seek and act on information about their

condition which may lead to a more positive level of functioning (Wallston, Maides & Wallston, 1976).

The external dimension of the locus of control concept refers to the degree to which individuals perceive the events that happen to them as dependent on luck, chance, or powerful others (Levenson, 1973). The original conceptualization of external locus of control was to place luck, chance and powerful others all into the same group as forces outside one's control (Rotter, 1966). Levenson (1973) reclassified external locus of control into two types of beliefs, luck or chance and powerful others. Her rationale was that persons who believe that chance governs on unordered environment will behave differently from those who believe that powerful others are in control. Individuals who trust that powerful others determine their destiny will possess a belief in a ordered environment with a potential for control. Externally controlled powerful other oriented persons generally tend to feel a loss of control when placed in a situation where they are surrounded by persons who they perceive as more important or powerful (Strickland, 1978). Individuals who are chance oriented see events happening to them as a result of luck and not as a consequence of anyone's behavior. Levenson's (1973) splitting of the external locus of control concept into the two separate entities of luck/chance and powerful others resulted in the reconceptualization of the concept as multidimensional.

In the theoretical model, powerful others locus of control is depicted as a positive indicator of control as the individual has placed personal control to a powerful other, indicating that some

degree of control had been exerted. Chance locus of control is represented as a negative indicator of control in the theoretical model. A belief by the individual that luck/chance determines the outcomes of an event signifies a lack of control.

The two dichotomies of the locus of control concept have been studied in relationship to the effect locus of control has on stressful stimuli (Averill, 1973; Mandler, 1975; Thompson, 1981). Research indicates that an internal locus of control has stress reducing characteristics while the perceived lack of control, or an external locus of control, often intensifies the stress of an aversive situation (Sells, 1970). According to Mandler (1975), when a person believes that they possess control over a potentially life-threatening event then their level of anxiety will be reduced. Lefcourt (1973) reviewed a number of studies which investigated control and reactions of stress and found that a sense of control whether real or illusionary reduces the level of stress to an aversive situation. This implies that a sense of control over environmental events has a distinct and positive function in maintaining the individual's equilibrium and integrity.

In the theoretical framework, internal locus of control is predicted to have a direct positive impact on the concept of self esteem in Stage II. The degree to which one has good feelings about self is influenced by the belief that one can internally control matters and ultimately affect the demands of their environment (Lewis, 1982).

Powerful others locus of control concept does not have a predicted relationship in the theoretical model with the concept of self

esteem in Stage II. This relationship is denoted as a question mark. Research findings are not available to support a linkage between these two concepts and it is not possible at this time to hypothesize if the relationship is one of a positive or negative nature.

Chance locus of control concept is predicted to have a negative relationship with the Stage II concept self-esteem. When one believes that the outcomes of an event is not influenced by their own behavior but rather depends on an element of luck or chance then feelings of low self esteem generally ensue (Seligman, 1975).

Internal locus of control is predicted to have a direct positive impact on the Stage III concept well being. Zautra & Reich (1980) in their study measuring the frequency and impact of different life events found that persons who are internally controlled report more positive experiences and a higher level of well-being when compared to those who categorize their existence as not under their control. Feelings that one is in control have been shown to increase general well-being, morale and performance (Laborde & Powers, 1985; Langer & Rodin, 1976; Chang, 1979).

Powerful others locus of control concept is predicted to have a positive impact on the Stage III concept well-being. In persons with cancer it has been found that the belief that powerful others (e.g., the physician) could control the cancer was associated significantly with positive well-being (Taylor, et al., 1984). The relinquishing of personal control to powerful others can be viewed as a positive behavior, for it may signal the resolution of the individual to the

realities of a life-threatening situation which necessitates medical intervention.

The concept chance locus of control is hypothesized to have a direct negative relationship with the Stage III concept well-being. Although little research is available on which to base the impact of a chance locus of control on well-being, chance locus of control is predicted to have a negative relationship on well-being. Seligman's (1975) work on learned helplessness, which is viewed as no control or a chance locus of control, has demonstrated that a lack of perceived control over life events results in depression, anxiety and a decreased perception of well-being. In patients with cancer it is conceptually predicted that a chance orientation will negatively influence the level of well-being as the individual believes no one can influence the outcome.

Further examination of the concepts measuring locus of control in relation to their predicted relationship with well-being is particularly pertinent to health behaviors and perceptions. Strickland (1973) suggested that people who believe that reinforcements are contingent on their own behavior are more likely to utilize preventive and ameliorative behaviors to facilitate health and recovery, thereby improving overall well-being. Findings from the longitudinal study which investigated health behaviors in relation to locus of control, revealed that chance oriented persons demonstrate more illness episodes, poorer self-rated health, less self initiated preventive care and a greater dependence on their physician (Seeman & Seeman, 1983).

Social Network

In Stage I of the model the second construct identified is social network, which is defined as a unit of structure that includes all of an individual's social contacts (Gottlieb, 1981). Social networks are categorized according to a number of properties including: size (number of persons with a network), density (extent to which members are in contact with one another), accessibility, stability over time, type of social exchange (advice, information and/or support), strength of social tie, and reciprocity (Mitchell & Trinkett, 1980; Wortman, 1984). Examination of an individual's network reveals a variety of social contacts including relationships with immediate family, work associates, church friends, community organizations, neighbors and close friends. Social network analysis focuses attention on how the properties of a network affect the flow of resources to focal individuals. Network studies have revealed that how individuals seek jobs, obtain social services, and receive help at times of crisis and transition will depend, to a large extent, on the properties of their social network (Liu & Duff, 1972; Granovetter, 1982; Gottlieb & Hall, 1980).

The relationship between social network and health status has been examined by Israel (1982) in an extensive review of the literature. She discovered that a high density, large network with reciprocity and geographic proximity of members, was positively associated with lowered mortality and depression, and an increased level of morale, life satisfaction, and physical health. It was further found that the quality of the interaction (intensity) rather than

the quantity (frequency) was the most significant predictor of health status. These findings indicate that social factors are important in maintaining and altering health states, which supports Cassel's (1974) hypothesis that social contacts can moderate life stress. Quality interactions are one of the identified positive functions of a social network and yet the social environment can also intensify the stress of a life event, as small dense networks may entrap people by providing limited norm expectancies, social contacts, and information (Gordon, et al., 1977).

Cancer patients have reported in some situations that negative aspects of the social network exist as significant social others feel threatened, apprehensive, and uncomfortable when interacting with the individual who has cancer. The conflicts between what to say and how to behave may frequently result in actions that are unintentionally harmful to the already stressed individual. It has been stated that the most devastating stressful events are those in which social ties are lost, disrupted, or diminished (Gore, 1985b). In one study (Peters-Golden, 1982), assessing the social network of breast cancer patients, the majority of individuals felt they were treated differently after people knew they had cancer and were frequently misunderstood, feared, avoided and pitied. Social interactions were viewed as strained with communication falsely cheerful. Gordon, et al. (1977) reported that individuals diagnosed with cancer often cite difficulties in communicating with family and friends about cancer, and that the lack of open communication offers further evidence of rejection at a time when discussion and interaction are especially

important. Wortman & Dunkel-Schetter (1979) found that healthy persons regarded patients who did not want to discuss their illness as better adjusted. Ironically it is in those patients who discuss their feelings with the support of others that fewer problems of adjustment are reported. Due to the fears and misperceptions surrounding a diagnosis of cancer the individual's social network may not only fail to buffer a high level of stress but it may further intensify an already difficult to manage situation (Silver & Wortman, 1981; Revenson, Wollman & Felton, 1983).

Social network is predicted to have a direct positive impact on the Stage II construct self-concept and the Stage III construct adaptation. The hypothesized linkage between social network and self-concept is derived from the work of George Mead (1934) who noted that the self-concept is strongly influenced by social interaction. In order to anticipate the reactions of other people, an individual learns to perceive the world as they do, which serves to guide and stabilize the individual's behavior. According to Mead (1934) there are as many selves as there are social roles within a network. Sullivan (1953) theorizes that the experience of interacting with a social network develops the self-concept. He states that individuals seek to internalize those values that facilitate the achievement of approval from significant others. From Sullivan's work it is apparent that the need to avoid unpleasant responses from others is a major function of the self-concept, and this supports the theoretical model which predicts the direct impact of social network on self-concept.

The predicted relationship between the constructs social network in Stage I and adaptation in Stage III is supported by research studies which have focused on how differences among social networks influence adaptation. One investigation comparing VA mental health patients to VA medical patients revealed that mental health patients have fewer intimate ties, less reciprocity in relationships and a greater unwillingness to utilize social networks in times of crisis (Tolsdorf, 1976). In another study comprised of elderly persons living alone, findings indicated that the number of social contacts each person had was directly related to their feelings of life satisfaction (O'Connor, et al., 1977). Cohen & Sokolovsky (1978) found that schizophrenics are more likely to be rehospitalized if their networks were small, low in density and lacking in reciprocity. In women undergoing major life transitions higher density networks have been associated with less successful adaptation (Hirsch, 1978). The author suggests that networks of high density may place pressure on the individual to maintain existing roles rather than assisting in the transition to new social roles. Investigations into the complex effects of social networks on adaptation remains a central focus of psychosocial research due to the current popular interest in enhancing health outcomes (Cohen & Syme, 1985).

Social support, a Stage I concept, is a positive indicator of the construct social network and was defined as the information a person receives that leads them to believe they are cared for, loved, valued, and belong to a network of mutual obligation (Cobb, 1976). The study of social support is embedded within the power, influence,

and communication channels of the social network (Hall & Wellman, 1985). Support is one property of the construct social network, and is conceptualized according to social exchange theory which is derived from research in sociometry and group relations (Homans, 1961). Social exchange theory suggests a principle of distributive justice or that rewards (love, status, information and service) gained by a person are proportional to investment (Foa, 1971; Wills, 1985). Social support (Wills, 1985) involves the provision of needed resources through interpersonal transactions which offer a reassurance of worth and esteem, advice and information, tangible aid, and social companionship. Weiss (1974) and Kahn & Antonucci (1980) have identified the functional aspects of interpersonal relationship according to the type of support which is offered. The different types of support which are sought by persons include: a perception of attachment, an acknowledgement of personal beliefs, the expression of positive affect, a sense of reliance, the offering of material assistance, and the feeling that one belongs to a network of mutual obligation and reciprocation. The quality of the support gained from the interaction is determined by the adequacy and availability of the resources provided by other persons.

Social support has been hypothesized to play a major role in alleviating the impact of stress on the person and in facilitating adjustment when illness does occur (Gore, 1985a; Bloom, 1982; Dean & Lin, 1977). The idea that social support reduces stress has led to the formulation of a buffering hypothesis, which states that the impact of a high level of stress may be offset by the mobilization

of adequate social supports (Cohen & McKay, 1984; House, 1981). It is suggested that social support acts to reduce the anxiety associated with a stressful event by providing resources which help the individual to redefine the potentially harmful situation in a less stressful way.

When supportive others maintain a mood of calm and reassurance, then the emotional arousal to a stressful event may be kept within manageable limits. By reducing the perception of stress, coping techniques to handle the demands of the situation are enhanced and the motivation to engage in adaptive behaviors is facilitated (DiMatteo & Hays, 1981).

Studies of individuals with various diagnoses of illness have attempted to relate social factors with subsequent outcomes of health. The overall findings suggest that social support is significantly associated with positive improvement from cardiac disease, tuberculosis, psychiatric disorders, and the stress related problems of hypertension and gastrointestinal distress (Imboden, 1972; Hirsch, 1979; Kaplan, Cassel & Gore, 1977). Berkman & Syme (1979) have demonstrated that social support is a significant predictor of survival even when the factors of physical health, health practices and social class are controlled for.

The relationship between social support and the life-threatening illness of cancer has received special attention by investigators due to the intense fears and stigma associated with the disease (DiMatteo & Hays, 1981; Weisman & Worden, 1976). The uncertainties and fears experienced by the person diagnosed with cancer are likely

to result in an increased need for social support (Bloom, 1982). Stronger needs of support may frequently occur as the person experiences the stress of treatment and survival (Wortman, 1984).

The importance of the physician as a source of patient support cannot be overlooked as the patient-physician relationship has shown to be related to positive health outcomes of successful adjustment to illness. In patients with cancer undergoing treatment the provision of information by the physician is seen as a type of support that is of equal value to the emotional support provided by family and friends (Peck & Boland, 1977). It was reported that physicians who provide too little information were never seen as unhelpful. Funch & Mettlin (1982) report that when adequate communication and a warm supportive relationship exist between the patient and physician, then postoperative recovery is significantly enhanced. Bloom (1982a), in a study with cancer patients, found that the physician was ranked higher than family and friends as the most significant provider of social support.

Identifying the type of social support that is sought by the individual during the illness experience relates to the work of French and others (1974) who conceive adaptation as the goodness-of-fit between the characteristics of the person and the properties of his environment. When stressful demands are imposed on a person, assistance is often sought from the social environment in order to meet one's emotional and informational needs. When helpful support is available from family, friends and health care professionals across the illness experience then the specific needs of the individual may

be met, and when the type of support received is relevant to the adaptive task at hand, then subsequent health outcomes are enhanced. During the often complex and stressful phase of treatment the support of the physician may be of importance in helping the individual to seek information and adjust to changes in physical functioning. When social needs are met by the environment then support will act as an effective buffer against stress, and the goodness-of-fit between person and environment will function in a way to promote a positive level of well-being. As in all types of social support it is the perception of support rather than the actual existence of social ties which determine subsequent outcomes of well-being.

Social support is predicted to also have a direct positive impact on the Stage II concept self-esteem. The supportive function of interpersonal relationships is to strengthen a person's own evaluation and self-esteem through the experience of feeling accepted and valued by significant others (Wills, 1985). Self-esteem maintenance is the primary help-seeking behavior of distressed persons within social networks (Wills, 1983). Empirical findings have consistently reported a strong relationship between support from significant others and the enhancement of self-esteem (Greenwald, 1980; Fisher, Nadler & Whitcher-Alagha, 1982).

Social support in this model is also predicted to have a direct positive impact on the Stage III concept well-being. A large number of research studies have shown that persons encountering stressful life events are protected from decreases in physical and emotional well-being when supportive relationships are present (Dean & Lin,

1977; Jamison, Wellisch & Pasnau, 1978; Cassel, 1976; Berkman & Syme, 1979). Turner (1981) evaluated the magnitude and consistency of the relationship between social support and psychological well-being across diverse populations. The findings revealed that social support has significant main effects on well-being that are most important in times of stress, and the flow of causation is from social support to psychological well-being. In women with breast cancer it has been reported that support or lack of support by the patient's husband was one of the most important predictors of an overall "good" level of well-being (Holland & Mastrovito, 1980; Maguire, 1975). Research has consistently found that social support is important to a person's health and well-being (Cohen, 1979; Cobb, 1976; Andrews, Tennant, Hewson & Valliant, 1978).

Stage II of the Model

Self-Concept

The construct in Stage II of the theoretical model is self-concept which is defined as a person's total appraisal of their appearance and background, abilities and resources, and attitudes and feelings which culminate as a directing force in behavior (Labenne & Greene, 1969). Self-concept has been identified as the nucleus of an individual's personality, and plays a key role in determining what will be assimilated from the environment into the overall personality structure (Lecky, 1945). It is assumed that the self-concept is organized into a unified system whose preservation is essential, the major motive of the self-concept is a striving for unity. A threat

to the organization of the self-concept produces anxiety and if the threat cannot be adequately defended against then stress increases and total disorganization will follow (Lecky, 1945; Rogers, 1951).

The views of Syngg & Combs (1949) are similar to those of Lecky (1945), as they conceptualize self-concept as "those parts of the phenomenal field which the individual has differentiated as definite and fairly stable characteristics of self" (p. 112). Self-concept is the core of an organization which contains changeable as well as stable personality characteristics. Allport (1955) notes that the self-concept is comprised of those individual attributes which contribute to a sense of inward unity including: awareness of a bodily self, a perception of continuity over time, awareness of self esteem, a synthesis of inner needs with outer reality, the expansion of awareness and the seeking of challenges.

The construct self-concept in Stage II is predicted to have a direct positive impact on the construct adaptation in Stage III. The relationship between self-concept and adaptation has been well documented in the literature as studies have found a significant association between an individual's concept of self and the person's ability to adjust to a variety of environmental stimuli (Lazarus, 1966; Wells & Marwell, 1976; Rosenberg, 1965; Mages & Mendelsohn, 1979). Self-concept is assumed to influence adaptation through its role as a buffer between internal self and external environment (Ziller, Hagey, Smith & Long, 1969). White (1974) conceptualized adaptive behavior as the movement toward self-actualization through the resistance of external forces. The maintenance of equilibrium

in an unfamiliar situation depends on the strength of the self-concept in preserving a sense of competence and unity. It is hypothesized by Roy (1981) that man adapts to his environment through a mode involving the self-concept. According to Roy, a person's concept of self should be utilized by the health professional in assisting the individual towards adaptation in situations of health and illness. Adaptation in chronic illness refers to the restructuring of the environment through the affirmation of self. Only in accepting the changes in self can life retain its meaning and purpose and transcend the limitations imposed by illness (Feldman, 1974).

The Stage II concept self-esteem is a positive indicator of the construct self-concept and was defined as a positive judgment of worthiness that indicates the extent to which a person believes that they are capable, significant, successful and worthy (Coopersmith, 1967). Self-esteem is one aspect of the construct self-concept and is recognized as a basic need which fulfills its purpose by enhancing one's concept of self. All other needs of the self-concept are subordinate to the need for self-esteem (Epstein, 1973). According to Coopersmith (1967) the evaluation of one's self-worth is based on four factors; the ability to influence and control events (power), the acceptance and affection received from others (significance), the accomplishment of personal goals (competence), and the adherence to one's moral and ethical beliefs (virtue).

High self-esteem is assumed to be related to "healthy behavior" as persons high in their own estimation approach tasks and persons with the expectation that they will be well received (Coopersmith,

1967). In contrast, persons with a low level of self esteem are likely to react passively and less effectively in their environment due to a lack of self-confidence and self-acceptance (Ziller, et al., 1969; Linton & Graham, 1959; Rosenberg, 1965). The negative self-attitude that exists with a lowered sense of self esteem has been associated with high levels of depression, anxiety, and functional impairment (Antonucci & Jackson, 1983). Cohen (1959) related high and low levels of self esteem to the type of defense mechanism that is used in adjusting to changes in the environment. Low esteem persons are found to utilize techniques of projection as they seek out and incorporate negative information from the environment into self. Persons with a high level of self esteem tend to avoid and deny negative environmental stimuli by ego defenses which allow the repression of undesirable or conflicting stimuli. In this way, persons with high esteem can insulate themselves from a constantly changing environment and maintain a sense of self consistency. Weisman & Sobel (1978) found that greater ego strength among a cancer population related significantly to positive psycho-social outcome as evidenced by less disturbance of mood, fewer symptoms and concerns, and better resolution of problems.

Pearlin & associates (1981) observed that life events and chronic role strains frequently create a process of stress which adversely affects positive attitudes of self. Persons under the stressful experience of illness are particularly vulnerable to diminished feelings of self esteem as they often must confront their own lack of success in altering the circumstances or outcome of illness.

A positive relationship has been reported between perceived severity of health problem and lower levels of self-esteem (Antonucci & Jackson, 1983). Functional incapacity or the inability to perform normal activities was the most important element in determining the strength of the relationship that was found between health and self-esteem. The key factors which have been identified to enhance self-esteem in situations of severe and chronic stress are locus of control and significant interactions with others (Crouch & Straub, 1983).

Self-esteem in this model is predicted to have a direct positive impact on the Stage III concept well-being. In a global study on American life, Campbell, et al. (1976) found that the variable of satisfaction with self ("self-esteem") was associated (r=.35) with sense of well-being. He concluded by stating that the domain of self undoubtedly figures as one of the most important indicators in assessing global feelings of well-being. Andrews & Withey (1974) suggest that global feelings of well-being can be predicted by the single measurement of satisfaction with self, as no other domain of life satisfaction contributes as strongly to overall well-being. A review of the literature reveals that high self-esteem is one of the strongest predictors of well-being (Czaja, 1975; Kozma & Stones, 1978; Deiner, 1984; Reid & Zeigler, 1980). Positive self-esteem has been found to contribute directly to a higher level of well-being (Burckhardt, 1985). In persons who are chronically ill, low self-esteem may have more of an impact on well-being than the disease or disability itself (Earle, Perricone, Maultsby, Perricone, et al., 1979).

A level of positive well-being in cancer patients depends to a large extent on the efforts made by the person to restore self esteem (Taylor, 1983). The enhancement of self esteem was found to be accomplished by comparing oneself to others who were less fortunate. The downward comparisons enable one to feel better about self and assisted the individual in returning to a prior level of function.

Stage III of the Model

Adaptation

The third stage of the model, the outcome state of adaptation, was defined as behavioral responses utilized by the individual to maintain integrity and equilibrium in their environment (Roy, 1976; White, 1974). Adaptation is theoretically formulated as something that is done by living systems who are in constant interaction with a changing environment, with the goal being one of survival (Roy, 1981). Adaptation is part of the inherent process of living, it involves the striving toward an acceptable compromise that not only maintains who you are but also allows for growth and autonomy (White, 1974). The state of adaptation refers to a given level of activity, the greater the disequilibrium in one's environment, then the higher the level of adaptive response or activity (Helson, 1964).

Behavioral responses of adaptation to a threatening situation place strong emphasis on effective transactions between the individual and their environment. White (1974) identifies adaptive behavior as creative and reflective actions performed by the individual in response to the information he has obtained from his environment.

The success of the encounter between the individual and environment depends on the maintenance of a balanced internal structure, the freedom of movement or autonomy, and the securing of adequate environmental information. White (1974) states that the human system has a natural tendency to maintain equilibrium by the rebalancing process of adaptation which is developed over a considerable length of time. Modification of adaptive responses occurs as judgments are made by the individual on the basis of the long-term success of their behavior (Roy, 1981).

The outcome of adaptation to a stressful event may be successful or unsuccessful. Successful adaptation emphasizes the ability of the individual to come to terms with the demands of their environment. As stated earlier by Roy (1976), positive adaptation refers to behavioral responses that promote the person's mastery, growth, and survival. Successful adaptation implies the advancement of goals by changing the environment or changing oneself in response to events which threaten self esteem and survival. The antithesis of a successful adaptive response is the adaptational outcome which is seen as ineffective and inappropriate in resolving the demands of the environment. Unsuccessful adaptation is exemplified by the person who experiences long-term disorganization, emotional stress and turmoil to an event which threatens their personal goals. When problem solving and decision making techniques are severely impaired then successful performance to difficult and unusual conditions is often not achieved (White, 1974). The unsuccessful or ineffective response to an environmental event is largely due to three factors; the inability to tolerate

negative experiences, a deficit in resources for dealing with threat, and a consistency to appraise threats as unmanageable (Lazarus & Folkman, 1984). According to Roy (1981), ineffective responses occur when the quantity of internal and external stimuli exceed the ability of the human system to maintain a state of equilibrium.

Adaptive responses to the life-threatening illness of cancer start at the time of diagnosis when the initial stress of the situation serves to create a period of crisis due to the severity of threat to the individual's functioning and well-being. The usual framework of time for adaptation to a crisis is six weeks, in cancer patients this crisis period has been extended due to the intensity of the emotional stress experienced (Lewis, Guttsman & Gutstein, 1979). Rapaport (1962) characterized the state of crisis as a time when problem solving techniques are called forth. For the person with cancer this is the period where some method of adaptation is chosen. If the person's efforts fail to diffuse the severe stress of the situation, then stress and disequilibrium may continue to increase. Krouse (1985) states that in women with gynecological cancer, the year following diagnosis and treatment is most critical for the long-term resolution to the stress of cancer depends on the initial pattern of adaptive responses. It is these first months following the traumatic event that are the most crucial in determining the quality of long-term adaptation (Caplan, 1964).

Well-being is the outcome variable at the conceptual level for the three stage causal model which is illustrated in Figure 1. Well-being is an indicator of the Stage III construct adaptation and

was defined as the subjective perception of life quality (Ruff, 1985). Well-being relates to adaptational outcomes as life quality is determined by how a person responds to the demands of their external environment. The perception of well-being is subjective, as the meaning of the event resides within the experience of the individual. Conceptualization of the term well-being has been based on two major traditions of research: social epidemiological studies focused on mental health, and gerontological investigations into the conditions under which life in later years is characterized as satisfying or unfulfilling.

Sociological studies on well-being have centered upon a mental health orientation in which an individual's well-being is assessed by self-reports of happiness. Happiness has a variety of meanings and has been used at times as a synonym for well-being. Bradburn (1969) provided the most succinct definition for happiness which is taken to be the product of the presence of positive feelings and the absence of negative feelings. Happiness in this sense may be strongly influenced by immediate moods of contentment and elation, and is viewed therefore as a transitory, malleable phenomenon. Measures of happiness are conceptualized in short-term affective assessments of well-being (George, 1981).

Gerontological investigations have contributed to the cognitive understanding of well-being by their historic focus on descriptions of life satisfaction in older people. Life satisfaction refers to the assessment of the overall conditions of life and the attainment of an appropriate number of desires in life (Campbell, et al., 1976;

Stones & Kozma, 1980). Well-being as defined by life satisfaction refers to the mainly cognitive appraisal of the congruence between desired and attained life goals, the referent is life overall, which involves the long-term reflection of one's life (Andrews & Withey, 1976). The study of life satisfaction offers a broad scope for viewing well-being as it is concerned with more than the immediate mental health orientation that is found in research on happiness. The sense of satisfaction with life is strongly influenced by past and current life experiences and is evaluated by the overall pervasive quality of generalized experience. In contrast, measurements of happiness denote a brief time frame, an indication of sensitivity to the short term situation.

Morale has been utilized as an indicator of well-being. Original usage of the term was in social science studies of occupational and military performance which referred to morale as feelings of social cohesion, discipline and confidence (Stones & Kozma, 1980). Gerontological studies have frequently used self-report measures of morale to denote the overall level of psychological well-being in elderly persons (Carstensen & Cone, 1983; George, 1981). Studies utilizing morale as the sole indicator of subjective well-being are not consistently clear in what the term actually indicates. Some investigations view morale as a measure of affective state while others hold the premise that morale is predominantly an assessment of life quality (Lawton, 1972). It also remains unclear if morale is a relatively stable characteristic or a transitory state of well-being.

The terms happiness, life satisfaction and morale have been used interchangeably across research studies in an effort to define the concept of well-being. Even though all terms have been utilized to describe well-being they contrast widely in their focus of meaning, temporal referent, and orientation. For the purposes of terminology in this study, the investigator is defining well-being as the individual's subjective perception of life quality. This definition implies that the person's own perception of the positive and negative aspects of their life as well as their satisfaction with life determines well-being. Well-being is undoubtedly a highly personal experience that is influenced by both the individual's past experience and current expectations.

One of the central issues confronting any investigation into perceived well-being is the relationship between objective and subjective indicators of well-being. This issue can occur at the substantive level where the research question concerns the nature of the interaction between subjective evaluation of objective conditions. The utilization of both methods for studying well-being may be the preferable approach as the inherent limitations of meaning associated with each perspective may be better understood if their interaction is examined (Campbell, et al., 1976).

Governmental agencies frequently assess the objective well-being of their citizens in relation to the conditions of life by counting numbers which produce rates of unemployment, literacy, crime, family income, and educational level. A review of the literature reveals that outside of the federal government, few research studies

investigate well-being solely in terms of objective indicators. Those studies that evaluate only objective well-being are mainly in the health care field where life quality is measured in terms of an individual's abilities to perform their activities of daily living (Karnofsky & Burchenal, 1949; Zubrod, et al., 1960). Another method that is utilized for a broader objective assessment of well-being is the physician's evaluation of the patient's quality of life according to their health activity, family support, and outlook (Spitzer, et al., 1981). Findings are mixed as to whether physician ratings of patient quality of life are valid and reliable indicators of patient well-being (Padilla, et al., 1984; Selby, et al., 1984).

The overwhelming majority of research studies conceptualize well-being according to the subjective perceptions of the individual. Subjective well-being refers to the individual's perception of life quality and is heavily influenced by the person's aspirations, frustrations and attitude (Young & Longman, 1983). In this sense the subjective measurement of well-being is the evaluation of the psychosocial dimensions of the individual's life.

Subjective well-being resides within the experience of the individual, it includes positive and negative elements as well as the measurement of happiness and life satisfaction (Deiner, 1984; Andrews & Withey, 1976). In defining subjective well-being it is evident that some of the same terminology is used in conceptualizing the broader term of well-being. Confusion continues to exist in this field of research concerning definition of terms as consensus has yet to be reached on the distinctions and boundaries among concepts.

The current focus in health care research is increasingly one of combining both objective and subjective indicators of well-being. This approach takes into account that well-being is a broad multidimensional concept that is quantified best by the perceptions of both the patient and health professional. Objective indicators of well-being (sociodemographic variables, medical data, and physician perception) are then correlated with subjective indicators (patient's perception of current health status and overall life satisfaction) to derive a general assessment of patient well-being (Penckhoffer & Holm, 1983; Selby, et al., 1984; Evans, et al., 1985; Danoff, et al., 1983). Pearson correlation coefficients demonstrate that objective and subjective properties of well-being do exist but research findings are not tenable as to the contribution and worth of each variable to the overall evaluation of well-being.

The relationship of well-being to the other concepts in the theoretical model is supported by Pearlin & associates (1981) who report that level of well-being in a stressful life circumstance such as illness is mediated by the influence of three factors; the extent to which people see themselves as in control of their environment, the judgments one makes concerning their self-worth, and the access and use of family, friends and associates. All factors have been identified as affecting well-being as their presence or absence can intensify the person's struggle to re-establish equilibrium with their environment. In women with breast cancer, adjustment to the contingencies of illness involves a psychological component which is dependent on one's interaction with significant others, the re-evaluation

of self, and the sense of mastery one feels they have in the situation (Bloom, 1982). Findings indicate that social support, self-esteem and sense of power are significant predictors of a "good" psychological outcome. Mages, Mendelsohn & Castro (1980) interviewed 100 patients with cancer and found that psychosocial morbidity is reduced in situations where the person is able to accomplish the following adaptive tasks: the maintenance of self-esteem and integrity, the ability to exercise choice whenever possible and retain a sense of self-sufficiency, and the strengthening of support from a social matrix they are firmly embedded in. Burckhardt (1985) found that self-esteem, locus of control, and supportive relationships were major factors in determining perceived well-being in persons with arthritis.

In summary, the six concepts of internal locus of control, powerful others locus of control, chance locus of control, social support, self-esteem, and well-being have been isolated as indicators of the constructs control, social network, self-concept, and adaptation respectively. The concepts are depicted in a three stage causal model with well-being designated as the outcome variable. Studies investigating the determinants of well-being as responses of adaptation to stressful life events provided the support for the theoretical relationships between the constructs and concepts.

The theoretical model of well-being is in the initial stages of development for describing the variables which have been predicted to influence adaptive responses in persons experiencing the stress of a life-threatening illness. It is acknowledged that the theoretical framework may undergo structural changes with future testing as

additional insight is gained into the factors which influence adaptation to life-threatening events.

Hypotheses

To test the proposed theoretical framework, the following hypotheses were developed:

1. Internal locus of control, chance locus of control and social support have a significant relationship to self-esteem.

2. Internal locus of control and social support have a positive relationship to self-esteem. Chance locus of control has a negative relationship to self-esteem.

3. The variables which are related to self-esteem predict a statistically significant amount of variance in self-esteem.

4. Internal locus of control, powerful others locus of control, chance locus of control, social support and self-esteem have a significant relationship to well-being.

5. Internal locus of control, powerful others locus of control, social support and self-esteem have a positive relationship to well-being. Chance locus of control has a negative relationship to well-being.

6. The variables which are related to well-being predict a statistically significant amount of variance in well-being.

Theoretical Assumptions Underlying the Framework

The variables in the theoretical model of well-being are linked by relational statements which are causal in nature. The conditions

of causality are met through the theoretical assumptions of; covariation and time ordering of the variables, and the inclusion of all major variables in the theoretical model (Asher, 1976). It is assumed that individual subject differences will result in covariation of the variables. The next condition of time ordering or temporal asymmetry is satisfied by the staging of the variables in the framework. The last condition is the most problematic in that it mandates the controlling of all extraneous variables which may influence the outcome or dependent variable. The theoretical assumption which satisfies this condition is to establish closure of the model with the independent variables which have the greatest predictive strength, and to assume that the effects from the extraneous and confounding variables is negligible (Asher, 1976; Blalock, 1964, 1969; Hinshaw, 1984). Causal modeling techniques also assume that the described linkages among the variables are recursive, additive and linear.

Additional Variables Measured

Variables outside the causal model were isolated as possible factors that could directly influence the predicted relationships among the concepts. The identified demographic and situational variables were measured in order to determine if the observed correlation between two concepts is spurious (due to the presence of a third variable), or if a causal relationship between the two concepts actually does exist. The demographic and situational variables that were measured objectively included: age, education, income, stage of disease, number of months since diagnosis, treatment to date, and number of

months since last active treatment. The variables of search for meaning and concern of recurrence were also measured due to their hypothesized influence on cancer patient outcomes. The relationship of these variables to the concepts in the causal model will be examined in order to assess the completeness of the delineated causal structure. The demographic and situational variables are not specified in the theoretical model due to a lack of empirical research findings indicating their role in influencing level of adaptation in persons diagnosed with life-threatening illnesses.

Demographic Variables

The demographic characteristics of age, sex, marital status, employment, education, ethnic origin, family income, and geographic location were examined as explanatory factors of well-being due to their suggested influence on adaptation (Appendix F). Concerning the variable of age, the findings are mixed. Researchers have found a positive correlation between age and overall life satisfaction with reports of being very happy decreasing with age (Cantril, 1965; Campbell, et al., 1976), while a meta-analysis of studies conducted prior to 1980 revealed a zero correlation between subjective well-being and age (Stock, Okun, Haring & Witter, 1983). It was important to examine age in this study due to the reported role of previous life history in determining how effectively an individual copes with stressful upheaval (Yasko, 1986). Sex and marital status have been examined in relation to well-being with the findings indicating: a low difference between the sexes in terms of global satisfaction,

and a strong correlation between marriage and well-being (Andrews & Withey, 1976; Gurin, 1960; Campbell, et al., 1976). In one study (Glenn & Weaver, 1979), marriage was found to be the strongest predictor of well-being. The variable of employment is shown to positively influence adjustment to a stressful life event, as involvement with satisfying work tends to elevate an individual's mood and sense of well-being (Catalano & Dooley, 1977; Cobliner, 1977). The effects of education on global satisfaction are not significantly strong, but education may serve as a resource by which alternatives are sought for reducing the stress associated with an event (Glenn & Weaver, 1981). The last two demographic characteristics of ethnic origin and family income were shown to positively impact on well-being as blacks have usually been found to have lower perceptions of well-being than whites, and the higher the amount of tangible resources (income), the greater the sense that life is not limited by financial constraints (Bradburn, 1969; Campbell, et al., 1976; Andrews & Withey, 1976). For persons with cancer, income may play an important role in determining if treatment alternatives can be sought in helping to eradicate the disease. The financial strain associated with cancer may also be reduced if income is of a high enough level to meet the often overwhelming costs incurred with a diagnosis of cancer.

Situational Variables

The situational characteristics, defined in relation to the specifics of the subject's cancer, included: presence of other illness (including prior cancers), number of months since diagnosis, primary

site, stage of disease, treatment to date, number of months since last active treatment, and presence of metastatic disease (Appendix F). It was hypothesized that these variables could influence the relationship observed between two or more of the concepts in the causal model.

If a person is experiencing stress due to other illnesses, then one may expect that a diagnosis of cancer will further accentuate feelings of powerlessness, lowered self-esteem and decreased life quality (Bloom, 1982). Prior diagnosis of cancer may affect adaptational outcomes to a new cancer as strong emotions (positive and negative) regarding the previous experience are often times readily evoked. The remaining variables index the position of the subject relative to the entire cancer experience, including: the number of months since diagnosis, primary site, stage of disease, treatment to date, and presence of metastases. Feelings of personal control, social support, self esteem, and well-being may be affected by where the person is in the cancer experience, for as one moves through the course of illness, specific adjustment difficulties can frequently occur within each phase (Krouse, 1985).

Search for Meaning

> "He who has a why to live can bear with almost any how." Nietzche

The search for meaning involves attempts made by the individual to understand why an event has occurred. According to attribution theory, people will make attributions following a threatful event in order to understand, predict, and control their environment (Kelley,

1967; Wong & Weiner, 1981). By understanding the cause of the event, one may also begin to comprehend the significance and impact of the event in one's life.

Mechanic (1977) reported that in relation to illness, patients actively search for the cause and meaning of their current situation. Successful adaptation is a dynamic response to changing conditions in which the search for meaning affects the ways in which people accommodate to serious and chronic conditions of illness. In persons with cancer, one study reported that in a small sample of 20 subjects, every person sought answers as to why they had gotten cancer (Shanfield, 1980). Each subject, when later questioned, could then relate a reason as to why the cancer had occurred including: heredity, virus, stress, nutrition, and past sins. Cancer patients will frequently search for an external and impersonal cause for their disease as a way of finding meaning and maintaining mastery over an otherwise disordered and chaotic situation (Bard, 1979). Taylor (1983) argues that the process of adaptation to life-threatening events depends in part on a search for meaning in the experience. She found that in 78 women with breast cancer, 95% of the subjects offered some explanation as to why the cancer had occurred. When positive meaning can be interpreted from the cancer experience, the result is significantly better psychological adjustment (Taylor, 1983).

Concern of Recurrence

Concerns of cancer recurrence have been well documented in the literature as a primary concern of all patients who have survived

cancer (Peters-Golden, 1982; Holland, 1980; ONCOPA, 1985). Even when a patient has been told they are cured of cancer they may continue to live with the fear of recurrence. The possibility of recurrence stirs up feelings of physical and psychological inadequacy which means that individuals are living with the constant and imminent threat of dying (Holland, 1980). Even years after the cancer has been cured, survivors report a continued concern with mortality and an enduring sense of vulnerability (Shanfield, 1980; Schmale, et al., 1983). The survivor of cancer may no longer have the high levels of stress that were present at diagnosis and treatment but now there exists the persistent worry of "Did they get it all?".

Concern of recurrence was evaluated in this study due to findings which suggest its strong presence and role in influencing subsequent psychological outcomes in cancer survivors (O'Neill, 1975; Shanfield, 1980). It is foreseen that survivors of cancer will constitute a large proportion of the subjects in the proposed investigation which necessitates the inclusion of concerns of cancer recurrence as a study variable.

Summary

This chapter describes the construct and concept levels of the theoretical framework whose overall perspective is that of adaptation. A three stage theoretical model is proposed which identifies the constructs control, social network, self-concept, and adaptation in a causal sequence. The constructs are represented at the conceptual level by the variables of internal locus of control, powerful others

locus of control, chance locus of control, social support, self-esteem, and well-being. Delineation of the conceptual variables into a causal model specifies that well-being is the outcome measure of adaptation.

The theoretical framework is derived from empirical findings based on a review of the literature. The model is tentative in structure and is a beginning attempt at conceptualizing the variables which determine adaptational outcomes. Definitions and relational statements were established for the constructs and concepts under study and assumptions underlying the theoretical framework were also provided.

CHAPTER III

METHODOLOGY

> Neither the prestige of your subject and the power of your instruments, nor the extent of your learnedness and the precision of your planning can substitute for the originality of your approach and the keenness of your observation.
>
> Hans Selye

This chapter describes the following aspects of the study: the research design of the study, the sample and setting, protection of subject rights, the data collection protocol, and the instruments chosen to reference the concepts under study including reliability and validity assessment. Also addressed in this chapter are the pilot study, the data analysis plan and the limitations of the study.

Research Design

The research method implemented in this study was a nonexperimental correlational design with a causal modeling approach. Causal modeling (Asher, 1976) focuses on questions about possible causes by providing explanations of phenomena (effects) as the result of previous phenomena (causes). The design allows for the specification of relationships among the independent variables and the dependent outcome variable. Each linkage between the variables represents a hypothesis which is tested by estimating the magnitude of the relationship. Causal modeling techniques are utilized when one wants to

determine if a predicted relationship exists between two variables in a situation when the experimental randomization of subjects or the manipulation of independent variables is not feasible.

Correlational data are relevant for causal hypothesis testing as they test the adequacy of the theoretical model by exposing the proposed variable linkages to disconfirmation (Campbell & Stanley, 1963). Correlation does not necessarily imply causation, but the absence of a correlation can rule out a causal hypothesis while a high correlation between variables strengthens the proposed relationship. Asher (1983) states that causality is not observed directly, one makes inferences that a causal relationship exists based on the findings of the data and the assumptions made concerning the variable relationships.

Sample and Setting

The sample for this study consisted of patients who have been diagnosed with malignant melanoma, a rare type of skin cancer. The subjects selected were in three stages of the cancer experience including treatment, metastasis and survival. Specifically, patients with malignant melanoma were included in the study if they were currently undergoing treatment, had metastatic disease, or were disease-free (survivor). No attempt was made to control for age or gender. It was not anticipated that equal numbers of subjects for each of the three cancer stages would be recruited for the study. Additional criteria for the selection of subjects included: be able to speak and understand English, possess sufficient physical stamina, and a

willingness to respond to five questionnaires in an one hour interview. The sample was chosen from a multidisciplinary cancer clinic and an oncologist's office which are both located in the southwestern United States, which has the highest incidence of melanoma in the U.S. All subjects were informed of their diagnosis. The method of selecting the nonrandom sample was classified as nonprobability, convenience sampling (Kerlinger, 1973). There was a lack of agreement as to the subject-variable ratio needed to adequately test a theoretical model. Tabachnick & Fidell (1983) suggest that the minimum number of subjects be four to five times the number of independent variables. In the theoretical model of well-being, five independent variables were under study, which mandates a minimum total sample size of 30 subjects. At least ten subjects per variable or 60 subjects were sought in this study as correlation coefficients are not stable with less than 10 cases per variable (Pedhazur, 1982).

Protection of Subject Rights

Approval from the University of Arizona College of Nursing Ethical Review Committee was obtained prior to the start of data collection (Appendix A). The study was deemed exempt from full University review and required only a disclaimer (Appendix B) for all subjects to read before giving their oral consent to the research project.

Once the subjects were identified, a description of the study was provided to each subject. The risks and benefits of the study were explained and participation for all subjects was voluntary. Each subject was assured anonymity by attaching only an identification

number to all questionnaires and responses to interview questions. Names and addresses of subjects were coded by ID number and kept on a list in the investigator's possession alone. This list was destroyed at the completion of the study. Raw data were scored by code number and will be reported and published as group data only.

Data Collection Protocol

Subjects were identified by the investigator according to the previously set criteria from two outpatient care settings. The potential subjects were then mailed an introductory letter which explained the purpose and significance of the research study, time involved, benefits, cost and risks and the confidentiality of all data obtained (Appendix C). After the letter was received, the investigator phoned each potential subject to see if he/she would be interested in participating in the study. If a person decided to voluntarily participate, an interview was arranged at a time and place convenient for the subject. Each subject, prior to the start of the interview, was given a disclaimer (Appendix B), which further detailed the study. The majority of interviews took place in the subject's home and lasted approximately one hour. All data were collected by the investigator.

The five instruments used in the study were all subjective questionnaires which were given in random order across all the subjects. (A sixth instrument, concern of recurrence, was administered only to persons who were disease-free at the time of the interview.) The random ordering of the instruments served to reduce any bias which could occur if one questionnaire was influencing subsequent responses

on another questionnaire. Subjects could respond to as many of the questions as they liked and could withdraw from the study at any time.

The subject demographic data sheet was completed by the investigator and included information on: number of months since diagnosis, primary cancer site and stage, treatment regimen and presence of metastases. Additional demographic data obtained from the subject included: age, marital status, education, family income and chronic illnesses.

Instruments

The six concepts in the theoretical model of well-being were operationally defined in order to test the proposed causal relationships. Operational definitions were formulated to empirically measure the concepts under study. The six concepts as depicted in the causal model (Figure 1) were operationally defined according to the following:

1. Internal locus of control is the subscale score from the items on the Cancer Health Locus of Control (CHLC) which measures internal locus of control. The CHLC was developed by Dickson, Dodd, Carrieri & Levenson (1985) (Appendix D).
2. Powerful others locus of control is the subscale score from the items on the CHLC which measures powerful others locus of control (Appendix C).
3. Chance locus of control is the subscale score from the items on the CHLC which measures chance locus of control (Appendix D).

4. Social support is the summated averaged scores from the Norbeck Social Support Questionnaire (NSSQ) as measured by the properties of function and network (Appendix D). The scale authors are Norbeck, Lindsey & Carrieri (1981, 1983).
5. Self esteem is the summated score of the revised Coopersmith Self-Esteem Inventory, Adult Form (1968) (Appendix D).
6. Well-being is the summated score of the Index of Well-Being as constructed by Campbell, Converse & Rodgers (1976) (Appendix D).

The operational measures of the concepts are summarized in Table 2. The instruments indexing the concepts under study were described according to their item content and psychometric properties of reliability and validity. Permission was granted by all authors of the instruments for their utilization in this research study (Appendix E). The discussion proceeds according to the causal ordering of the concepts under study.

Internal, Powerful Others and Chance Locus of Control

The three concepts measuring locus of control are determined by the multidimensional Cancer Health Locus of Control instrument which measures an individual's beliefs that the source of reinforcements is internal, a matter of chance, or under the control of powerful others (Dickson, Dodd, Carrieri & Levenson, 1985). The instrument was modified from the Multidimensional Locus of Control (MHLC) scale

Table 2. Operational Measures of the Concepts

Concept	Measure
Internal Locus of Control	CHLC internal subscale score
Powerful Others Locus of Control	CHLC powerful others subscale score
Chance Locus of Control	CHLC chance subscale score
Social Support	NSSQ summated averaged scores 1. Function - aid, affirmation, affection 2. Network - frequency of contact, number and duration of relationships
Self-Esteem	SEI summated score
Well-Being	IWB summated score

developed by Wallston, Wallston & Devellis (1978) to increase the sensitivity of the MHLC to the specific illness situation of cancer. The CHLC is self-administered and consists of 18 items. Six items comprise each of the three subscales which index internal, powerful others and chance locus of control (Appendix D). The items are measured on a six point Likert scale ranging from one (strongly disagree) to six (strongly agree). The range of possible scores on each subscale is six to 36. The higher the score on each subscale, the more a person can be associated with a specified type of personal control. Scoring key for the CHLC is in Appendix D.

The Cancer Health Locus of Control instrument has reliability alpha coefficients (Cronbach, 1951) for the three subscales ranging from .71 to .80 based on a sample of 60 cancer patients receiving radiation therapy (Dodd & Ahmed, 1986). In this study, the reliability alpha was performed with the alpha level set at .70. Estimates of validity were given for the CHLC by correlating its subscales with the subscales of the MHLC in a small sample of patients with cancer (Dickson, et al., 1985). A multitrait-multimethod matrix (Campbell & Fiske, 1959) revealed a moderate degree of construct validity for the CHLC due to its correlation coefficients (.33, .49 and .56) with the MHLC. In addition to examining the same traits with different methods, the matrix also revealed that different traits (the three subscales) measured by the same method had expected correlations that were zero or low negative (-.02 and -.10). Construct validity will be estimated in this study if locus of control (internal, powerful others and chance) predicts in the hypothesized direction to self

esteem and well-being. When theoretically derived hypotheses are empirically tested and hold as predicted, then an estimate of construct validity has been achieved (Zeller & Carmines, 1980).

Social Support

Social support is evaluated by the Norbeck Social Support Questionnaire (NSSQ) which assesses the multiple dimensions of social support including: affection, affirmation, aid, frequency of contact, and duration and number of relationships (Norbeck, et al., 1981). The NSSQ is a self-report questionnaire which consists of the subject rating their sources of support according to functional and network properties (Appendix D). Each rating is based on a five point scale which has been specified according to each question. Because scores on the NSSQ are highly intercorrelated, problems of multicollinearity occur when support sources are entered into the same regression to determine which components are most highly predictive of outcomes (Norbeck, 1987). A solution to this problem was to use averaged scores which was done in this study by taking each component of support, dividing it by the number of items in the component times the number in the network. This created an averaged score for each component or source of support on the NSSQ. Averaged components were then summed, with the higher score indicating the greater amount of perceived support.

Reliability has been assessed by test-retest Pearson correlations for the NSSQ subscales with values ranging from .85 to .92 in a sample of 67 female nursing students (Norbeck, et al., 1981).

Consistency has been established for the scale by item intercorrelations ranging from .54 to .95. The NSSQ has also demonstrated to be very stable over a seven month period and sensitive to changes within the social support networks of a group of 44 graduate students (Norbeck, et al., 1983). For this study, the total scale alpha level will be set at .70. Concurrent validity is reported with moderate correlations (.31 to .56) between the subscales of the NSSQ and another known measure of social support in 42 college students. Predictive validity was tested in a sample of 53 graduate students by assessing the buffering effect of social support on measures of negative mood following life stress. The NSSQ accounted for 20% of the total variance on negative mood which offers evidence for the predicted relationship that was hypothesized (Norbeck, et al., 1983). Construct validity of the instrument was established by statistically significant correlations at the .05 level with the related convergent constructs of affection and inclusion. The unrelated construct of need for control was not significantly correlated with the NSSQ which indicates the instrument's psychometric property of discriminant validity. Construct validity will be estimated in this study if social support predicts in a positive direction to self esteem and well-being.

The NSSQ is currently being utilized in a number of research studies with ill subjects (Norbeck, 1987). Findings will determine if the psychometric properties of the scale hold with subjects who are not healthy, as prior research with the NSSQ has centered mostly on healthy students.

Self-Esteem

Self-esteem is assessed by the Coopersmith Self-Esteem Inventory (SEI) which measures the evaluation a person makes toward self, that is, overall self-esteem is an expression of approval or disapproval, indicating the extent to which a person believes that they are competent, significant, successful, and worthy (Coopersmith, 1967). The Adult Form of the Self-Esteem Inventory is self-administered and consists of 25 items. The items responses are "like me" or "unlike me". Also, by converting the SEI to a linear analogue scale, the sensitivity of the scale to perceptions of self-esteem is greatly enhanced. The scale is scored by measuring a vertical mark placed by the subject across a 10 centimeter (cm) horizontal line anchored by the responses "like me" or "unlike me" (Appendix D). The higher the summated score, the greater the level of self-esteem. The SEI, according to Coopersmith (1967) is composed of four subscales which correspond to four identified sources of self-esteem: general, social, work and family. In this study the SEI will be analyzed as one scale as there is no empirical support for their separate interpretation (Shavelson, Hubner, Stanton, 1976). Scoring key for the SEI is in Appendix D.

The SEI has been utilized in well over 100 studies (Gilberts, 1981). Measures of reliability include internal consistency and stability estimates. In a study of 103 college students, Kuder-Richardson reliability estimates (KR-20s) for the SEI were reported at .72 (Bedeian, Geagud & Zmud, 1977). Test-retest reliabilities were also computed, coefficients were .80 for males and .82 for

females. The alpha level will be set at .70 for the total scale in this study. Validity estimates for the school form of the SEI include concurrent, predictive, construct and multitrait-multimethod validity. Data from a study of 7600 school children demonstrated that the SEI correlates significantly with school achievement and intelligence suggesting concurrent validity (Kokenes, 1978). Predictive validity of the SEI was displayed in the relationship found with reading achievement (r=.55). Construct validity was demonstrated through empirical evidence which substantiated the sources of self-esteem as proposed by the subscales of the SEI. The positive association that has been found between self-esteem and the importance of home and peers as theorized by Coopersmith (1967) provides another piece of evidence supporting the construct validity of the SEI. Greater confidence in the construct validity of the SEI school form was justified with subsequent analyses revealing numerous successful predictions involving the diverse and theoretically related variables of: creativity, willingness to express unpopular opinions, perceived reciprocal liking and popularity, effective communication and family adjustment (Matteson, 1974; Coopersmith, 1967; Simon, 1972). Additional studies have offered evidence for convergent validity with the SEI school form and three self-report measures of esteem and divergent validity with measures of anxiety (Many, 1973; Cowan, Altmann & Pysh, 1978). The majority of research has been done with the child or school form of the SEI. The SEI adult form has revealed test-retest estimates of .82 (N=103) and total score correlations with the school form exceeding .80 for 647 college students (Bedeian, Geagud & Zmud, 1977;

Coopersmith, 1984). Initial convergent validity has been demonstrated by the .60 correlation (N=300) that was found between the SEI adult form and the Rosenberg (1965) self-esteem scale (Coopersmith, 1984). In this study, construct validity will be assessed if self-esteem predicts in the hypothesized direction to well-being.

Well-Being

The outcome concept of the theoretical model is well-being, which is evaluated by the multidimensional Index of Well-Being (Campbell, et al., 1976). According to Campbell & colleagues (1976), the Index of Well-Being (IWB) measures both the cognitive and affective dimensions of general well-being. The IWB is a nine item semantic differential scale which asks the individual to measure their current satisfaction with life (Appendix D). All nine items are based on a seven point interval rating scale with responses ranging from one (completely dissatisfied) to seven (completely satisfied). The IWB is basically computed as the sum of two scores: the score on the single item of overall life satisfaction, and the average score on the eight items which measure general affect. The overall life satisfaction item is then multipled by a factor of 1.1, indicating its greater weight over the items measuring general affect. The higher the summated score, the greater the overall satisfaction with life as currently experienced.

In a sample of 2160 individuals, the standardized alpha and omega coefficients for the Index of Well-Being were calculated at .89 (Campbell, et al., 1976). Item to scale correlations were all

calculated above .67. In this study, the IWB will be tested for reliability with the coefficient alpha set at .70. Concurrent validity has also been estimated by the moderate correlation (r=.35) that was found between well-being and the two theoretically related variables of self-esteem and self-competence (Campbell, et al., 1976). Validity will be estimated for this study by examining the correlations between well-being and personal control, social support, and self-esteem. These three variables are predicted to have a direct positive impact on well-being as illustrated by the causal model in Figure 1.

To enhance reliability, all instruments will be administered under standard, well-controlled, and similar conditions with clearly interpretable items and instructions. Test-retest measures of instrument stability will not be performed in this study due to questionable appropriateness of measuring affective traits which may be susceptible to sudden and significant changes over short periods of time.

Pilot Test of Instruments

Prior to the research study, six patients who had been diagnosed with skin cancer were administered the four instruments (CHLC, NSSQ, SEI, IWB) which had been chosen to measure the concepts under study. The sample consisted of equal number of males and females with the age range from 18 to 65 years. It is anticipated that the demographic characteristics found in the pilot study will be similar to the demographic information found in the larger study.

In the pilot instrument test, subjects were asked to indicate if all items on the instruments were clear and could be understood.

The findings revealed that none of the items required further clarification or explanation. It was made evident that verbal instructions given to the subject by the investigator in which the subject was told to center on their cancer when answering the questions was important, as a few of the subjects found that the items could relate to life events other than cancer. Estimates of reliability and validity would be in jeopardy if subjects responded to scale items inconsistently, due to a lack of focus on which to base their answers.

Search for Meaning Scale

The search for meaning is quantitatively measured by a five item scale which ascertains if the individual has made attempts to understand why the cancer occurred and what its impact has been in their life? (Appendix G). A sixth item is an open ended qualitative question. The scale was developed for initial use in this study due to the initial findings of investigations (Mechanic, 1977; Taylor, 1983) which indicate that the search for meaning may have an impact on subsequent well-being in persons diagnosed with cancer. The Search for Meaning Scale (SMS) is composed of six items which measure the content domain of the individuals search for meaning in the cancer experience. Items for the scale were generated from research findings (Taylor, 1983; Shanfield, 1980) with cancer patients in which thoughts and feelings were discussed concerning a search for meaning in the cancer experience, specifically, why the event occurred and the meaning gained from the experience. Each item has five possible Likert responses which range in value from strongly agree, which is scored

as a five, to strongly disagree, which is scored as a one. The higher the total score, the greater the search for meaning in the cancer experience.

The scale was given to five health care professionals who are experts in the field of oncology to assess content validity. The six questions that were initially evaluated were: 1) I have made attempts to understand why I developed cancer; 2) I believe there is a specific cause as to why the cancer occurred; 3) the diagnosis of cancer has had a strong impact on my life; 4) the cancer experience has made me reappraise my life; 5) I have found that due to the cancer experience my priorities in life have changed; and 6) the quality of my life is better now than before I was diagnosed with cancer. Content validity refers to the extent to which a set of items taps the content of the domain of interest (Zeller & Carmines, 1980). Given evaluation of the scale by the panel of experts, the following changes were made in the items: 1) A greater distinction in content between items one and two resulted in item one being reworded to "I have found myself thinking about why I got cancer"; 2) Item three had the word "strong" deleted from the statement due to the varied connotations the word could imply; and 3) Item six concerning quality of life was changed from a Likert format to an open ended question, in which the subject was asked to describe if their life quality had changed. The resulting five item scale (Appendix G) was examined for reliability and validity and is reported under psychometric properties of the scales in chapter four.

Concern of Recurrence Scale

Concern of recurrence was measured by a three item scale which was developed to assess if an individual was concerned about cancer recurrence (Appendix H). Items for this scale were selected according to research which documented the thoughts of cancer survivors in relation to concerns of tumor recurrence (Holland, 1977, 1980, 1985).

The three scale items have a linear analogue response of "not at all" or "a great deal". The choice of a linear analogue scaling methodology allows for a wide range of variability in subject responses and increases the sensitivity of the scale to pick up fine graduations in an individual's feelings concerning their fears of recurrence. The scale is scored by measuring a vertical mark placed by the subject across a 10 centimeter horizontal line anchored by the responses "not at all" or "a great deal". The higher the total summated score, the greater the concern of cancer recurrence.

The procedure for assessing content validity was the same as for the Search for Meaning Scale described earlier. The Concern of Recurrence Scale was given to five health care professionals who are noted for their expertise in oncology. There were no recommended revisions (Appendix H). Initial estimates of reliability and validity for the scale are presented in chapter four under psychometric properties of the scales.

Data Analysis Plan

Analysis of the data was conducted according to a variety of statistical techniques. Descriptive statistics were utilized to examine the demographic and situational characteristics of the sample. A correlational matrix was generated from the data using Pearson product-moment correlations to assess if multicollinearity existed between the independent variables in the causal model.

Multiple regression analyses were utilized to empirically test the predicted theoretical relationships as well as estimating predictive validity for the theoretical concepts. An expanded empirical model was then generated using stepwise regression techniques in which all independent model variables and significant demographic and situational variables were regressed on the dependent variable. For this study an alpha level of $p \leq .05$ was used in determining statistical significance for all the data, including the betas (B's) and R^2s. The adjusted R^2 value was utilized in regression analysis as the statistic for explained variance since it accounts for the number of subjects and the number of independent variables in the regression equation (Nie, Hull, Jenkins, Steinbrenner & Bent, 1975).

Testing for errors in the statistical and causal assumptions underlying the theoretical model was conducted including: Cronbach's alpha coefficients for estimates of internal consistency on each instrument, assessment of distribution characteristics and examination of the residuals.

Graphic residual analysis to assess for violations in the causal modeling and statistical assumptions was done. Analysis of the residuals can provide for the empirical respecification of a theoretical model with improved predictive and/or explanatory power (Ferketich & Verran, 1984). By identifying additional variables which increase the explained variance while deleting those model variables which are nonsignificant, residual analysis allows the researcher to balance power against parsimony in rebuilding testing models. The results of the analysis are presented in chapter four.

Limitations of the Study

Limitations of the study have been identified in relation to the design, instrumentation, and sampling. Measurement error refers to any deviation from the true value of a variable that arises in the measurement process (Asher, 1983). Measurement error could occur in this study as there is the possibility that an unknown extraneous variable could produce an effect on the outcome variable. To decrease the amount of error from extraneous variables, the research design included: analysis of demographic and situational characteristics, the selection of subjects according to designated criteria, and limiting the population to only one type of cancer. With the causal modeling design the findings of the study were applied back to the theoretical structure and not to the population at large. The primary purpose of this design was to construct and validate a theoretical framework so that multiple operational systems can be tested in the future.

therefore, the causal modeling design is only limited in the sense of direct application to the empirical world.

The reliability and validity of the instruments is of some concern in this study as precise measurements are made only with precision instruments (Kerlinger, 1974). The majority of the instruments have been widely utilized in a number of diverse studies and have high coefficients as reported earlier. Psychometrics for one of the instruments (Cancer Health Locus of Control) were limited due to the newness of its conceptualization. A pilot test of the instruments was conducted for the purpose of testing the scales for clarity and understanding. The instruments were closely examined for their sensitivity to detect fine gradations in subject response, as the more precise the instrument, the more certain the investigator can be that the variance between observed and "true" score is kept to a minimum.

A final limitation of the study concerns selection of the sample. Subjects were chosen according to a convenience sample without random selection, and once selected, the subject was not assigned to a manipulated independent variable group due to study constraints. An assumption that must be made here is that all subjects entered the study as characteristic equals except for those variables that were to be measured. By noting subject demographic and situational variables, analysis of their effects on the concepts under study can later by determined. If the extraneous subject variables influence the research findings as evidenced by residual analysis, then they

must be controlled for in future testing of the model or considered important model variables.

Summary

This chapter discussed the methodology. The study utilized a nonexperimental, correlational design with a causal modeling approach. The instruments chosen to index the concepts under study were specified including their psychometric properties. The chapter also provided a description of the sample and setting, protection of subject rights, the data collection protocol, the data analysis techniques, and limitations of the study.

CHAPTER IV

RESULTS OF DATA ANALYSIS

When you are out to describe the truth,
leave the elegance to the tailor.

Albert Einstein

The purpose of this study was to test a theoretical model which explains subjective well-being in individuals diagnosed with cancer. Results of the data analyses to test the theoretical model are presented in this chapter.

Results of the data analysis include the following: 1) description of the sample; 2) psychometric properties of the scales; 3) relationships among the variables; 4) test of the theoretical model through regression analysis; 5) residual analysis to test for violations of the statistical assumptions underlying the regression analysis and the causal modeling assumptions.

Description of the Sample

The sample for this study consisted of 75 subjects who had been diagnosed with malignant melanoma. The subjects were not hospitalized and met with the investigator in their home or a convenient location. Three subjects received the questionnaires by mail due to time constraints or geographical location. With these subjects a follow-up phone call was made to see if any questions had arisen concerning the questionnaires or study. Demographic data were obtained

on all subjects agreeing to participate in the study. Fifteen potential subjects refused to participate, reasons given included: "I don't want to talk about it", "I'm too sick now", "I wasn't sick enough", "It was too long ago", "I'm not interested", and "This is a bad time for me". Sixteen potential subjects were recently deceased with 12 of the deaths attributed to metastatic malignant melanoma.

In this investigation, missing data on individual scale items totaled five questions for the entire sample. When a response was found to be missing, then that subject's subscale or scale mean was computed and substituted. It was assumed that mean substitution for this very small amount of missing data would not significantly alter the data analysis results.

Demographic data on the 75 subjects revealed that the mean age for subjects was 52.5 years with an age range from 21 to 83 (Table 3). Seven (9%) subjects were under age 30, 17 (23%) were between 30 and 40, nine (12%) were between 41 and 50, 12 (16%) were between 51 and 60, 23 (31%) were between 61 and 70, and seven (9%) were above age 70.

Thirty eight (51%) of the subjects were males. The male to female ratio of 1:1 reflected nationwide malignant melanoma morbidity statistics. The distribution of ethnic origin was also very similar to known melanoma patterns with 73 (98%) Caucasian subjects, one (1%) Hispanic subject, and one (1%) Negro subject. Data on geographic location indicated that 54 (72%) subjects were local residents with 21 (28%) subjects residing elsewhere in the state.

Table 3. Demographic Data on the Sample: Age (N=75)

Years of Age	N	% of Sample
Under 30	7	9
30-40	17	23
41-50	9	12
51-60	12	16
61-70	23	31
Above 70	7	9
TOTAL	75	100%

Mean = 52.5

S.D. = 16.1

Median = 56.0

Mode = 40.0

The majority of the sample (52) were married; eight (11%) were divorced, six (8%) were widowed, and nine (12%) were single (Table 4). In terms of employment, 37 (49%) subjects were employed or going to school full time, seven (9%) were employed part time, five (7%) were not employed, and 26 (35%) were retired (Table 5).

The subjects were well educated. Twenty nine (39%) subjects had some college education with 35 (42%) having a graduate or professional degree. Only three (4%) did not have a high school degree (Table 6). The mean gross family income for the sample was $30,000-$39,999 (Table 7) with income levels ranging from below $10,000 (11%) to above $60,000 (27%). Forty-nine (65%) subjects did not indicate they had any chronic illnesses. One to three chronic illnesses were listed by 26 (35%) subjects with neurological, cardiovascular, and respiratory chronic illnesses most frequently cited.

Data on primary cancer site (Table 8) revealed that 23 (31%) had melanoma on the back or shoulder, 24 (32%) were located on the leg or arm, 15 (20%) were found on the head or neck, nine (12%) were discovered on the abdomen or chest, and four (5%) were located first in the lymph nodes with primary site unknown. For the majority of subjects (51) the diagnosis of malignant melanoma was their first diagnosis of cancer. Nineteen (19%) had been diagnosed previously with skin cancer only. The number of months since diagnosis (Table 9) ranged from under 12 months (4, 5%) to over 108 months (15, 20%). The mean number of months since diagnosis was 81 months with 44 (59%) subjects having had their diagnosis greater than five years. Three phases of the cancer experience were represented in the sample

Table 4. Demographic Data on the Sample: Marital Status (N=75)

Marital Status	N	% of Sample
Married	52	69
Divorced	8	11
Widowed	6	8
Single	9	12
TOTAL	75	100%

Table 5. Demographic Data on the Sample: Employment (N=75)

Employed/School	N	% of Sample
Full Time	37	49
Part Time	7	9
Not Working	5	7
Retired	26	35
TOTAL	75	100%

Table 6. Demographic Data on the Sample: Education (N=75)

Number of Years of Education (12 Years=High School)	N	% of Sample
Less Than 12 Years	3	4
12 Years	20	27
13-15 Years	20	27
16 Years	9	12
17-19 Years	17	23
Above 19 Years	6	7
TOTAL	75	100%

Mean = 15.0

S.D. = 3.2

Median = 14.0

Mode = 12.0

Table 7. Demographic Data on the Sample: Income (N=75)

Gross Family Income	N	% of Sample
Below $10,000	8	11
$10,000-$19,999	14	18
$20,000-$29,999	14	18
$30,000-$39,999	8	11
$40,000-$49,999	6	8
$50,000-$59,999	5	7
$60,000 and Above	20	27
TOTAL	75	100%

Table 8. Demographic Data on the Sample: Primary Cancer Site (N=75)

Primary Cancer Site	N	% of Sample
Back or Shoulder	23	31
Leg or Arm	24	32
Head or Neck	15	20
Abdomen or Chest	9	12
Lymph Nodes (Primary Unknown)	4	5
TOTAL	75	100%

Table 9. Demographic Data on the Sample: Number of Months Since Diagnosis (N=75)

Number of Months Since Diagnosis	N	% of Sample
Under 12 Months	4	5
12-24 Months	7	10
25-36 Months	10	13
37-60 Months	10	13
61-84 Months	16	22
85-108 Months	13	17
Over 108 Months	15	20
TOTAL	75	100%

Mean = 80.5

S.D. = 68.2

Median = 72.0

Mode = 36.0

(Table 10). Twenty one (28%) subjects were in the treatment phase, 19 (25%) had metastatic disease, and 35 (47%) were survivors.

The types of cancer treatment in the sample were: 24 (32%) had wide excision of the mole only, 19 (25%) had wide excision with BCG treatments, 13 (17%) had wide excision, BCG and Vitamin A therapy, nine (12%) had wide excision and BCG with radiation, chemotherapy, or further surgery, and 10 (14%) due to metastasis had over five different treatments (Table 11). The mean number of months since last active treatment (Table 12) was 57 months with a range from under 12 months (13, 17%) to over 108 months (9, 12%). Twenty-nine of subjects had not had active treatment for over five years.

Psychometric Properties of the Scales

Certain assumptions are made by the investigator who utilizes a causal modeling research design in order to test the proposed theoretical framework. A model is robust to the degree that its parametric estimates are unaffected by violations of the assumptions that one must make in order to use regression statistics (Bohrnstedt & Carter, 1971). One of the causal modeling assumptions involves the measurement of concepts without error. This assumption infers that the instruments were tested and held their estimates of reliability and validity. The degree of measurement error is directly related to the accuracy of the predicted relationships between the variables.

Table 10. Demographic Data on the Sample: Cancer Phase (N=75)

Cancer Phase	N	% of Sample
Treatment	21	28
Metastasis	19	25
Survivor	35	47
TOTAL	75	100%

Table 11. Demographic Data on the Sample: Cancer Treatment (N=75)

Cancer Treatment	N	% of Sample
Wide Excision Only	24	32
Excision and BCG	19	25
Excision, BCG and Vitamin A	13	17
Excision, BCG, Radiation, Chemotherapy or Surgery	9	12
Over 5 Different Treatments	10	14
TOTAL	75	100%

Table 12. Demographic Data on the Sample: Number of Months Since Last Active Treatment (N=75)

Number of Months Since Last Active Treatment	N	% of Sample
Under 12 Months	13	17
12-24 Months	11	15
25-36 Months	6	9
37-60 Months	16	21
61-84 Months	10	13
85-108 Months	10	13
Over 108 Months	9	12
TOTAL	75	100%

Mean = 57.0

S.D. = 47.2

Median = 48.0

Mode = 72.0

Reliability Assessment

Internal consistency for the total instrument and each subscale was calculated by using Cronbach's (1951) alpha. Cronbach's alpha (α) is a conservative estimate of reliability based on the assumption that each scale item is a parallel item measuring one concept. This assumption is violated when the items are unequally measuring a concept or when the items are measuring more than one concept. When this situation occurs then the true reliability is understated by the alpha coefficient (Armor, 1974).

Table 13 presents the estimates of internal consistency for the eight instruments which were used in this study. A standardized alpha level of .70 (Nunnally, 1978) was set as the minimum criterion value for an acceptable estimate of internal consistency for the study instruments. Two instruments failed to meet this criteria. One is the Cancer Health Locus of Control (CHLC), powerful others subscale which has a reliability estimate of $\alpha = .5750$. Item analysis, using the Pearson correlation coefficient, revealed that for the total subscale three of the six items did not have inter-item correlation values within an acceptable range of $r \leq .80$ (Gordon, 1968; Kerlinger, 1973). The item-subscale criterion level of $r \geq .50$ and $r \leq .80$ (Gordon, 1968) was also not met by any of the six subscale items. Internal consistency estimates for a second scale, the CHLC Chance subscale, were even lower than that of the powerful others CHLC subscale. The standardized alpha coefficient for the chance subscale was $\alpha = .3703$. Item analysis showed but one item to item correlation that met the criteria level with no item to subscale correlations meeting the

Table 13. Calculated Reliability Estimates, Cronbach's Coefficient Alpha for Scales and Subscales. (N=75)

Scale	Number of Items	Unstandardized Alpha	Standardized Alpha
Cancer Health Locus of Control (CHLC) Internal Subscale	6	.6786	.7127
Cancer Health Locus of Control (CHLC) Powerful Others Subscale	6	.5736	.5750
Cancer Health Locus of Control (CHLC) Chance Subscale	6	.3707	.3703
Norbeck Social Support Questionnaire (NSSQ)	6	.7515	.7559
Self-Esteem Inventory (SEI)	25	.8193	.8201
Index of Well-Being (IWB)	9	.9166	.9166
Search for Meaning Scale (SMS)	5	.7907	.7953
Concern of Recurrence Scale	3	.7229	.7263

criterion. Internal consistency measures for the CHLC powerful others and chance subscales did not meet minimum criterion levels. Neither subscale could be viewed as an accurate measure of the locus of control concepts for the subjects in this study. The data for these concepts were deleted from the study and no further analysis was done.

The internal CHLC subscale did meet the criterion level for internal consistency (α=.71) but item analysis revealed that one item did not meet the correlation criteria for item to item or item to subscale. Deletion of one item from the CHLC internal subscale in accordance with previously set criteria regarding item to item and item to scale correlations, resulted in a new alpha coefficient of α=.7620. After validity assessment using factor analysis the one item was deleted from the internal CHLC scale with subsequent analysis now referring to a five item CHLC internal subscale.

As shown in Table 13, reliability estimates on the remaining five instruments demonstrate internal consistency above the .70 level as recommended by Nunnally (1978).

Validity Assessment

"Factor analysis is perhaps the most powerful method of construct validation" (Kerlinger, 1973, p. 468). Factor analysis is a statistical technique used to represent a set of measured variables with a smaller set of hypothetical variables or factors. These techniques produce a linear combination of factors (or components) which explain the variance contained in the intercorrelation matrix. To

estimate construct validity for the eight instruments in this study, two methods were used, confirmatory factor analysis and predictive model testing. The confirmatory factor analysis is presented and discussed in this section with results of the predictive modeling following later in this chapter under test of the theoretical model.

Confirmatory analysis tests the predicted theoretical model by determining if the item and scale relationships hold as predicted, with this type of factor analysis the number of factors to be extracted is specified. All study instruments were factor analyzed using confirmatory principal components analysis with varimax (orthogonal) rotation in order to estimate their construct validity. Principal components analysis (PCA) redescribes the variable interrelationships, transforming them into basic components (Zeller & Carmines, 1980). The PCA model utilizes the unities in the main diagonal of the intercorrelation matrix and further analyzes only the first few components extracted or those which account for the greatest variance in the variables. Varimax rotation enhances variable interpretation by rotating the factor axis so that factor loadings are as high and as low as possible on any one factor (Zeller & Carmines, 1980).

The criterion levels (Nunnally, 1978; Zeller & Carmines, 1980) to estimate construct validity with factor analysis include: 1) Principal component factors should have an eigenvalue of 1.00 or greater prior to subsequent rotation; 2) The first factor extracted should explain at least 40% of the total variance in the scale if the scale is unidimensional; 3) Items should load onto the first factor at .40 or greater; 4) A factor is deleted from further analysis if no item

loads greater than .30 on it; and 5) The items should load on more than one factor than on subsequent factors, with a loading difference of .20.

Valid interpretation of factor analysis requires at least 10 subjects per item per scale (Nunnally, 1978). This criterion level was met for all the scales in the study except for the Index of Well-Being (IWB) and the Self-Esteem Inventory (SEI). The IWB and the SEI for this reason will be interpreted with caution. Estimates of construct validity using principal components factor analysis will now be discussed for each scale.

Cancer Health Locus of Control (CHLC) Internal Subscale

Confirmatory factor analysis for the CHLC internal subscale (Table 14) revealed that the scale was unidimensional in nature as all six items loaded onto one factor. The one factor which emerged from the analysis had an eigenvalue greater than one and explained 43% of the variance. The range of factor loadings for the items was from .22 - .79. Five of the six items met the criterion level of factor coefficients at .50 or greater. One item on this subscale (number eight) which did not meet the criteria for reliability as discussed earlier, had an expected loading which was quite low at .22. This low factor loading further substantiated the removal of the item from the scale. Factor analysis did establish construct validity for this scale given the removal of one item which failed to meet the criteria for reliability and validity.

Table 14. Confirmatory Factor Analysis of the Cancer Health Locus of Control Internal Subscale (N=75)

Item Number (N=6)	Factor Loadings Factor 1
1	.68*
6	.69*
8	.22
12	.75*
13	.65*
17	.79*
Eigenvalue ($\geq$ 1.00)	2.60
Explained Variance (%)	43.40
Cumulative Variance (%)	43.40

* Factor Loading $\geq$ .40

Norbeck Social Support
Questionnaire (NSSQ)

Confirmatory factor analysis for the Norbeck Social Support Questionnaire (Table 15) revealed that the six scale items did load on three factors as tentatively predicted by its author (Norbeck, 1987). But due to the new scoring method for the NSSQ when using averaged scores, it hasn't been firmly established as to what items load on which factors. Four items loaded on the first factor which explained 59.5% of the variance, while the remaining two items loaded on factors two and three. Factor three did not meet the criteria regarding an eigenvalue of 1.00 or greater. Cumulative variance for the three factors was 93.1%.

Self-Esteem Inventory (SEI)

The Self-Esteem Inventory is theoretically conceptualized according to four sources of self-esteem: general, work, social and family. Confirmatory factor analysis resulted in four factors which revealed the multidimensions of the scale (Table 16). Seven of the 25 items loaded on factor one with an explained variance of 23%, four items loaded on factor two with an explained variance of 9.6%, two items loaded on factor three with an explained variance of 8.1%, and three items loaded on factor four with an explained variance of 7.1%. Nine items did not load on any of the four factors. The items generally loaded onto the four factors as anticipated according to the source of self-esteem indexed. Construct validity for the Self-Esteem Inventory was not established using factor analysis. The first factor extracted explained less than 40% of the variance. The recommended

Table 15. Confirmatory Factor Analysis of the Norbeck Social Support Questionnaire (N=75)

Item Number (N=6)	Factor Loadings		
	Factor 1	Factor 2	Factor 3
Affection	.98*	.06	.01
Affirmation	.97*	.10	-.04
Aid	.86*	-.16	.12
Frequency of Contact	-.07	.16	.98*
Number of Relationships	.95*	.05	-.03
Duration of Relationships	.02	.98*	.15
Eigenvalue ($\geq$ 1.00)	3.56	1.33	(.68)
Explained Variance (%)	59.50	22.3	11.40
Cumulative Variance (%)	59.50	81.80	93.10

* Factor Loading $\geq$ .40

$\geq$ .20 Difference in Items Loading on one Factor

Table 16. Confirmatory Factor Analysis of the Self Esteem Inventory (N=75)

Item Number (N=25)	Factor Loadings			
	Factor 1	Factor 2	Factor 3	Factor 4
1	.14	-.06	-.03	.67*
2	.34	.09	-.45	-.24
3	.61*	.21	-.10	.00
4	-.03	.27	.16	.77*
5	.06	.55*	.13	.07
6	.19	.37	.00	.29
7	.24	.13	-.04	.46*
8	.22	.67*	.05	-.10
9	.13	.10	.80*	.13
10	.15	.20	-.46	.26
11	.41	.04	.43	-.12
12	.77*	-.14	.14	-.05
13	.72*	.02	.18	.18
14	-.08	.76*	-.18	.09
15	.53	.30	.16	.44
16	.60*	.11	-.06	.07
17	.68*	.00	-.16	.28
18	.00	.46	.30	-.08
19	.09	.50*	-.11	.09
20	.23	.11	.78*	.15

Table 16. Continued

Item Number (N=25)	Factor Loadings			
	Factor 1	Factor 2	Factor 3	Factor 4
21	.49	.44	-.01	-.09
22	.55	-.04	.48	-.21
23	.70*	.30	.18	.34
24	.69*	.29	.26	-.04
25	.12	.11	-.01	-.42
Eigenvalue (≥ 1.00)	5.74	2.40	2.03	1.77
Explained Variance (%)	23.00	9.60	8.10	7.10
Cumulative Variance (%)	23.00	32.6	40.70	47.80

* Factor Loading ≥ .40

≥ .20 Difference in Items Loading on one Factor

number of subjects (N=10) per scale item was not met which further limits the scales' interpretation (Nunnally, 1978).

Index of Well-Being (IWB)

Factor analysis of the Index of Well-Being revealed that eight of the nine items loaded on one factor with an explained variance of 60.8% (Table 17). The range of loadings for items using confirmatory factor analysis was .30-.80. The first factor explained 60.8% of the variance. Item nine did not meet the criteria for factor loading. The criteria for subject number (N=10) were not accomplished in relation to scale testing with this nine item scale.

Search for Meaning (SMS)
and Concern of Recurrence Scales

Construct validity using confirmatory factor analysis was estimated for the Search for Meaning Scale (Table 18). Results demonstrated the loading of all items onto one factor with values ranging from .42-.92. The total explained variance was 57.4%. The Concern of Recurrence Scale (Table 19) had three items which all loaded on one factor with 64.9% of the variance explained. Factor loadings were .85, .84 and .72 respectively. Both scales are "factorially pure" (Kerlinger, 1973) as the instruments are measuring only one factor. Considering the immaturity of these scales, they both functioned quite well in terms of reliability (α's = .73, .80) and construct validity estimates.

Table 17. Confirmatory Factor Analysis of the Index of Well-Being (N=75)

Item Number (N=9)	Factor Loadings Factor 1
1	.59*
2	.74*
3	.51*
4	.58*
5	.80*
6	.71*
7	.69*
8	.55*
9	.30
Eigenvalue (≥ 1.00)	5.47
Explained Variance (%)	60.80
Cumulative Variance (%)	60.80

* Factor Loading ≥ .40

Table 18.. Confirmatory Analysis of the Search for Meaning Scale (N=75)

Item Number (N=5)	Factor Loadings
	Factor 1*
1	.92
2	.88
3	.87
4	.58
5	.42
Eigenvalue (≥ 1.00)	2.86
Explained Variance (%)	57.40
Cumulative Variance (%)	57.40

* All items loaded on one factor

Table 19. . Confirmatory Factor Analysis of the Concern of Recurrence Scale (N=75)

Item Number (N=3)	Factor Loading
	Factor 1*
1	.85
2	.84
3	.72
Eigenvalue (≥ 1.00)	1.95
Explained Variance (%)	64.90
Cumulative Variance (%)	64.90

* All items loaded on one factor

Summary of the Psychometric Assessment of the Scales

Six of the eight scales utilized in this study met the internal consistency criterion of =.70 or greater as an estimate of reliability. Two scales, the CHLC powerful others subscale and the CHLC chance subscale were shown to be lacking adequate internal consistency reliability estimates. Data from these two scales were deleted from the study without further analysis. Item analysis on the CHLC internal subscale revealed that one item should be deleted according to previously set criteria. Factor analysis substantiated this finding and as a result the CHLC internal subscale was composed of five items.

Construct validity of the scales was evaluated according to confirmatory factor analysis. Five scales were determined to have strong evidence of construct validity: CHLC internal subscale, NSSQ, IWB, SMS and Concern of Recurrence scale. Factor analysis of the SEI failed to establish construct validity for the scale. The lack of an adequate sample size may have influenced the results of the factor analysis.

Test of the Theoretical Model of Well-Being

The primary purpose of this study was to test a theoretical model which predicts the relationship of the variables internal locus of control, social support and self-esteem to the dependent variable well-being. The six hypotheses relate to the test of the theoretical model. The hypotheses, as stated earlier in chapter two, were:

1. Internal locus of control, chance locus of control and social support have a significant relationship to self-esteem.

2. Internal locus of control and social support have a positive relationship to self-esteem. Chance locus of control has a negative relationship to self-esteem.

3. The variables which are related to self-esteem predict a statistically significant amount of variance in self-esteem.

4. Internal locus of control, powerful others locus of control, chance locus of control, social support and self-esteem have a significant relationship to well-being.

5. Internal locus of control, powerful others locus of control, social support and self-esteem have a positive relationship to well-being. Chance locus of control has a negative relationship to well-being.

6. The variables which are related to well-being predict a statistically significant amount of variance in well-being.

Prior reliability and validity assessment revealed that the powerful others locus of control and chance locus of control subscales were inadequate estimates of the concepts under study. The two concepts were deleted from the theoretical model prior to testing. Regression analysis was utilized to examine the strength of the predicted relationships among the variables of internal locus of control, social support, self-esteem and well-being in the theoretical model.

An expanded empirical model which includes the demographic and situational variables and the variables of search for meaning

and concern of recurrence was tested through examination of the residuals.

Multicollinearity

Multicollinearity refers to the phenomenon that occurs when intercorrelations exist between the independent variables under study. It has been generally agreed upon that the higher the degree of multicollinearity between variables, then the greater the redundancy of measurement made (Kerlinger & Pedhazur, 1973). High multicollinearity leads to inaccurate estimates of the regression statistics including the standard error of the regression coefficient. A minimal value for a "high" correlation between two independent variables is from .65 to .70 (Gordon, 1958; Kerlinger & Pedhazur, 1973).

Prior to multiple regression analysis, correlation matrices demonstrating the relationships between the study variables were evaluated for multicollinearity. Table 20 shows the Pearson correlation coefficients for the independent variables in the theoretical model. Table 21 depicts the correlation values that were generated to assess multicollinearity among the model variables and demographic/situational variables which entered into the regression equation. There was no evidence of multicollinearity among the independent variables at any stage of the theoretical model, all correlation coefficients were below the criterion level of $r \geq .65$.

Theoretical Model

Multivariate correlational and regression analysis statistics were utilized to examine the proposed theoretical model. Regression

Table 20 Pearson Correlation Coefficients Between Variables in the Theoretical Model of Well-Being (N=75)

Variables	Internal Locus of Control	Social Support	Self-Esteem	Well-Being
Internal Locus of Control	1.000	-.02	-.07	.23*
Social Support		1.000	.26*	.20
Self-Esteem			1.000	.61**
Well-Being				1.000

* Significant at $p \leq .05$

** Significant at $p \leq .001$

Table 21. Pearson Correlation Coefficients Between Variables in the Theoretical Model of Well-Being and Selected Demographic and Situational Variables (N=75)

	Demographic and Situational Variables								
Variables	Age	Sex	Marital Status	Education	Income	Employment	Number Other Illnesses	Search for Meaning	Concern of Recurrence
Internal Locus of Control	-.12	.05	.04	-.19	.12	.23*	-.25*	.15	-.04
Social Support	.01	.22	.05	.25*	.31**	-.06	-.15	.14	-.05
Self-Esteem	.02	.00	.08	.26**	.27**	.21	-.20	.03	.03
Well-Being	-.16	.05	.04	.30**	.43***	.34**	-.34**	.13	.12

* Significant at $p \leq .05$

** Significant at $p \leq .01$

*** Significant at $p \leq .001$

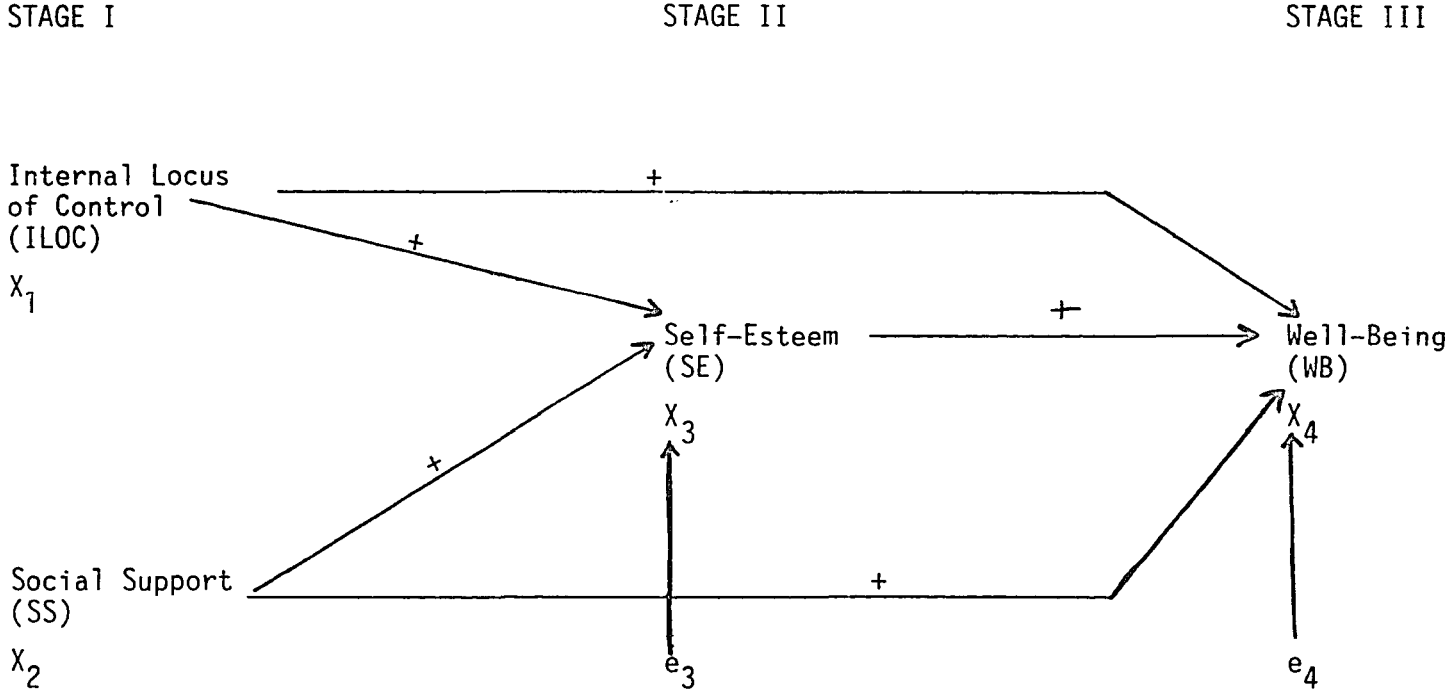
coefficients were computed for each of the independent variables in the theoretical model in order to assess the direction and magnitude of the relationships predicted. Standardized regression coefficients (B's) were used because they are scale-free and can be compared across different variables. Since B's are population specific, the results of the regression analysis can only be generalized to the population used in this study. A measure of explained variance is the adjusted R^2 value which adjusts for the number of independent variables in the regression equation and for the number of study subjects. The adjusted R^2 is an estimate which is more conservative than R^2 (Nie, et al., 1975). The regression coefficients (B's) and explained variance measures (adjusted R^2) were set at a significant criterion level of $p < .05$. The operational level of the theoretical model is depicted in Figure 2.

Two multiple regression equations were derived from the theoretical model. The equations empirically tested were:

$$X_3 = B_1 X_1 + B_2 X_2 + e_3 \qquad (3.1)$$

$$X_4 = B_1 X_1 + B_2 X_2 + B_3 X_3 + e_4 \qquad (3.2)$$

In the first equation (3.1) the Stage I variables of internal locus of control and social support were regressed on the Stage II variable self-esteem (Figure 3). Forced entry of the variables into the regression equation was done in order to empirically test the predicted theoretical model. Figure 3 shows the results of the analysis. The variable of social support had a direct positive relationship with the variable self-esteem (B = .27). Six percent of the variance in

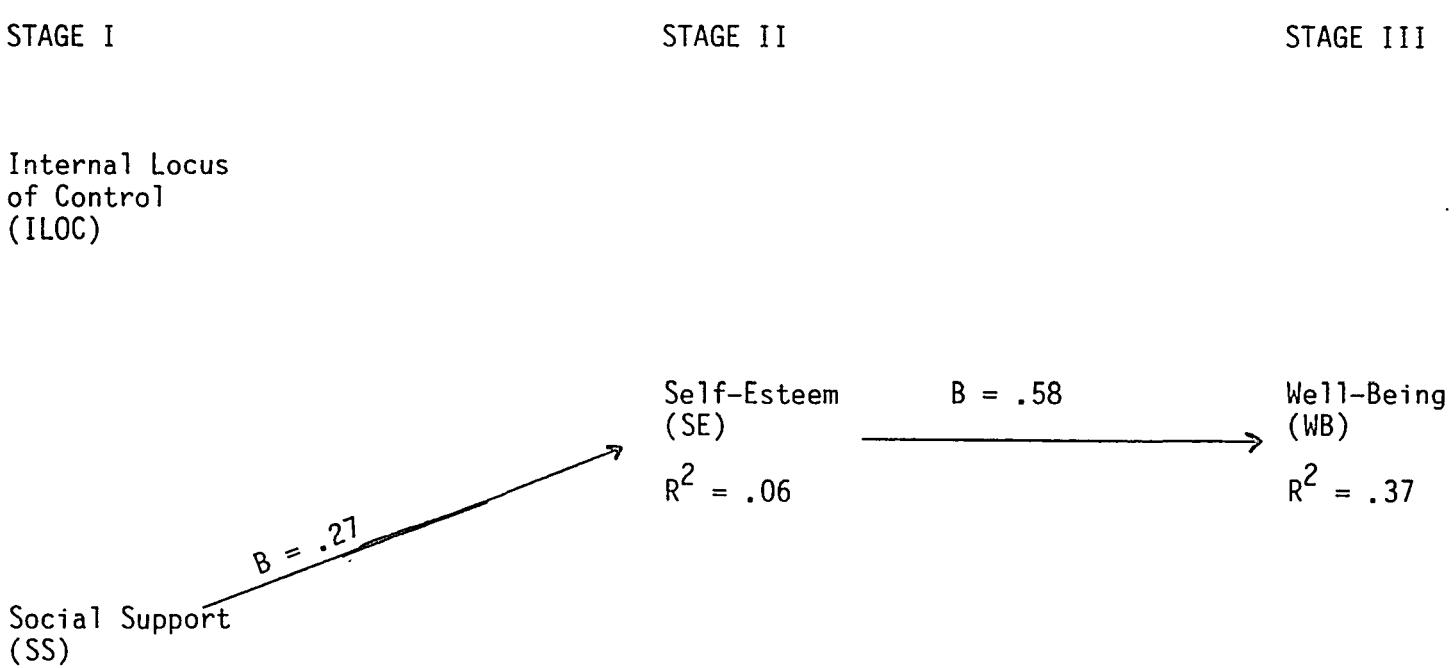


Structural Equations for the Theoretical Model:

$$X_3 = B_1 X_1 + B_2 X_2 + e$$

$$X_4 = B_1 X_1 + B_2 X_2 + B_3 X_3 + e$$

Figure 2. Operational Level of the Theoretical Model: Subjective Well-being in Patients Diagnosed With Malignant Melanoma



Structural Equations:

$SE = .27\ (SS) + e_3$

$WB = .58\ (SE) + e_4$

Figure 3. Empirical Model: Subjective Well-Being in Patients Diagnosed with Malignant Melanoma

self-esteem was explained by social support (R^2 = .06). The relationship was significant at the .02 level. A statistically significant relationship was not found between the variable internal locus of control with the variable self-esteem.

In the second equation (3.2), the variables of internal locus of control and social support in Stage I, and the variable self-esteem in Stage II were regressed onto well-being in Stage III (Figure 3). Forced entry of the variables revealed that self-esteem had a significantly strong ($p \leq .0000$) direct-positive relationship with well-being, accounting for 37% of the variance in well-being ($B = .58$, $R^2 = .37$). The variables in Stage I, internal locus of control and social support, were found not to have a significant relationship with well-being in Stage III.

In summary, hypothesis one was partially supported by the significant relationship between social support and self-esteem; hypothesis two was partially supported by the positive relationship between social support and self-esteem; hypothesis three was not supported; hypothesis four was partially supported by the significant relationship between self-esteem and well-being; hypothesis five was partially supported by the positive relationship between self-esteem and well-being; and hypothesis six was supported by the statistically significant amount of variance which was explained in well-being by self-esteem.

Construct Validity Through Predictive Modeling

Construct validity for the variables was assessed through predictive modeling in which the regression coefficients were used to

evaluate the existence and direction of the hypothesized relationships between the variables (Hinshaw, 1978). Initial construct validity is established when the relationships were found to exist as predicted and when the direction of the relationships was as predicted. Figure 2 shows the predicted relationships. Figure 3 shows the regression coefficients for the predicted theoretical relationships. Two of the relationships were found to exist as predicted with the direction of the relationships also predicted. Initial construct validity was not found for the internal locus of control variable. The predicted theoretical relationship between social support and well-being was also not supported.

Only two relationships of the predicted five relationships in the theoretical model were supported in the empirical model (Figure 3). Initial construct validity was established through predictive modeling for self-esteem and well-being. Construct validity was not firmly supported for social support or internal locus of control.

Further analysis of the nonsignificant social support variable in relation to well-being was warranted given its strong theoretical and empirical linkages in the literature and that it was indexed with a reliable and valid instrument (NSSQ). It was hypothesized by the investigator during the course of the study that social support and its predicted relationships with self-esteem and well-being might have been influenced by two other variables in this study; number of months since diagnosis and sex. The number of months since diagnosis could impact on the quantity and quality of support perceived during the cancer experience. A t-test was conducted to determine if the two

groups, less than 60 months since diagnosis and greater than or equal to 60 months since diagnosis, had a statistically significant difference in their mean on the NSSQ. Table 22 revealed that a significant difference in NSSQ scores did not exist between those who were diagnosed < 60 months and those who were $\geq$ 60 months since diagnosis. Sex of the subject was also examined by a t-test in relation to NSSQ score as it has been proposed (Coan, 1987) that males and females view social support in different ways. Table 23 shows that a significant difference was found to exist between the two means at the .05 level of significance.

Expanded Empirical Model

Standardized residuals were saved from the regression equation in which the independent variables (ILOC, SS, SE) were regressed on the dependent variable (WB). The residuals were then plotted against the demographic, situational, search for meaning and concern of recurrence variables in order to determine which of these variables had a significant relationship to the unexplained variance of the dependent variable. Variables correlating significantly with the residuals are then entered into the regression equation as their presence could increase the variance which is explained by the theoretical model.

A correlation matrix revealed six variables which correlated with the residuals at the statistically significant level of $p < .05$. These variables included: employment ($r = .24$), treatment with BCG ($r = .25$), education ($r = .24$), income ($r = .33$), number of months since last active treatment ($r = .22$) and number of chronic illnesses ($r = .23$). Subjects who were full time employed, well educated and

Table 22. t-test Between Number of Months Since Diagnosis and NSSQ Score (N = 74)

Number of Months Since Diagnosis	Mean	t-value
< 60 months	612.23	
		-1.18
≥ 60 months	852.20	

Table 23. t-test Between Sex and NSSQ Score (N = 74)

Sex	Mean	t-value
Male	578.85	
		-1.89*
Female	947.43	

* Significant at $p \leq .05$

had a good level of income tended to report a higher level of well being. A heightened sense of well-being was also significantly associated with treatment by BCG only, a decreased number of chronic illnesses, and a greater number of months since last active treatment. All relationships were weak but statistically significant.

In addition to the model independent variables, the six demographic and situation variables with significant correlations to the residuals were regressed stepwise in the Stage III dependent variable. The equations for regressing the independent variables on the dependent variable were:

$$X_3 = B_1 X_1 + B_2 X_2 = e_3 \qquad (3.3)$$

$$X_4 = B_1 X_1 + B_2 X_2 + B_3 X_3 + B_5 X_5 + B_6 X_6 + B_7 X_7 + B_8 X_8 + B_9 X_9 + B_{10} X_{10} + e_4 \qquad (3.4)$$

The resulting expanded empirical model is shown in Figure 4. Two demographic variables were significant at $p \leq .01$ and entered the regression equation (3.4), they included income ($B = .26$, $R^2 = .06$) and employment ($B = .22$, $R^2 = .04$). It is acknowledged that due to the moderate correlation between education and income ($r = .50$)), the variable of income is partially composed of level of education. The addition of income and employment to the theoretical model resulted in an increased explained variance of 10% to the dependent variable. Total explained variance of the expanded empirical model was 47%.

In summary, respecification of the theoretical model through examination of the residuals with the demographic and situational

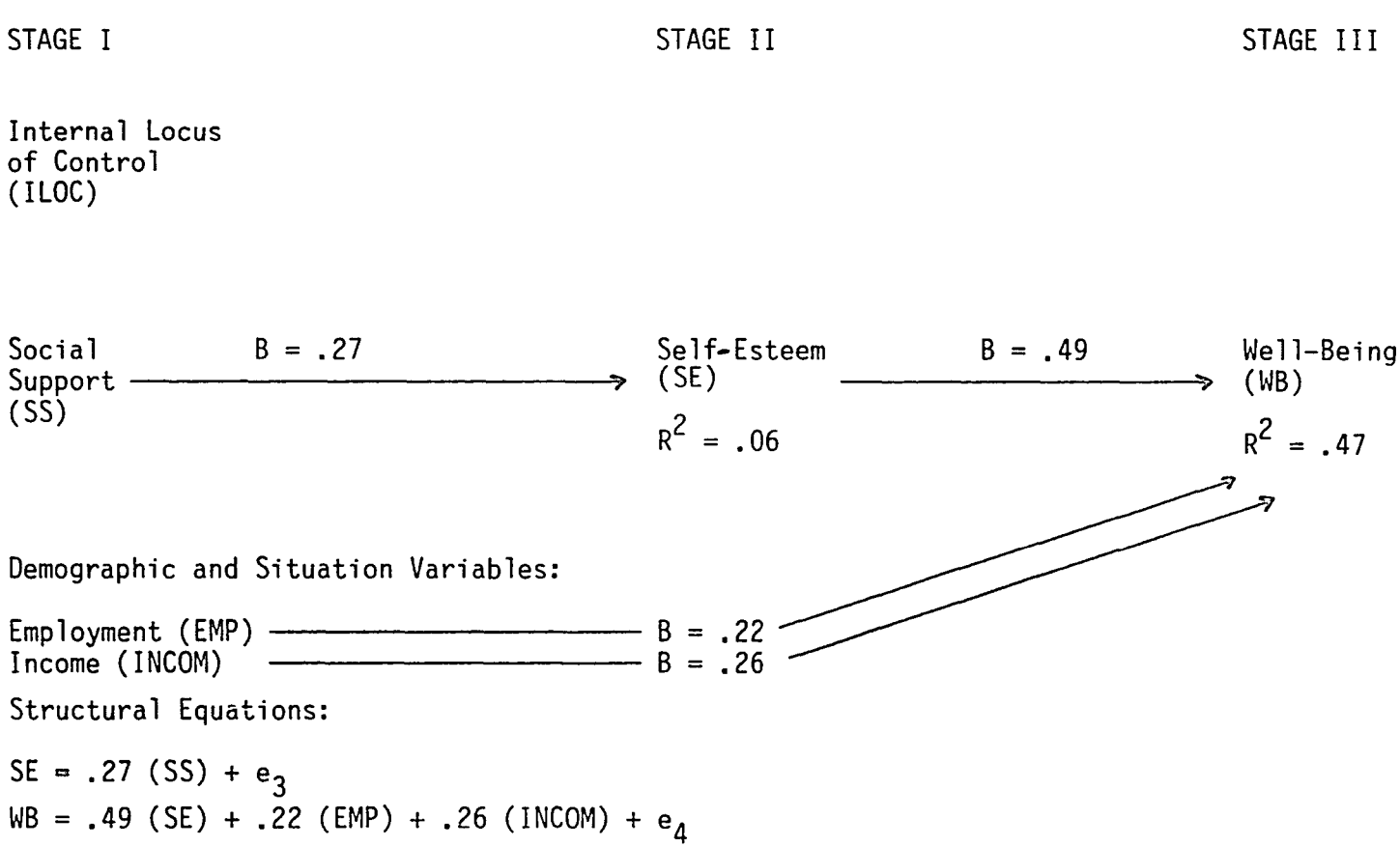


Figure 4. Expanded Empirical Model: Subjective Well-Being in Patients Diagnosed With Malignant Melanoma

variables increased the substantive and statistical significance of the models explained variance, while not increasing the complexity of the model.

Summary of Empirical Models

In the empirical test of the theoretical model which underlies this research study, two relationships were statistically significant and held as predicted. Social support in Stage I had a direct-positive impact on self-esteem in Stage II as predicted, and self-esteem had a direct-positive relationship with well-being in Stage III as predicted. Internal locus of control was nonsignificant in its predicted relationships to self-esteem and well-being. The expanded empirical model which included demographic and situational variables, revealed the existence of two additional variables which increased the explanatory power of the model. The variables of income and employment had a direct-positive impact on well-being and increased the explained variance of well-being by 10%. Self esteem continued to have a strong positive impact on well-being. As self-esteem, level of income and tendency to be employed full time increased, then the level of perceived well-being also increased.

Residual Analysis

Graphic residual analysis was utilized to assess for violations in the causal modeling and statistical assumptions which underlie the theoretical model. The residual consists of both systematic (bias) and random error, and is the difference between the observed value

and the predicted value based on an estimated parameter (Ferketich & Verran, 1984).

Statistical Assumptions of Multiple Regression

Multiple regression analysis is based on six statistical assumptions as specified by Verran & Ferketich (1984) and Graybill (1976). These include:

1. The mean of the residuals is zero.

2. The residuals are normally distributed.

3. Homoscedasticity is evidenced by equal variance of residuals at all points of the predicted dependent variables.

4. The residuals indicate the independent variables have a fixed distribution.

5. Residuals are not autocorrelated, the value of one residual does not influence the value of another residual.

6. The independent variables are measured without error.

The first four assumptions were examined directly through graphic analysis of the residuals. The fourth assumption of fixed independent variables was examined indirectly by plotting standardized residual values against each independent variable for each regression equation. Assumption five regarding autocorrelation of residuals was not evaluated. It is surmised that the value of one residual would not influence the value of another residual if subjects participated independently of one another, which was done in this study. Evaluation of the sixth assumption was provided by the estimates of reliability and validity for each scale. Measurement error in the scales was demonstrated.

However, reliability estimates for the scales met or exceeded the minimum criterion level, so the sixth assumption was not considered to be violated.

Residual analysis revealed residual means of zero for each of the regression equations. All residuals were of a nearly normal distribution as evidenced by histograms and normal probability plots. All scatterplots demonstrated homoscedasticity by indicating near equal variance along the predicted values of the independent variables. When the values for the independent variables in each equation were plotted against the standardized residuals, the resulting values demonstrated a random scatter about the mean. The scatter indirectly indicated that all independent variables have a fixed distribution. In summary, no violations in the statistical assumptions of multiple regression were found by analysis of the residuals.

Causal Model Assumptions

Assumptions which underlie a causal modeling methodology include: 1) the relationships in the model are linear and additive; 2) all major variables impacting on the dependent variable are correctly specified and included in the model; and 3) the residuals from one equation are not correlated with residuals from any other equation in the model (Asher, 1976; Kerlinger & Pedhazur, 1973). Violations in the assumptions were assessed through direct and indirect residual analysis.

The first assumption of linear and additive model relationships was met by examining a scatterplot of the residuals for each regression equation. The scatter diagram of equation residuals against independent

variables revealed randomly scattered residuals, with no evidence of a curvilinear relationship.

The second assumption of all major variables correctly specified and included in the model was not met. The expanded empirical model explained 47% of the variance in well-being. One or more unspecified variables explaining the remaining portion of variance were not included in the model. Of greater concern is the 94% residual or unexplained variance for self-esteem. This portion of the model will most require additional variable specification.

The third assumption regarding uncorrelated residuals among equations was evaluated by examining correlations of the residuals with each other, and with the independent variables in the model. In all plots random scatter about the zero line was found which indicated the assumption was not violated.

Summary

The purpose of this study was to determine the impact of cancer health locus of control, social support and self esteem on the level of subjective well-being in patients diagnosed with malignant melanoma.

This chapter included a description of the 75 subjects on which the theoretical model was tested. Results of reliability and validity estimates for the study scales were presented with the subsequent deletion of two scales which failed to meet the minimum criteria level. Construct validity for the five major variables was examined through predictive modeling which included regression analysis techniques. Empirical testing of the theoretical model resulted in support for

two of the five relationships predicted. The expanded empirical model generated from the demographic and situational characteristics data demonstrated the significance of two additional variables. Total explained variance for the expanded empirical model was 47%. Graphic residual analysis was utilized to test for violations in the causal modeling and statistical assumptions of multiple regression. No violations of the assumptions underlying the regression equations occurred.

CHAPTER V

DISCUSSION AND CONCLUSIONS

> The world breaks every one and afterward many are strong at the broken places.
>
> Ernest Hemingway

This chapter presents interpretations of the findings from the data analysis for the theoretical model testing. Included in the discussion are: methodological issues, interpretation of the theoretical model testing, implications for theory development, implications for nursing and recommendations for further research. Limitations of the study are discussed throughout the chapter.

Interpretation of Findings

Five variables which had been hypothesized to influence subjective well-being in patients diagnosed with malignant melanoma were quantified in this study. Demographic and situational characteristics in addition to the search for meaning and concern of recurrence variables were also analyzed in an effort to determine their impact on the predicted relationships among the concepts.

Methodological Issues

Six instruments were utilized in this study. Reliability and validity estimates were not established for two subscales of one instrument which negated their further use in the study. As a result the

two concepts of chance locus of control and powerful others locus of control were not measured, and the hypotheses pertaining to their impact on well-being could not be answered. The Cancer Health Locus of Control (CHLC) scale had been used in two earlier studies with good initial estimates of reliability and validity for its three subscales (Dodd & Ahmed, 1986; Dickson, et al., 1985). Why these subscales were unreliable and invalid in this study is not known. Perhaps the composition of the sample which represented patients across three stages of the cancer experience with varying treatment modalities and prognoses represented a group which was too heterogeneous to be measured adequately with the CHLC. Previous usages of the CHLC were with cancer patients all receiving one type of treatment and all in the same cancer stage. By examining subjects who were anywhere from eight years out from cancer treatment (survivors) to currently undergoing treatment, the degree of vividness to the cancer experience may be too dissimilar to capture with one scale. It is also possible that the limited prior testing of the CHLC greatly decreased its usage and generalizability in samples where the subjects were not homogeneous on many characteristics. It was of substantive interest to note that many subjects expressed control over their cancer in ways not included on the CHLC including: positive imagery, meditation, biofeedback, exercise, healthy eating and denial of the melanoma. These subjects stated (often emphatically) that this was how their cancer was controlled. Also in the study, 18 (25%) subjects saw the powerful others item content which was originally conceptualized as medical personnel, to be a measure of their belief in faith and prayer. The powerful other was seen as God. This finding indicates

that scale items for the CHLC powerful others subscale may have been answered by the subjects with differences in reference point for the powerful others figure.

The internal CHLC subscale had adequate estimates of reliability and validity with the deletion of item eight, "I am to blame for getting this illness". Many subjects, when filling out the scale, would stop at this item and ask, "Should I answer with what I know now or what I knew when I was younger?". Due to increased public awareness regarding malignant melanoma the responsibility for cancer prevention is now placed to a greater degree on the individual, whereas the past prevailing mood was one of not knowing about the harmful effects of the sun. Because of the shift in public knowledge, this item was met with some confusion regarding time frame (now or then?).

The Norbeck Social Support Questionnaire (NSSQ) demonstrated internal consistency but due to new scoring methods construct validity could not be established through factor analysis. The new scoring method in which averaged scores were utilized appeared to be well suited for this study as artificial inflation of social support by quantity of persons listed was reduced, which allowed for the examination of support quality during the cancer experience. Forcing number of persons listed into the regression equation as a separate variable with the averaged scores preserved the effect of network size.

The Self-Esteem Inventory (SEI) was modified from the dichotomous response to the linear analogue format. This alteration in the scale appeared to be a good decision as the subsequent range in data variability (779.0-2290.0) allowed for increased sensitivity in measuring

the self-esteem concept. Construct validity was not supported by factor analysis for the revised SEI. Four explanations relevant to the negative evidence for construct validity are provided by Cronbach & Meehl (1955). They include: 1) the set of indicants fail to measure what they purport to measure; 2) the theoretical framework was incorrectly specified; 3) measurement error resulting from the methods used to test the hypotheses; and 4) other variables in the theoretical model which were tested had a lack of construct validity. Explanations one and three involve measurement error which was not seen as a strong argument in the failure to establish construct validity for the SEI. The SEI, since its development in 1967, has been utilized in over 100 research studies with consistently good estimates of construct and concurrent validity for the total scale (Coopersmith, 1984). Predictive modeling to assess construct validity revealed one moderate relationship did hold as predicted between self-esteem and the dependent variable well-being, with another weak relationship also holding between social support and self-esteem. Other theoretical variables included for model testing met the minimum criterion level for reliability and validity. Therefore, measurement error was not seen as the likely cause for the lack of construct validity. Explanations two and four in relation to self-esteem are discussed later in this chapter under theoretical model testing.

The Index of Well-Being was found to have good estimates of reliability with factor analysis demonstrating that eight of the nine items loaded onto one factor. Of some concern is the fact that item nine (overall satisfaction with life) had a greater weight in

determining the total well-being score than the other eight items, and yet it loaded onto another factor. Usage of this instrument as a unidimensional scale with unequal weighting of items requires further investigation as to whether items should all be weighted equally or is the scale really multidimensional? Predictive modeling, another indicator of initial construct validity revealed a moderate relationship between well-being and self-esteem.

The Search for Meaning and Concern of Recurrence scales are briefly mentioned here as their initial development for use in this study revealed two scales with good estimates of reliability and validity. Their inclusion in the theoretical model was nonsignificant, but due to their presence in the literature as possible predictors of well-being, further research is warranted into their conceptualization and theoretical specification.

Theoretical Model Testing

The principal objective of this study was to test a three stage theoretical model (Figure 1) which predicted well-being in malignant melanoma patients. The theoretical framework was derived from empirical findings based on a review of the literature in which health locus of control, social support and self-esteem were identified as significant predictors of well-being. The six hypotheses derived from the theoretical model in relation to the conceptual relationships predicted were tested by regression analysis techniques. Findings are presented in terms of the hypotheses which were derived from the theoretical

model. Discussion also centers on sources of error which may have resulted in an attentuation of the predicted variable relationships.

Hypothesis One. The first hypothesis predicted that the variables in Stage I; internal locus of control, chance locus of control and social support had a significant relationship to self-esteem in Stage II. The findings in relation to the locus of control variables and self-esteem did not support the hypothesis. Analysis of the data revealed that the health locus of control variables did not impact significantly on self-esteem. Internal locus of control had a weak nonsignificant impact on self-esteem (B=.14) in the theoretical model. This finding indicates that the generalized belief that rewards are contingent upon internal resources had only a slight influence on level of self-esteem. This result may have been due in part to the scale that was used in measuring internal locus of control. The deletion of data from the powerful others locus of control and chance locus of control subscales due to poor reliability estimates resulted in the inability to test these variables as specified in the theoretical model. Possible explanations for the poor psychometric properties of these scales were provided earlier under methodological issues. Previous research studies had provided support for the hypothesized linkage between health locus of control and self-esteem (Lewis, 1982; Seligman, 1975).

The fourth relationship predicted in the first hypothesis, social support has a significant relationship to self-esteem was supported. Findings from the data revealed that social support in Stage I had

a significant impact (B=.27) on self-esteem in Stage II of the theoretical model. The significant relationship substantiates previous investigations by Wills (1983, 1985) which revealed that distressed persons seek self-esteem maintenance from their social contacts, and that social support strengthens one's self-esteem through feelings of self-worth.

Hypothesis Two. The second hypothesis predicted that the variables in Stage I, internal locus of control and social support, would have a positive impact on self-esteem in Stage II. The findings revealed that only the one relationship between social support and self-esteem was significant and held as predicted in the theoretical model. The positive impact of social support on self-esteem indicates that the greater the perception of social support then the higher the level of self-esteem. Empirical findings have consistently found that feelings of self-esteem are positively influenced by the degree of perceived support from significant others (Muhlenkamp & Sayles, 1986; DiMatteo & Hays, 1981; Pearlin, et al., 1981). The hypothesized negative relationship between chance locus of control and self-esteem was not examined due to the lack of an adequate scale to measure the chance locus of control variable.

Hypothesis Three. The third hypothesis derived from the theoretical model predicted that the variables related to self-esteem would account for a statistically significant amount of variance in self-esteem. The findings did not support the hypothesis. Only one variable, social support, was found to have a significant relationship with self-esteem. Social support explained 6% (R^2 =.06) of the variance in

self-esteem, which also is the total explained variance for the self-esteem variable.

The low value for the total explained variance in self-esteem can be attributed to specification error. Relations were misspecified in the model. The hypothesized links between the independent variables predicting self-esteem did not hold for three of the four relationships. Even though two of the relationships could not be tested, definitional errors in scale control for the health locus of control variables did occur. This included ambiguity regarding reference point for the powerful others locus of control subscale and the inability of the internal locus of control subscale to tap the full domain of internal control strategies. It is surmised that incorrect specification of the locus of control variables due to definitional

errors in content, may have contributed to the small amount of variance explained in self-esteem. This error in specification, namely that other variables in the theoretical model, had a lack of construct validity, may also have contributed to the failure in establishing construct validity for the SEI.

Hypothesis Four. The fourth hypothesis predicted internal locus of control, powerful others locus of control, chance locus of control and social support in Stage I and self-esteem in Stage II to have a significant relationship to well-being in Stage III. The findings held in one of the five relationships predicted. As discussed earlier, the data from the powerful others and chance locus of control variables were deleted from the study, therefore two of the predicted relationships could not be tested. Internal locus of control had a weak

nonsignificant (B=.10) relationship to well-being, which indicated that an internalized general belief regarding contingency of rewards did not significantly influence one's perception of well-being. Empirical findings from clinical settings provided strong support for the predicted relationships between health locus of control and well-being (Taylor, et al., 1984; Burckhardt, 1985; Zautra & Reich, 1980; Chang, 1979). In a sample of cancer patients, generalized beliefs regarding control may differ than for other diseases and settings. If this were true, a relationship may not exist between control of cancer and perceived well-being.

The fourth predicted relationship between social support and well-being was not significant (B=.02). It is puzzling as to why the relationship did not hold. The social support variable has received much recognition in research studies as a significant factor in predicting well-being in persons encountering stressful life events (Turner, 1981; Jamison, et al., 1981; Magilvy, 1985; Cohen & Syme, 1985). The multifaceted nature of the social support variable has led some investigators to propose that social support may primarily interact with other variables (prognosis, demographics, social skills, coping resources) in influencing well-being (Hirsch, 1981; Thoits, 1982). Except for demographics those variables were not measured in this study.

Secondary analysis of the social support variable was done in an effort to assess whether mean NSSQ score was influenced by two demographic variables; number of months since diagnosis and sex. If these variables significantly influenced perceived social support, then they may have contributed to the nonsignificant relationship that was found

between social support and well-being. A t-test (Table 22) revealed a significant difference on mean NSSQ score did not exist between the two groups of subjects who had been diagnosed under 60 months, and subjects who had been diagnosed equal to or greater than 60 months.

Secondary analysis of the social support variable with sex also revealed a statistically significant ($p < .05$) difference on mean NSSQ score between males and females (Table 23). Females scored significantly higher on the NSSQ when compared to males. Suggestions (Coan, 1987) that females perceive a greater number of persons as support while also expressing a greater depth to that support was initially supported by this finding. Burckhardt (1985) found that in arthritic patients a nonsignificant relationship existed between social support and sex of the subject. No other research studies have been reported which examine perceived social support and sex. More research is needed before conclusions can be drawn as to the effect of these variables on social support and subsequent well-being. Recommendations for inclusion of the variables number of months since diagnosis and sex in further testing of the theoretical model is provided later in this chapter.

The fifth relationship predicted from the theoretical model in hypothesis four revealed that self-esteem in Stage II had a moderately significant relationship ($B=.58$) with well-being in Stage III. The significant relationship between self-esteem and well-being is well documented by Campbell (1976) in the literature, as satisfaction with self more than any other variable, is the strongest contributor to life quality.

Hypothesis Five. The fifth hypothesis predicted that internal locus of control, powerful others locus of control and social support in Stage I and self-esteem in Stage II have a positive relationship to well-being in Stage III. Chance locus of control in Stage I was predicted to have a negative relationship with well-being in Stage III. Only the predicted relationship between self-esteem and well-being in the theoretical model was supported by the data. The positive relationship of self-esteem to well-being indicates that an increased self-esteem promotes a greater sense of well-being. As reported by Deiner (1984), many research studies have found that in healthy and ill persons a positive self-esteem is a strong predictor of a high level of well-being. Persons who maintain a positive sense of worthiness rate their life quality as more satisfactory than those who are unable to maintain a belief in self (Burckhardt, 1985).

Hypothesis Six. The sixth hypothesis derived from the theoretical model predicted that the variables which are related to well-being would account for a statistically significant amount of variance in well-being. The findings revealed that the hypothesis held as predicted. Self-esteem explained 37% (R^2 = .37) of the total variance in well-being at the statistically significant level of $p \leq .0000$. A moderate amount of variance was explained in the dependent variable by the one independent variable of self-esteem. None of the remaining relationships predicted from the theoretical model added significantly to the amount of explained variance in well-being.

Expanded Empirical Model

The demographic, situational, search for meaning and concern of recurrence variables, were examined as possible factors which could influence the predicted theoretical relationships. The variables of age, sex, marital status, first diagnosis of cancer, cancer site, stage of cancer, geographical location, search for meaning and concern of recurrence were not significantly related to perceived well-being in patients with malignant melanoma. Variables which were found to be statistically significant ($p < .05$) to well-being included: employment, treatment with BCG, education, income, number of months since last active treatment and number of chronic illnesses. Of these six variables, only employment ($B=.22$) and income ($B=.26$) entered the regression equation as significant ($p < .01$) predictors of well-being. As a result, those two new variables and their corresponding relationships to well-being were added to the expanded empirical model (Figure 4).

The findings indicated that persons who were employed full time and/or persons who had higher income levels reported a greater sense of well-being in relation to the cancer experience. Research has demonstrated that persons who are employed have a greater chance of positively adapting to a stressful life event, as satisfying and successful work tends to positively impact on an individual's mood and well-being (Catalano & Dooley, 1977). In women with breast and gynecological cancers, employment was found to be an important psychosocial factor in determining subsequent well-being (Cobliner, 1977).

Income was significant in determining positive well-being in this study. Investigations into the American perception of well-being have revealed that sense of well-being was influenced by level of income, the greater the income level then the greater the feeling that life was not limited by economic considerations (Campbell, 1976; Andrews & Withey, 1976). It was hypothesized due to the investigator's previous work with cancer patients, that income might play a role in sense of well-being, as persons who cannot afford quality health care or seek treatment alternatives might experience more frustration, anxiety, and depression. A few subjects in the study did relate that due to financial constraints they were not able to seek other physicians or cancer therapies which may have helped their situation. For subjects who were already at low income levels the time taken off from work due to the cancer further accentuated feelings of anger and anxiety, as even fewer monies were now available to support a previous lifestyle. Further research into the effects of employment and income on well-being in persons with cancer is needed before conclusions can be reached.

The addition of employment and income to the expanded empirical model resulted in a 10% increase in the amount of total explained variance in well-being. The total 47% explained variance in well-being that was accounted for by the expanded model was substantial. What is striking is that the multidimensional variable of well-being was specified to an important degree by the identification of only three variables. Kenney (1979) has stated that only 50% of the variance in human behavior can be quantified according to correlation and

causality because of "free will", which makes the 47% found in this study even more respectable.

Implications for Theory Development

Further theory development and testing is justified given the predicted and unpredicted findings revealed in this study. Structural changes in the theoretical model with future testing are proposed as this investigation afforded additional insight into the factors which influence well-being in patients diagnosed with malignant melanoma. Suggestions for revisions in the theoretical model relate to specification error including: 1) the importance of number of months since diagnosis and sex as variables influencing social support; 2) the inclusion of employment and income as variables in the model; and 3) the large amount of variance (94%) that remained unexplained in the Stage II variable self-esteem. Alterations in the theoretical model as proposed by the findings of this study have the potential of adding to the explained variance in self-esteem and well-being. Further recommendations in theory development are anticipated as future research provides new information on the variables examined in this study and on the population of individuals diagnosed with malignant melanoma.

Implications for Nursing

A diagnosis of cancer may significantly alter an individual's perception of well-being, with concerns regarding relationship, independence, job and career, body integrity and the threatened loss of life occurring not only at diagnosis but over an extended period of time (Holland, 1980). Little scientific information is available which

identifies and describes the variables which impact on the perception of well-being in individuals diagnosed with cancer.

In this study, the patient outcome of well-being was conceptualized as the perception of life quality during the cancer experience. At each stage of the theoretical model psychosocial variables were predicted to impact on the outcome variable of subjective well-being. The variables identified for study included; internal locus of control, powerful others locus of control, chance locus of control, social support and self-esteem. The study findings revealed that a high level of self-esteem promoted a greater sense of well-being. When an individual with cancer holds positive feelings of self-worth, then a higher life quality will generally ensue. Also related significantly to positive well-being was employment and level of income.

By knowing which variables impact on well-being, the nurse can intervene with actions that focus on inter and intrapersonal factors which influence self-esteem including: realistic expectations of success and failure and the potential for increased capabilities as a result of the cancer experience. When an individual looks at situations or challenges with an attitude of mastery, then self-esteem is promoted. Instilling this attitude in the patient with cancer involves a realization that there will be potential setbacks and problems but "we" (the patient and nurse) have the potential to influence this situation and can learn from the experience. Life-threatening events frequently create a decrease in self-esteem, by finding ways to help the patient feel good about self again, personal benefit and well-being can be gained from potential tragedy.

As the potential for stress occurs at each stage of the cancer experience from time of diagnosis to eventual outcome, the cumulative long-term effects of this experience on well-being must be studied. Research related to how patients perceive their well-being at each stage of the cancer experience is vital if nursing is to implement therapeutic interventions which will promote psychological adjustment and improved life quality. Knowledge of perceived well-being will also assist nursing in helping the patient to set short and long term goals.

This study extended the developing nursing theory on well-being in life-threatening illnesses and offered nursing an initial framework for implementing therapeutic actions which would promote the positive well-being of patients diagnosed with cancer. The findings of this study cannot be generalized to other populations or settings as it is not known if persons diagnosed with malignant melanoma are representative of the cancer population. The findings can be interpreted to other malignant melanoma patients. Further investigation of well-being and its perception following a diagnosis of cancer would provide greater confidence in the study findings if subsequent research demonstrates similar results with different cancer diagnoses across time. Additional inquiry into the variable self-esteem is warranted including the content and validity of its measured components given that it impacts to such a significant degree on the patient outcome of well-being.

Recommendations for Further Research

Recommendations for further research are proposed given the findings of this study. Additional testing of the results of this research study with a larger sample size would allow the investigator to more fully analyze the effects of the potentially confounding variables of cancer stage, treatment and prognosis on well-being. These situational variables were not adequately examined due to the small sample size. Selecting an adequate number of subjects who were matched on stage, treatment and prognosis would also accomplish this objective. Given time and monies, a longitudinal study which follows subjects through diagnosis, treatment and eventual outcome (survival or metastases) would allow for testing of the theoretical model at each stage of the cancer experience. Information gained from this type of research design would provide for increased nursing effectiveness in planning interventions which would assist patient wellbeing throughout the cancer experience.

Revisions in the theoretical model according to study findings have been discussed. The variables in Stage I of the model explained a small 6% of the variance in self-esteem in Stage II, this portion of the model needs greater specification. Suggestions to increase the explained variance in self-esteem include; the testing of demographic and situational characteristics in Stage I as inputs to self-esteem, re-examination of the relationship between social support and self-esteem by the inclusion of mediating variables (social skills, demographics and/or coping skills). The impact of number of months since diagnosis and sex on perceived social support and subjective

well-being will also need further investigation as initial findings from this study indicated their significant influence on mean NSSQ score. It is still this investigator's belief that the amount of personal control an individual believes he can exert over a situation will influence his self-esteem. Because the CHLC did not have good psychometric properties in this study it could either be retested in subsequent studies or, more favorably, a different instrument measuring sense of control could be employed in further testing of the theoretical model. Further examination of the predicted causal relationship between locus of control and self-esteem is warranted given its support in the research literature.

Identification of the missing variable(s) which would explain the remaining 53% variance in well-being is a recommendation for further study. In addition to the suggestions already made concerning locus of control and social support three other variables; spirituality, performance status and orientation to health care bear further scrutiny. Spirituality has been recognized as a major component to well-being as 25% of the American population in Campbell's (1976) study ranked religious faith as highly important. McNamara & St. George (1979) propose that satisfaction from religion ranks as the most accurate indicator of well-being. Measurement of performance status or the ability of the patient to remain ambulatory and perform the activities of daily living provides an indication of physical well-being, which could offer future studies a broader conceptualization of well-being.

Orientation to health care in terms of attitude towards physician and treatment should be examined in relation to well-being, as subjects during the course of this study frequently mentioned how much they did or did not like their physician and how these feelings affected their perception of the cancer experience.

These recommendations are not all-inclusive but are a beginning attempt at directing future studies into subjective well-being in cancer patients. In conclusion, further research should include: reliable and valid instruments indexing each variable, revisions in the theoretical model with additional variable specification, and greater control over potentially confounding variables through a larger sample size or matching subjects on these variables.

Summary

This chapter presented a discussion of the results of data analysis for the theoretical model testing. The theoretical model was developed to examine the impact of selected psychosocial variables on the outcome variable of well-being in patients diagnosed with cancer. Self-esteem was found to be the only significant predictor of well-being in this population. Methodological issues and limitations of the study were addressed. Implications for theory development and nursing were discussed with recommendations for further research focusing on instrumentation and theoretical model respecification.

APPENDIX A

HUMAN SUBJECTS COMMITTEE APPROVAL

THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF NURSING

MEMORANDUM

TO: Shannon Ruff, MS, RN
Doctoral Student
College of Nursing

FROM: Ada Sue Hinshaw, PhD, RN ASH
Director of Research

Katherine Young, PhD, RN
Chairman, Research Committee

DATE: March 5, 1985

RE: Human Subjects Review: Well-Being in Cancer Patients

Your project has been reviewed and approved as exempt from University review by the College of Nursing Ethical Review Subcommittee of the Research Committee and the Director of Research. A consent form with subject signature is not required for projects exempt from full University review. Please use only a disclaimer format for subjects to read before giving their oral consent to the research. The Human Subjects Project Approval Form is filed in the office of the Director of Research if you need access to it.

We wish you a valuable and stimulating experience with your research.

ASH/fp

APPENDIX B

SUBJECT DISCLAIMER

WELL-BEING

The purpose of this research study is to investigate how your life has been affected by your diagnosis of cancer.

This study involves one session at your home or another location convenient for you in which you will be asked to fill out five questionnaires. The first questionnaire asks for your view on the social support you have while the second questionnaire asks how much control you feel you have over your illness. The third and fourth questionnaires ask for your perception on how you see yourself and life in general. The fifth questionnaire asks about a search for meaning in the illness experience. A sixth questionnaire concerning fear of recurrence will also be given to those who have survived cancer.

If you decide to participate, your name will not be placed on the questionnaires or mentioned with any statements you may make. You are free to respond to as many of the questions as you like and may withdraw from the study at any time you choose without incurring ill will or a change in your medical care. There are known risks in this study and you are free to ask questions at any time during the study.

Your participation in this study implies your informed consent.

Thank-you for your time.

Shannon Ruff, R.N., M.S.
Doctoral Candidate
College of Nursing
University of Arizona
Tucson, Arizona 85721
(602) 626-6154

APPENDIX C

SUBJECT INTRODUCTORY RESEARCH LETTER

THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF NURSING

Dear _____

Dr. Frank Meyskens has given his approval to approach persons who have received medical care from the University Medical Center to see if they are interested in participating in a research study entitled "Measurement of Well-Being in Individuals Diagnosed with Malignant Melanoma". The purpose of the study is to learn from you how your life has been affected by your diagnosis of cancer. By sharing your feelings you will assist nursing in providing better health care to individuals diagnosed with cancer.

The research study involves one interview which will be arranged at a time and place convenient for you. All interview material will be treated confidentially. Your care will not be affected in anyway and there are no known risks involved.

I will be attempting to contact you within the next few weeks to see if you would be interested in participating in the study. Thank you.

Sincerely,

Shannon Ruff, R.N., M.S.
Doctoral Candidate
College of Nursing
University of Arizona
Tucson, AZ 85721
(602) 626-6154

APPENDIX D

STUDY INSTRUMENTS

CODE NUMBER_____ DATE_____

CHLC

Each item is a belief statement 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 disagree or agree with the statement. The more strongly you agree with a statement, then the higher will be the number you circle. The more strongly 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.

Please answer these items carefully, but do not spend too much time on any one item. As much as you can, try to respond to each item independently. When making your choice, do not be influenced by your previous choices. It is important that you respond according to your actual beliefs and not according to how you feel you should believe or how you think we want you to believe.

	In the following statements the word illness pertains to your having had cancer.	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1.	It is my own behavior which determines how soon I get well again.	1	2	3	4	5	6
2.	No matter what I do, if I'm going to get worse, I'll get worse.	1	2	3	4	5	6
3.	Having regular contact with my physician is the best way for me to avoid this illness getting worse.	1	2	3	4	5	6
4.	Most things that affect my health now that I am ill, happen to me by accident.	1	2	3	4	5	6
5.	Whenever I don't feel well, I should consult a medically-trained professional.	1	2	3	4	5	6
6.	I am in control of cancer.	1	2	3	4	5	6
7.	My family has a lot to do with how well I cope with this illness.	1	2	3	4	5	6

CODE NUMBER_____ DATE_____

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
8. I am to blame for getting this illness.	1	2	3	4	5	6
9. Luck plays a big part in determining how soon I will recover.	1	2	3	4	5	6
10. Health professionals control cancer.	1	2	3	4	5	6
11. Improvement of this illness is a matter of good fortune.	1	2	3	4	5	6
12. The main thing which affects my condition is what I do myself.	1	2	3	4	5	6
13. If I take care of myself, I can avoid progression of my illness.	1	2	3	4	5	6
14. When I get better from this illness, it's because other people (for example: doctors, nurses, family, friends) have been taking good care of me.	1	2	3	4	5	6
15. No matter what I do, it's likely that my illness will get worse.	1	2	3	4	5	6
16. If it's meant to be, I will regain my health.	1	2	3	4	5	6
17. If I take the right actions, this illness will be controlled.	1	2	3	4	5	6
18. Regarding this illness, I can only do what my doctor tells me to.	1	2	3	4	5	6

Do you have any other beliefs or sources of support which assisted you that were not expressed in the items above?

SOCIAL SUPPORT QUESTIONNAIRE

PLEASE READ ALL DIRECTIONS ON THIS PAGE BEFORE STARTING.

Please list each significant person in your life on the right. Consider all the persons who provide personal support for you or who are important to you.

Use only first names or initials, and then indicate the relationship, as in the following example.

Example:

	First Name or Initials	Sex/Relationship
1.	MARY T.	F / FRIEND
2.	BOB	M / BROTHER
3.	M.T.	F / MOTHER
4.	SAM	M / FRIEND
5.	MRS. R.	F / NEIGHBOR

etc.

Use the following list to help you think of the people important to you, and list as many people as apply in your case.

- spouse or partner
- family members or relatives
- friends
- work or school associates
- neighbors
- health care providers
- counselor or therapist
- minister/priest/rabbi
- other

You do not have to use all 24 spaces. Use as many spaces as you have important persons in your life.

Number [11-41]

Date

PERSONAL NETWORK

	First Name or Initials	Relationship	
1.			[32]
2.			[33]
3.			[34]
4.			[35]
5.			[36]
6.			[37]
7.			[38]
8.			[39]
9.			[40]
10.			[41]
11.			[42]
12.			[43]
13.			[44]
14.			[45]
15.			[46]
16.			[47]
17.			[48]
18.			[49]
19.			[50]
20.			[51]
21.			[52]
22.			[53]
23.			[54]
24.			[55]

[56]

For each person you listed, please answer the following questions by writing in the number that applies

1 = not at all
2 = a little
3 = moderately
4 = quite a bit
5 = a great deal

Question 1:

How much does this person make you feel liked or loved?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

(7-91)

Question 2:

How much does this person make you feel respected or admired?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

(10-12)

1 = not at all
2 = a little
3 = moderately
4 = quite a bit
5 = a great deal

Question 3:

How much can you confide in this person?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

(13-15)

Question 4:

How much does this person agree with or support your actions or thoughts?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

(16-18)

GO ON TO NEXT PAGE

1 = not at all
2 = a little
3 = moderately
4 = quite a bit
5 = a great deal

Question 5:

If you needed to borrow $10, a ride to the doctor, or some other immediate help, how much could this person usually help?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

[19 21]

Question 6:

If you were confined to bed for several weeks, how much could this person help you?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

[22 24]

Question 7:

How long have you known this person?

1 = less than 6 months
2 = 6 to 12 months
3 = 1 to 2 years
4 = 2 to 5 years
5 = more than 5 years

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

[25 27]

Question 8:

How frequently do you usually have contact with this person? (Phone calls, visits, or letters)

5 = daily
4 = weekly
3 = monthly
2 = a few times a year
1 = once a year or less

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

[28 30]

PLEASE BE SURE YOU HAVE RATED EACH PERSON ON EVERY QUESTION. GO ON TO THE LAST PAGE.

9. During the past year, have you lost any important relationships due to moving, a job change, divorce or separation, death, or some other reason? [57]

_____ 0. No
_____ 1. Yes

IF YES:

9a. Please indicate the number of persons from each category who are *no longer available* to you.

_____ spouse or partner	[58]	
_____ family members or relatives	[59-60]	
_____ friends	[61-62]	
_____ work or school associates	[63-64]	
_____ neighbors	[65-66]	
_____ health care providers	[67]	
_____ counselor or therapist	[68]	
_____ minister/priest/rabbi	[69]	
_____ other (specify) _____	[70]	[71-72]

9b. Overall, how much of your support was provided by these people who are no longer available to you? [73]

_____ 0. none at all
_____ 1. a little
_____ 2. a moderate amount
_____ 3. quite a bit
_____ 4. a great deal

COOPERSMITH INVENTORY Code No. _____

Directions: The purpose of this questionnaire is to measure your attitudes about yourself. You are asked to indicate if a statement describes you by placing a vertical mark across the line between "like me" and "ulike me".

Example: My friends expect too much of me. Like Me _____|_____ Unlike Me
The above mark indicates that you feel the statement describes you somewhat. If you had found the statement to describe you very well, you would have placed the mark at the far left of the line for "Like Me". If you had found the statement not to describe you at all, you would have placed the mark at the far right of the line for "Unlike Me".

Please rate each life event listed below.

	Life Event		
1.	Things usually don't bother me.	Like Me _____	Unlike Me
2.	I find it very hard to talk in front of a group.	Like Me _____	Unlike Me
3.	There are lots of things about myself I'd change if I could.	Like Me _____	Unlike Me
4.	I can make up my mind without too much trouble.	Like Me _____	Unlike Me
5.	I'm a lot of fun to be with.	Like Me _____	Unlike Me
6.	I get upset easily at home.	Like Me _____	Unlike Me
7.	It takes me a long time to get used to anything new.	Like Me _____	Unlike Me
8.	I'm popular with persons my own age.	Like Me _____	Unlike Me
9.	My family usually considers my feelings.	Like Me _____	Unlike Me
10.	I give in very easily.	Like Me _____	Unlike Me
11.	My family expects too much of me.	Like Me _____	Unlike Me
12.	It's pretty tough to be me.	Like Me _____	Unlike Me
13.	Things are all mixed up in my life.	Like Me _____	Unlike Me
14.	People usually follow my ideas.	Like Me _____	Unlike Me

Code No._____

Life Event

15.	I have a low opinion of my self.	Like Me _____	Unlike Me
16.	There are many times when I would like to leave home.	Like Me _____	Unlike Me
17.	I often feel upset with my work.	Like Me _____	Unlike Me
18.	I'm not as nice looking as most people.	Like Me _____	Unlike Me
19.	If I have something to say, I usually say it.	Like Me _____	Unlike Me
20.	My family understands me.	Like Me _____	Unlike Me
21.	Most people are better liked than I am.	Like Me _____	Unlike Me
22.	I usually feel as if my family is pushing me.	Like Me _____	Unlike Me
23.	I often get discouraged with what I am doing.	Like Me _____	Unlike Me
24.	I often wish I were someone else.	Like Me _____	Unlike Me
25.	I can't be depended on.	Like Me _____	Unlike Me

Thank you for your assistance.

Code No. _____

INDEX OF WELL-BEING

Directions: Here are some words and phrases which I would like you to use to describe how you feel about your present life. Put an "X" over the line that you think best describes how you feel about your present life.

1. My present life is:

BORING	____	____	____	____	____	____	____	INTERESTING

2. My present life is:

ENJOYABLE	____	____	____	____	____	____	____	MISERABLE

3. My present life is:

USELESS	____	____	____	____	____	____	____	WORTHWHILE

4. My present life is:

LONELY	____	____	____	____	____	____	____	FRIENDLY

5. My present life is:

FULL	____	____	____	____	____	____	____	EMPTY

6. My present life is:

DISCOURAGING	____	____	____	____	____	____	____	HOPEFUL

7. My present life is:

REWARDING	____	____	____	____	____	____	____	DISAPPOINTING

8. My present life:

DOESN'T GIVE ME MUCH CHANCE	____	____	____	____	____	____	____	BRINGS OUT THE BEST IN ME

9. In thinking about my life as a whole, I am:

COMPLETELY DISSATISFIED	____	____	____	____	____	____	____	COMPLETELY SATISFIED

- Thank you! -

APPENDIX E

LETTERS OF APPROVAL FOR INSTRUMENT USAGE

School of Nursing
Department of Physiological Nursing N 611Y
San Francisco, CA 94143

University of California, San Francisco A Health Sciences Campus

January 22, 1986

Shannon Ruff, R.N., M.S.
Doctoral Candidate
College of Nursing
University of Arizona
Tucson, AR 85721

Dear Ms. Ruff:

I received your letter inquiring into your use of the Cancer Health Locus of Control (CHLC) scale. Yes, you have my permission to use this tool. You need Angie Dickson's permission primarily, since it was her thesis work that originated the CHLC. Her address is:

58 Ashbrook
Irvine, CA 94714
telephone (714) 551-6883

I am enclosing drafts of manuscripts in preparation for you to review and obtain an update on the psychometric properties of the CHLC; please handle as confidential material.

Good luck in your endeavors. If there are any questions, please contact me (415) 476-4320.

Sincerely,

MARYLIN J. DODD, R.N., Ph.D.
Associate Professor

P.S. Also enclosed is the modification of the original CHLC, used in the later two studies.

MJD:rjf

Encs

PACIFIC HOSPITAL OF LONG BEACH
2776 PACIFIC AVENUE • LONG BEACH • CALIFORNIA 90806
(213) 595 1911

21 Feb. 86

Shannon Ruff, R.N., M.S.
College of Nursing
University of Arizona
Tucus, Arizona, 85721

Dear Shannon

Congradulations on your research proposal! I am happy to see the CHLC used in your work with the cancer population. Enclosed is a copy of the publication addressing my study, including beginning reliability and validity data. Since that time we have further modified the CHLC so that "cancer" does not appear in each of the questionnaire items. I have enclosed a copy of this modified CHLC for your review.

Best wishes in your work! Would you please send me a copy of your results on the enclosed questionnaire?

Sincerely yours,

Angie Dickson

Angie Dickson, RN.,MSN.
Clinical Nurse Specialist-Onc.
Pacific Hospital
Long Beach, CA.

APPENDIX A

Request Form

I request permission to copy the Norbeck Social Support Questionnaire (NSSQ) for use in research in a study entitled: "VARIABLES OF WELL-BEING IN CANCER SURVIVORS"

In exchange for this permission, I agree to submit to Dr. Norbeck a copy of the one-page scoring sheet for each subject tested. These data will be used to establish a broad normative database for the instrument for clinical and non-clinical populations. Aside from use in the pooled data bank, no other use will be made of the data submitted. Credit will be given to me in reports of normative statistics that make use of the data I submitted for pooled analyses.

Sharon E. Ruff
(Signature)

January 17 1986
(Date)

Position and Full Address of Investigator: Doctoral Candidate
College of Nursing
University of Arizona
Tucson, Az. 85721

Permission is hereby granted to copy the NSSQ for use in the research described above.

Jane S. Norbeck
Jane S. Norbeck

1/24/86
(Date)

Please send *two signed* copies of this form to:

Jane S. Norbeck, D.N.Sc.
Department of Mental Health and Community Nursing
University of California, San Francisco
N505-Y
San Francisco, California 94143

CONSULTING PSYCHOLOGISTS PRESS, INC.

577 College Ave. (P.O. Box 60070), Palo Alto, California 94306 (415) 857-1665

Shannon Ruff, R.N., M.S.
Doctorial Candidate
The Univeristy of Arizona
College of Nursing
Tucson, AZ 85721

In response to your request of 21 January 1986 (Date) permission is hereby granted you to adapt and reproduce 60 copies of the Coopersmith Self-Esteem Inventory for your dissertation.

subject to the following restrictions:

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Date 23 Janaury 1986

ISR

INSTITUTE FOR SOCIAL RESEARCH / THE UNIVERSITY OF MICHIGAN / P O BOX 1248 / ANN ARBOR, MICHIGAN 48106 · 313-764-8363

February 18, 1985

Shannon Ruff, R.N., M.S.
College of Nursing
University of Arizona
Tucson, AZ 85721

Dear Ms. Ruff:

I am responding to your note to Dr. Angus Campbell, who passed away a few years ago. I am sure he would have no objection to your using the Index of Well-Being as a part of your investigation into the perceived well-being of cancer patients.

You might want to contact Professor Camille Wortman, who is in the Research Center for Group Dynamics at ISR, and who has been studying the influence of traumatic life events on individuals' adjustment and state of well-being. I believe she has used measures similar to those designed by Dr. Campbell.

Sincerely,

F. Thomas Juster
Director

FTJ/jk

APPENDIX F

SUBJECT CHARACTERISTICS

Code No _____

Age in Years _____

Sex 1. Male 2. Female

Marital Status 1.Married 2.Divorced 3.Widowed 4.Single

Working/School 1.Full Time 2.Part Time 3.None 4.Retired

Education (No. of Years) _____

Ethnic Origin 1.Caucasian 2.Hispanic 3.Black 4.Oriental

5.Native American 6.Other _____

Gross Family Income

1. Below 10,000
2. 10,000-19,999
3. 20,000-29,999
4. 30,000-39,999
5. 40,000-49,999
6. 50,000-59,999
7. 60,000-69,999

Chronic Illnesses (List) _____

_____

First Diagnosis of Cancer 1.No 2.Yes 3.Any previous skin cancers?

No. of Months Since Diagnosis _____

Primary Cancer Site _____

Stage of Disease I II III IV

Treatment to Date (List the Types) _____

_____

Metastatic Disease Present 1.No 2.Yes

No. of Months Since Last Active Treatment _____

Geographical Location _____

APPENDIX G

SEARCH FOR MEANING SCALE

Code No _____

SMS

Directions: Please respond as best you can to each of the statements below which describe responses some people have following a diagnosis of cancer.

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. I have found myself thinking about why I got cancer.	5	4	3	2	1
2. I believe there is a specific reason as to why the cancer occurred	5	4	3	2	1
3. The diagnosis of cancer has had an impact on my life.	5	4	3	2	1
4. The cancer experience has made me reappraise my life.	5	4	3	2	1
5. I have found that due to the cancer experience my priorities in life have changed.	5	4	3	2	1

Has the quality of your life changed since before your diagnosis of cancer? If so, please explain _____

_____

_____

APPENDIX H

CONCERN OF RECURRENCE SCALE

Code No. _____

CONCERN OF RECURRENCE

Directions: The purpose of the following questions is to find out if you are concerned about your cancer recurring. You are asked to respond to each statement by placing a vertical mark across the line between "Not At All" and "A Great Deal".

Example: I am concerned about my health.

Not At All _____ A Great Deal

The above mark indicates that you are somewhat concerned about your health. If you were not at all concerned, you would have placed the mark at the far left of the line. If you were concerned a great deal, you would have placed the mark to the far right of the line.

Please answer each statement below.

1. I am concerned that the cancer I had could reappear.

Not At All _____ A Great Deal

2. Thoughts that the cancer might return has affected the way I am now living.

Not At All _____ A Great Deal

3. Before each visit with my physician I become anxious due to fears of cancer recurrence.

Not At All _____ A Great Deal

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