Title
The effects of social support upon chronicity-related role stress, role strain, and health status

Author
Shuster, George Fredrick

Publication Date
1987

Peer reviewed|Thesis/dissertation

THE EFFECTS OF SOCIAL SUPPORT UPON CHRONICITY-RELATED ROLE STRESS, ROLE STRAIN, AND HEALTH STATUS

by

GEORGE FREDRICK SHUSTER III

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF NURSING SCIENCE

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA

San Francisco

Date University Librarian

Degree Conferred: MAR 29 1987

THE EFFECTS OF SOCIAL SUPPORT UPON CHRONICITY-RELATED ROLE STRESS, ROLE STRAIN, AND HEALTH STATUS

GEORGE FREDRICK SHUSTER III

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

ACKNOWLEDGEMENTS

The author wishes to express sincere appreciation to his dissertation committee members, Dr. Sandra Ferketich, Dr. Shirley Laffrey, and Dr. Patricia Underwood, whose thoughtful input and ongoing support were critical to my efforts. A very special thank you to my dissertation advisor and chairperson, Dr. Dorothy Oda, whose help in the completion of this manuscript was invaluable. And to Barb: I could not have done this without your aid and understanding.

"Durate et vosmet rebus servate secundis."

This study was supported by a National Research Service Award Number NU 05881 from the Division of Nursing, U.S. Department of Health and Human Services Administration, U.S. Public Health Service.

THE EFFECTS OF SOCIAL SUPPORT UPON CHRONICITY-RELATED ROLE STRESS, ROLE STRAIN AND HEALTH STATUS

GEORGE FREDRICK SHUSTER III

University of California, San Francisco, 1986

ABSTRACT

This study used a nonexperimental design to test a recursive prospective model for direct and indirect effects of perceived social support on chronicity-related role stress and strain and health status from a role theory perspective. LaRocco, House, and French (1980, p. 203) proposed a theoretical model of social support that was modified by the investigator for this study. The modified model postulated that social support had direct effects which reduced chronicity-related role stress (stress) and chronicity-related role strain (strain), and improved the role occupant's health status. Indirect effects of social support on strain (through stress) and of social support and stress on health status were also postulated. The model tested four health status (health) outcomes: positive and negative affect, a physical rating and activities of daily living (ADL).

A nonrandom sample of 83 congestive heart failure (CHF) patients living in a metropolitan community and aged 55-79 was enrolled. Social support, stress, and strain explained the most variance for the negative affect health outcome (R^2=.35 , $p \leq .005$); in contrast, the theoretical model predicted the least variance for positive affect (R^2=.11, $p \leq .005$). Social support and stress predicted 25% of the variance in physical rating ($p \leq .001$) while stress predicted 30% of the variance in ADL rating ($p \leq .001$). Although both social support and stress were expected to influence strain, the hypothesized relationships only held for the

outcome of negative affect where the link between stress and strain predicted 20% of the variance for strain ($p \leq .001$). There were no direct effects between social support, stress, and strain for any of the four health outcomes. These findings are important because they substantiate other research that had indicated social support differentially affects the physical and psychological health. Also, this study extends those findings to include CHF patients. As postulated, stress affected both physical and psychological health. In this study CHF patients with more social support generally reported better physical status and a reduced negative affect. CHF patients who recently experienced stress generally reported increased anxiety, a higher negative affect, and a reduced ability to perform ADLs.

Dorothy Oda, Chair

George Fredrick Shuster III

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Almost one out of every two Americans endures one or more chronicity-related problems. Chronic illnesses cut across every socio-economic status and all age groups. Although low income and advanced age are directly correlated with increased susceptibility to chronic illnesses, they are certainly not the only variables. Indeed, advances in health care contribute to the total number of adults with chronic conditions by frequently preserving life at the price of chronic disability (Gearson & Strauss, 1975). By definition most chronic conditions are not curable; consequently, the current goals of health care focus on the restoration and maintenance of function at each individual's optimal level (Katz, 1984).

Eighty percent of America's health care resources are being directed towards chronic disease. Thirty million Americans experience some kind of dysfunction as a result of chronic disease and over fifty percent of these individuals are either limited in or unable to perform major activities related to daily living such as work or even self-care (Cluff, 1981).

Cluff states that while the course of different diseases may vary as a result of disease-specific factors, all require continuous care, periodic monitoring, and a large dose of self-care (p. 301). Nurses, as primary providers and coordinators of health care for ambulatory clients living in the community, must take the initiative in conceptualizing a new framework for understanding and treating sickness. To effectively

meet their professional commitment, community health nurses must have a clear understanding of concepts related to health and the effects of long-term physical and interactional chronicity, as well as the requisite clinical skills.

Any understanding of such chronicity-related needs is based on answers to important clarifying questions. These questions include: (1) the meaning of chronicity for the individual; (2) how chronicity affects the individual; (3) how the patient copes with the stress of chronicity; and (4) what kinds of role strain are involved with chronicity. But such understanding is not enough for effective, systematic intervention. Before nurses can effectively intervene in a systematic fashion, they must be able to isolate, identify, and address the effects of chronicity-related factors. Therefore, nurses need to know which chronicity-related factors attenuate or ameliorate the effects of chronicity and which variables help to insulate individuals from chronicity-related problems. On the other hand, it is equally important for nurse's to know what other chronicity-related factors complicate or exacerbate the effects of chronicity and which factors can predispose individuals to chronicity-related problems.

The development and testing of the predictive model presented as Figure 1 addresses the five tasks identified by Lin, Dean, and Ensel (1981) as necessary for further progress in the field of social support. These tasks are:

1. The theoretical explanation of why social support can be expected to influence chronic illness.
2. The empirical measures of such theoretical explanations.

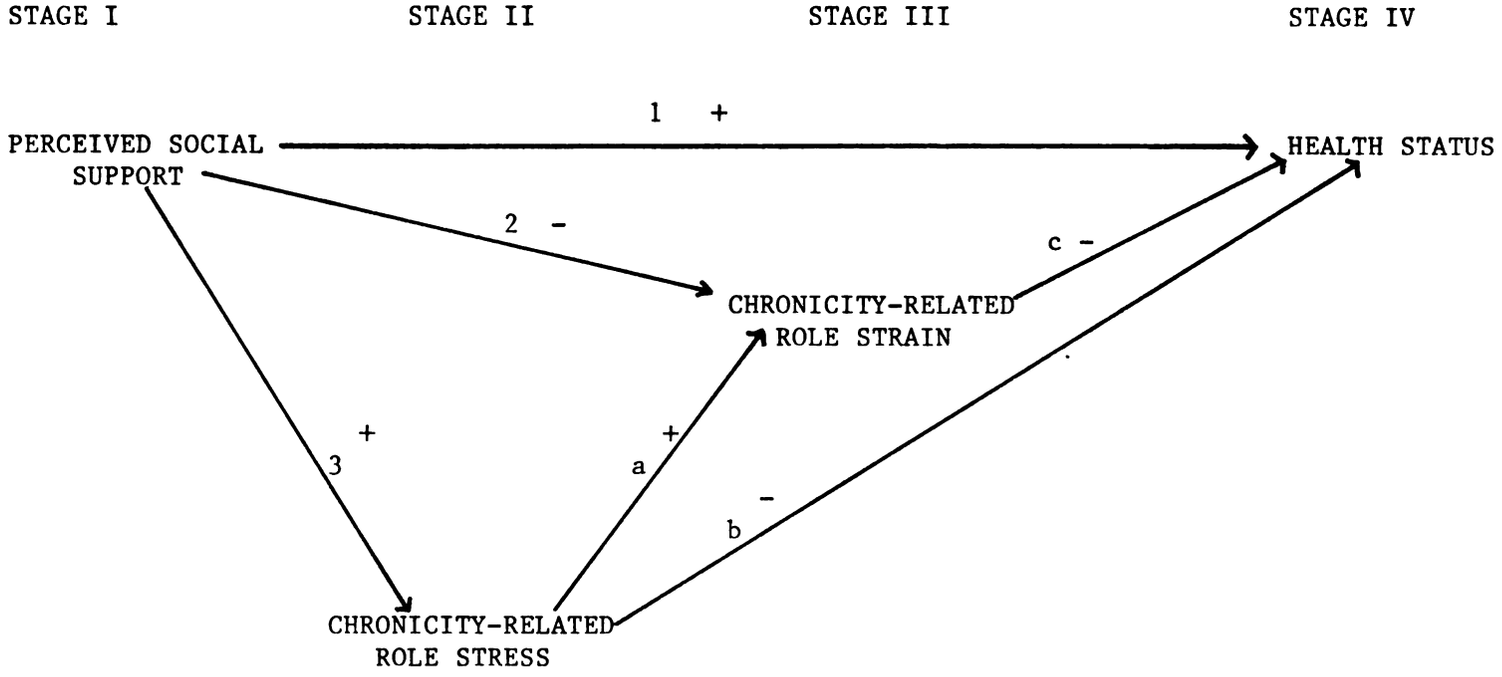


Figure 1. Theoretical model of potential relationships among perceived social support, chronicity-related role stress, chronicity-related role strain, and health status. Arrows 1, 2, and 3 show hypothesized direct effects of perceived social support. Arrows a and b represent hypothesized effects of chronicity-related role stress on chronicity-related role strain and health status. Arrow c represents the hypothesized effect of chronicity-related role strain on health status. A positive relationship between variables is indicated by a "+." A negative relationship between variables is indicated by a "-" (modified from LaRocco et al., 1980, p. 203).

3. The demonstration of empirical relationships between the variables of interest and measurements of their magnitude.
4. The specifications of the causal pathways involved in these relationships.
5. The development of clinically useful social support instruments and analysis (p. 74).

Statement of the Problem

There are many different chronic health conditions that affect people, but one of the most prevalent among the geriatric population in the community is congestive heart failure (CHF). With chronic conditions (long-term, ongoing, psychosocial, and physical imbalances) such as CHF, there are a number of associated health problems. The focus of this research, however, was on the relationship between reported chronicity-related role stress (a condition caused by difficult or impossible demands) and role strain (internalized, subjective counterpart of stress), perceived social support, and psychological as well as physical health status.

Initial field interviews with elderly CHF patients from a Visiting Nurses' Association (VNA) were conducted by the researcher as part of a nine month qualitative research project studying the daily management of chronic conditions. Data from qualitative analysis of interviews with this population suggested that effective usage of social support resources by the affected individual was critical to the successful daily management of chronicity-related problems.

Purpose of the Study

The purpose of this study was to test a predictive model of perceived social support (see Figure 1) for its direct effects on chronicity-related role stress, chronicity-related role strain, and health status. And, to test the indirect effects of social support on chronicity-related role strain through chronicity-related role stress and on health status through role stress and strain.

To minimize extraneous variables and still maximize findings for chronicity, the research was limited to a group of 83 geriatric patients who have a diagnosis of congestive heart failure. The model suggests that the role occupant with CHF was affected by the stress of chronicity (defined here as a process involving long term, ongoing, dynamic psychosocial and physical imbalances). Social support was proposed as the intervening variable with direct and indirect actions that provide role supplementation that may reduce the effects of chronicity on the role occupant's health status.

Specific Aims and Hypotheses

The major premise of this research states that perceived social support has both direct and indirect effects upon chronicity-related role stress, chronicity-related role strain, and health status. This predictive model was empirically tested to determine whether greater amounts of perceived social support have a negative impact on reported chronicity-related role stress and chronicity-related role strain; and a positive impact on study subjects scoring better for psychological and physical health status.

To investigate the relationship between perceived social support, chronicity-related role stress, chronicity-related role strain, and health status within the selected patient population, the study proposes to:

1. Describe selected demographic variables including age, sex, marital status, and educational level;
2. Describe perceived social support as measured by the Norbeck Social Support Questionnaire; describe chronicity-related role stress as measured by the Sarason Recent Life Events Scale, describe each subject according the the New York Heart Association's Cardiac Functional Status Classification criteria, and identify clinical signs and symptoms as measured by the Cornell Medical Index; describe chronicity-related role strain levels as measured by the Spielberger State-trait Anxiety Inventory; describe patient psychological health status as measured by the Bradburn Affect Balance Scale's Negative and Positive Affect Scales; and identify the physical health status of each patient as a physical and activities of daily living rating measured by the Older Americans Resources and Service Center Instrument, the Multidimensional Functional Assessment Questionnaire (see Table 2, p. 71).
3. Analyze the predicted effects of perceived social support upon chronicity-related role stress, chronicity-related role strain, and health status as presented by the model labeled Figure 1.

There are three study hypotheses: H_1 is the major hypothesis of the study and H_2 and H_3 are the secondary hypotheses:

H_1: Health status is predicted by perceived social support, chronicity-related role stress, and chronicity-related role strain.

H_2: Chronicity-related role strain is predicted by perceived social support and chronicity-related role stress.

H_3: Chronicity-related role stress is predicted by perceived social support.

CHAPTER II

LITERATURE REVIEW

The purpose of this chapter is to examine a conceptual approach to the process of chronicity among physically ill adults and to present a selected review of the theoretical and research literature related to the four variables of the predictive model tested in this study. These variables are chronicity-related role stress, chronicity-related role strain, perceived social support, and health status. In order to accomplish these two purposes the literature review has four objectives:

1. to discuss role theory;
2. to examine the concept of chronicity and how the stress of chronicity affects individuals;
3. to develop the concepts of chronic illness and chronic lifestyle as outcomes of chronicity;
4. to present the predictive model variables of chronicity-related role stress, chronicity-related role strain, social support, and health status.

Role Theory

Role, as used in this framework, means a behavioral constellation defined in terms of values, sentiments, or goals that govern one's interactions (Hadley, 1967). Sarbin further clarifies the concept of role by describing it as learned actions and deeds that form sequential patterns within an interactionist setting. Dracup and Meleis (1982,

p. 33) assert that role, as conceptualized by interactionists, is fluid and that roles are therefore tentative because they are constantly adjusted or redefined by the individual.

Sarbin and Allen (1968, p. 489) define role theory as "a set of propositions employing a consistent idiom that guides the search for facts." They stress the role enactment area as the focus for role theory; and, it is the effects of chronicity on this area that are of interest in this study. There are additional reasons for the selection of role theory as an appropriate theoretical perspective. Role theory provides the researcher with an appropriate means of gaining insight and understanding for the important coping and role strain aspects of chronicity. Because role theory is a micro-oriented perspective, it is appropriate to use in examining dyadic relationships. (Here the dyadic relationship is of the individual affected by chronicity and the person providing support.) Turner (1982) notes that role analysis usually focuses upon restricted status networks such as those found in a clearly identified group, as it attempts to account for the actions of individuals who are participants within that identified group. Role theory is appropriate for this chronicity research because it focuses upon small groups and attempts to explore such individual means of coping. The role-related terms presented in this part of the literature review are summarized in Appendix A.

It is important to consider the intellectual legacy of George Herbert Mead to role theory. Mead drew from a number of American intellectual traditions to develop his concepts in Mind, Self, and Society (1934). His assumptions apply to the theoretical perspective used here, and are particularly useful for chronicity-related research.

First, as Turner noted, Mead drew from behaviorism the premise that reinforcement is a major factor in the guidance and direction of one's actions. Second, Mead also incorporated the perspective of pragmatism that allows individuals to come to terms with their actual world. Together, these two assumptions suggest that humans seek to cope with their actual conditions in a variety of ways. They also learn that patterns provide gratification, with the most important type of gratification being adjustment (Turner, 1982, p. 311). When Mead's concepts are applied for chronicity-related research they suggest that people will attempt to cope with chronicity-related stress through behavior patterns that provide the most gratification.

Turner asserts that role theorists perceive of the world in terms of interrelated positions, or statuses, within which each individual enacts different roles. Each position is associated with different kinds of expectations about behavior. "Thus social organization is ultimately composed of various networks of statuses and expectations" (Turner, 1982, p. 345).

Today, role theory has two major related perspectives: the functional perspective and the interactional perspective. The functional perspective is based on the assumption that roles are fixed societal positions that are attached to given expectations and demands. Society collectively enforces such roles by positive or negative sanctions (Conway, 1978). Roles are much more rigid in the functionalist perspective. On the other hand, the interactionist approach focuses upon interaction between individuals and the interpretation of behavior as a response to the symbolic acts of other people (Conway, 1978).

Thus, the functionalist perspective bases social behaviors upon learned responses, while the interactionist perspective adds the organization and interpretation of symbolic actions to learned behavior. The interactionist perspective conceives of role as a much more fluid concept and the interactionist perspective is more appropriate for chronicity-related research; it is philosophically congruent with the concept of social support as emotional support, aid, or affirmation (Kahn & Antonucci, 1980). This research uses role theory from an interactionist perspective.

Symbolic Interactionism

Interactionism is a broad term used by theorists to examine questions that concern relationships between individuals and society. The interactionist perspective adopted here is a synthesis of the positions of Blumer and Kuhn, neither of which, taken alone, is entirely adequate for this study. Kuhn's position appears too deterministic, and his belief that different sciences can use common methods seems inappropriate because of the currently recognized differences between the natural sciences and the human sciences (Meltzer & Petras, 1970). In contrast, Blumer's position seems too relativistic: each individual may help shape his reality, but meanings are shared in common, and societal interaction places constraints upon such individual interpretations. However, Kuhn's attempt to seek empirical indicators of key concepts (Meltzer & Petras, 1970) makes more sense to this researcher than Blumer's emphasis on the ambiguous nature of such concepts. Therefore, this research uses a synthesized interactionist perspective.

A number of terms used here require explanation. These terms are: role enactment, role clarity, role stress, role multiplicity, role strain, and role supplementation. These concepts are discussed below, and are defined in Appendix A.

Role enactment. Sarbin and Allen (1968) emphasize role enactment. Role enactment is an essential part of role that involves three important aspects:

1. the number of roles;
2. organismic involvement or degree of effort;
3. pre-emptiveness or time commitment.

The number of different roles an individual plays may affect organismic involvement as well as the amount of time that the individual can commit to each different role. Organismic involvement is the intensity of role enactment. The aspects of role numbers (the total number of roles available within an individual's repertoire) and pre-emptiveness (the relative total amount of time devoted by an individual to different roles) are relatively straightforward.

Role enactment as a concept is related to questions concerned with role status legitimacy, normative role status standards, and appropriate role occupant enactment conduct (Sarbin & Allen, 1968). The role occupant must either have sufficient personal resources or be able to draw upon the environment to fulfill role-related needs. Otherwise, role enactment will be insufficient and questions of role status legitimacy (capability and competency in fulfilling role requirements) will arise. These questions relate to "fit", that is, how well does the role occupant seem to fit the role?

Role clarity. Role clarity is a critical requirement of role enactment. Work by Bramwell and Whall (1986) links role clarity with the role performance of wives supporting husbands who have recently experienced their first myocardial infarction. Sarbin and Allen (1968) maintain that lack of role clarity produces role ambiguity which adversely affects social interaction.

Folkman and Lazarus (1982) state that ambiguity about role plays a major part in appraisal and coping. They define ambiguity in terms of environmental conditions and use the term "uncertainty" to describe the subjective counterpart of ambiguity. "Ambiguity refers to lack of clarity in the environment, and uncertainty refers to lack of clarity in the person's mind" (Folkman & Lazarus, 1982, p. 19). The concept of role ambiguity and its use in the study of occupational stress has been well documented (Holt, 1982). Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964) studied the effects of role conflict and ambiguity upon different subjectively-reported measures of role-related strain such as role-related tension (r=.51). In other research, the relationship between role-related ambiguity and psychological health (as measured by well-being and depression) was studied by French and Caplan (1970) and Kahn (1973). Folkman and Lazarus believe most social interactions display some degree of ambiguity. Likewise, Sarbin and Allen (1968) state that uncertainty impairs role clarity. Reduction of ambiguity and its subjective counterpart, uncertainty, are important to effective role enactment.

Multiple roles. Further consideration of role theory indicates that individuals occupy many different roles. In a single day, the individual faced with chronicity-related problems might enact any number

of roles: patient, spouse, lover, parent, professional, and provider. Some of these role enactments can be simultaneous, and some are sequential. Chronicity can affect any or all of an individual's multiple roles and it can affect them to different degrees.

Another aspect of potential stress with multiple role enactment is the nature of these roles. There are two general categories of roles: ascribed roles and achieved roles. Ascribed roles include sex and kinship and are often associated with heredity factors. Achieved roles usually require skill and training. Sarbin and Allen (1968) believe there is a positive relationship between the number of different roles one maintains and one's ability to meet life problems. They maintain that the more roles in one's repertoire, the better prepared an individual is to meet different requirements. Chronicity frequently limits or even eliminates roles from an individual's repertoire, the effect of which is congruent with the interactionist perspective of ongoing change and adjustment for roles (Dracup & Meleis, 1982).

Role stress and chronicity-related role stress. For the purpose of this study, role stress is a general term used to include social structural conditions in which role demands and obligations are difficult or impossible to meet. Role stress occurs when a role occupant does not fulfill role status expectations. Hardy (1978) uses role stress as a concept embedded within the social environment and therefore external to the role occupant. She argues that role stress is a general condition that develops as a result of difficult, conflicting, or impossible demands upon role occupants.

Chronicity-related role stress as used in this study starts with Hardy's idea of stress as a general condition that develops because of

difficult, conflicting, or impossible demands upon the role occupant and combines it with the concept of the chronicity process as the source of that general condition.

In this research, a direct link is proposed between chronicity-related role stress and health status. Pearlin and Lieberman (1979) investigated the effects of relatively enduring stressful role-related events associated with occupational, marital, and parental roles that caused psychological distress. A different study by Brown and Harris (1978) examined the relationship between life events and depression. Pearlin, Lieberman, Menaghan, and Mullen (1981) studied the effects of negative life events upon chronic life strains and how both affected psychological health.

One of the issues associated with research in this area is how to measure the stress of recent life events. Researchers examining the relationship between stress or role-related stress and social support take one of two general approaches to the problem: either their research measures a single significant life event such as death of a spouse, or they measure combined life events change scores over a specified period of time. For example, both Cobb (1974) and Gore (1978) utilize a single significant life event approach. In contrast, many other studies (discussed later) used a stressful life events approach. Studies that relate stressful life events to illness have been frequently criticized (Dohrenwend & Dohrenwend, 1976; Thoits, 1982) for confounding stressful life events with social support. For instance, social support may be confounded with stressful life data such as the death of a spouse or the loss of a spouse through divorce because both are events that would strongly affect both social support and

stressful life events. Despite the difficulty in separating the effects of social support and stressful life events, there are good reasons for the selection of stressful life events as a means of measuring stress.

In the present study, chronicity-related life stress does not present itself as a single event. Chronicity generates a broad range of life stressors. For many of the individuals involved in the studies noted above, chronicity is a full-time "career." Indeed, chronicity may well present individuals with a variation of what Weisman and Worden (1976) called the existential dilemma of cancer patients; simply the need to maintain one's ego integrity in the face of chronicity. For these reasons the stressful life events approach makes more conceptual sense in approaching the question of measurement for chronicity-related role stress.

Also, there is evidence to suggest the stress of recent life events may be related to chronic health problems (Wyler, Masuda, & Holmes, 1971) as well as cardiac-related incidents (Rahe & Lind, 1971; Theorell & Rahe, 1971). While Vinokur and Selzer (1975) reasoned that the source of stress from recent life events was not change itself but whatever the affected person considered and subjectively interpreted as offensive about the event. Mueller, Edwards, and Yarvis (1977) also reasoned it was the undesirability of the event rather than the change itself that was related to psychiatric symptomatology.

In the occupational health literature there are a number of studies that provide evidence linking a variety of objectively and subjectively defined stress to both physical and psychological health status. These include physical health measures such as serum cholesterol, high and low density lipoproteins (Chadwick, 1980), heart disease (Glass, 1977),

hypertension and diabetes mellitus (Cobb & Rose,1973), arthritis (Cobb, 1971) and such psychological health measures as anxiety and depression (Caplan, Cobb, French, Harrison, & Pinneau, 1975; Ilfeld, 1977).

Role strain and chronicity-related role strain. For the purpose of this study, role strain is defined as the subjective counterpart of role stress, which includes worry, guilt, and anxiety resulting from role conflict or role enactment. Role strain is created by the effects of role stress. Goode (1960, p. 483) viewed role strain as the difficulties that role occupants "felt" in the process of fulfilling their role obligations. Role strain manifests itself in "subjective feelings of frustration, tension, or anxiety" (Hardy, 1978, p. 73). In a principle components analysis of one instrument measuring role strain, MacKinnon (1978) found the role strain stable across two different sample populations, this lends credence to the generalizability of the concept.

Goffman maintains people expect other individuals, as role occupants, to possess the abilities and qualities required by specific role expectations during social interactions. This expectation is not always fulfilled. When individuals do not fulfill role status expectations, there is role stress and role strain. Specifically, Hardy (1978) argues that role stress and role strain are pervasive conditions of contemporary society.

Goode (1960) goes even further in maintaining that difficulties in fulfilling role demands and obligations are not only pervasive but normal. Individuals cope with such role strain by engaging in bargaining with other individuals. Goode believes the multiplicity of roles and their organismic requirements create role obligations that

cause an over-demand. Because role theory assumes role occupants generally fulfill role-associated enactments, over-demand contributes to role stress and role strain. Chronicity contributes to such over-demand by making the fulfillment of role obligations even more difficult, if not impossible. This might be due to fatigue, impaired mobility, or other chronicity-related impairments.

Chronicity-related role strain as used in this study is based upon Hardy's definition of strain as a subjective condition that develops as a result of difficult, conflicting, or impossible demands upon role occupants (1978). Because role strain is conceptualized as the internalized subjective counterpart of role stress, a direct positive relationship is proposed between role stress and the role strain experienced by the role occupant. In turn, increased chronicity-related role strain has a negative effect upon health status. The idea of chronicity-related role stress affecting chronicity-related role strain and health status is similar to the hypothesized causal model of occupational stress proposed by LaRocco, House, and French (1980); it is also congruent with the concept of social stress presented by French, Rodgers, and Cobb (1974) and Kahn (1970). Work by LaRocco, House, and French (1980) and by Vinokur and Selzer (1975) provides support for the hypothesized link between role stress and role strain.

There is also some research that supports the effects of strain upon health status; specifically, congestive heart failure. In an early study of the effects of emotion upon the precipitation of congestive heart failure Chambers and Reiser (1953) found that emotional distress precipitated 19 of 25 consecutive hospital admissions. More recently, LaRocco, House, and French (1980) found significant relationships

between different measures of job-related strain and both psychological health status and somatic complaints, while social support appeared to have interactive effects.

Role insufficiency. One outcome of role stress and role strain may be what Meleis (1975) calls role insufficiency. Role insufficiency refers to role occupants who can no longer meet their role enactment obligations. These difficulties can be related to either cognitive or performance aspects of the role as perceived by either self or significant others. This researcher believes role insufficiency is one possible outcome of chronicity-related role stress and strain.

Role supplementation. Meleis (1975) defines role supplementation as any deliberate process that is initiated by identification of role insufficiency, or potential role insufficiency, on the part of affected individuals and their significant others. Role supplementation requires role clarification (i.e., the reduction of ambiguity) and role taking (the adaptation to a revised role or a new role) as a preventive or therapeutic strategy to "decrease, ameliorate, or prevent role insufficiency" (Meleis, 1975, p. 267).

Role-Related Health Research

A great deal of the health research literature associated with the sick role focuses on entry into the role rather than the ongoing effects of sickness upon the role occupant (Blackwell, 1967; Mechanic & Volkart, 1961; Petroni, 1969; Phillips, 1965). Other sick-role literature (Kassenbaum & Baumann, 1965; Parsons, 1951; Petroni, 1969; Shuval, Antonovsky, & Davies, 1973) indicates dependency, weakness, undesirability, and passive outlook are associated with the sick-role.

Brown and Rawlinson (1975), who studied open heart surgery patients (N=150) one year after surgery, found depression, sex, age, and duration of illness prior to surgery as significant predictors for identifying who relinquished the sick role after surgery.

Although the terms role supplementation and role insufficiency are not used in the following health-related research, the findings are supportive of both terms as they are defined in this study. For example, Davis (1963) examined the process of role and role expectation changes in polio patients as they moved from wellness to sickness. Power (1979) studied 74 men with multiple sclerosis and found that only 21 were able to maintain participatory roles in family life. This study is consistent with an important point that Christopherson (1968) made: the actual level of impact for any disability upon the individual is not only a result of the physical impairment itself. Individual adaptation to physical impairment is greatly influenced by how the affected individual uses his residual abilities to adjust to the ongoing demands of life.

Both Lindenberg (1977) and Shellhause and Shellhause (1972) point out that the level of role adjustment by disabled individuals is greatly influenced by significant others who are actively involved with the affected individual in defining the meaning of the illness and its role impact. Pearlin and Lieberman (1979) used life-strains and related them with occupational, marital, and parental roles to identify the social sources of emotional distress and to describe how such life-strains came to matter. In a secondary analysis of the this data Pearlin, Lieberman, Menaghan, and Mullan (1981) used role and life strain data to study the process of stress. Occupational, marital, and parental roles were studied to identify the structure of coping (Pearlin & Schooler, 1980).

Role theory has also been used for intervention studies. Mann and Janis (1968) used a role perspective for an intervention study to help heavy smokers quit through incorporation of the sick role as a part of self-concept.

In summary, role insufficiency may be caused by a number of situational variables whose origin may be either the individual's perspective, the individual's environment, or the transaction between the individual and his environment. These variables may be physical, psychological, or social. In the next section, the concept of chronicity is presented as a source of poor health status as well as the primary cause of role stress and role strain.

Chronicity

The magnitude of the chronicity problem is great but the concept of remains vague. Conceptual clarification is important for both theoretical development and clinical treatment of chronic illness. What is chronicity? Archbold and Perdue state that chronicity is an attribute of individuals living with an ongoing health condition that combines

> all the vexing, weakening or troubling stressors of long duration associated with biological, cultural, economic, political or psychosocial imbalances which human systems possess and which influence all aspects of the system's relationship (1981, p. 3).

The chronicity process conceptualized here includes imbalances of a biological and psychosocial nature. It is hypothesized that these imbalances may lead to two kinds of outcomes: chronic illness or a chronic lifestyle. Chronicity, physical chronicity, interactional

chronicity, chronic illness, and chronic lifestyle are important concepts used throughout this study. For the purposes of this study each of these terms are defined below:

1. Chronicity is a process involving long term, ongoing, dynamic imbalances. It is primarily psychosocial in nature although it usually (but not necessarily) includes a biological imbalance as well.
2. Physical Chronicity is a pathophysiological process involving biological imbalances affecting different systems of the body.
3. Interactional Chronicity is the imbalanced psychosocial perspective that the individual uses during environmental interactions.
4. Chronic Illness is one possible outcome of the chronicity process that has characteristics of ambiguity, uncertainty, and instability. Disability is present but dependency is not present so biographical restrictions are of a limited nature and role fulfilment is possible although the individual is potentially discreditable.
5. Chronic Lifestyle is a second, different, relatively more severe, more labile, and more brittle outcome of the chronicity process with characteristics that also include ambiguity, uncertainty, and instability. However, in addition to disability, severe restriction, and handicap are also present. Role stress and role strain are a part of this outcome and role supplementation is necessary for role fulfilment. Stigma is present and the individual experiences a discredited state.

According to Underwood (1982), there are two kinds of chronicity, a hypothesis that this researcher also espouses. One kind can be attributed to the disease process, while the other kind can be attributed to the interaction of the affected individual with his environment during the process of care and treatment of the disease. Underwood presents this hypothesis in relation to mental illness, but this researcher hypothesizes that these two kinds of chronicity are also associated with physical illness. The term disease as used here is associated with the formal diagnosis of the pathological physical process while the term illness is associated with the affected individual's subjective perception of what is happening to him.

To differentiate the two types of chronicity, the type attributed to the disease will be referred to as physical chronicity and the type attributed to the way the affected individual interacts with his environment as interactional chronicity. Physical chronicity is described in the section on chronic disease, and interactional chronicity is described in the section on chronic illness. The term chronicity, when used alone, will refer to the combination of both physical and interactional chronicity.

Chronicity, as conceptualized here, begins with an individual with an impairment caused by disease, or an individual experiencing a devalued state. At that point the individual will engage in caring for his chronicity problem in response to this perceived devalued state. Chronicity becomes a dynamic impacting upon that individual's biography (life-events) by affecting his interactions with the environment. The process is present whether or not the individual is diagnosed and whether or not he is involved in a formalized treatment regimen.

The chronicity construct discussed in this section is based upon the following assumptions:

1. An individual may have a chronic disease without having either a chronic lifestyle or a chronic illness.
2. An individual may have a chronic illness without having either a chronic disease or a chronic lifestyle.
3. An individual may have a chronic lifestyle without having a chronic disease.
4. Interactional chronicity is a requirement of two and three; it is not a requirement of one.

These assumptions can be further clarified by examples.

Assumption 1. An example of an individual who has a chronic disease without a chronic lifestyle or a chronic illness would be the undiagnosed hypertensive or the individual who has had a silent myocardial infarction (M.I.).

Assumption 2. The individual who is symptomatic, who has some level of disability, and who has implemented some type of care plan in response to that disability fits here. One example is the colostomate. A second is the post M.I. individual with a cardiac insufficiency problem. However, they do not experience a handicap since they can function without disadvantage. Their lives are changed, but they are not dependent.

Assumption 3. Chronic lifestyle occurs when one experiences a handicap. The elderly recluse may have no active disease process present yet remain isolated. The cardiac cripple may be physically recovered from an M.I. yet so psychologically scarred by the experience that he becomes dependent on others for activities of daily living.

People with severe chronic back pain that restricts them also fall into this category.

Assumption 4. Chronic lifestyles or chronic illness may involve many different dimensions, but they always involve instability and ambiguity, disability, and some type of long-term care.

Chronic Disease

Chronic diseases can vary by symptomatic type, onset, severity, duration, complications, and effects; yet chronic diseases as a whole may be defined in the following way:

> All impairments or deviations from normal which have one or more of the following characteristics: are permanent, leave residual disability, are caused by non-reversible pathological alteration, special training of the patient for rehabilitation, may be expected to require a long period of supervision, observation, or care (Mayo, 1956, p. 5).

What are chronic diseases? Categorically, the formal diagnoses of the physical pathology as stated in Control of Chronic Diseases in Man include: disorders of perception and communication, diseases of the nervous system, diseases of the broncho-pulmonary system, diseases of the cardiovascular system, dental diseases, diseases of the blood, diseases of the digestive system, diseases of the urinary system, diseases of muscles, diseases of bones and joints, diseases of the endocrine system, diseases of metabolism, drug dependence, and cancer. A wide range of psychiatric problems are also treated as chronic diseases.

Characteristically, chronic diseases are long-term because most are incurable. Chronic disease has an uncertain nature, prognosis is uncertain until the disease process has evolved to a point where it declares itself, and the trajectory is uncertain. Chronic diseases

require significant palliation, including efforts to relieve physical discomfort, control pain, and address the psychological discomforts of grief and/or anxiety (Gearson & Strauss, 1975, p. 6). Palliation is symptomatic in nature; its goal is relief of symptoms, not cure of cause. Chronic disease is episodic--there are acute periods, periods of relative improvement, and periods of stability. Each disease has its own trajectory. Each trajectory has events that are specific to it, although a more general approach will reveal that each trajectory also shares important characteristics, characteristics that were noted above in the definition of chronic disease and that are common to all chronic diseases. Table 1 reveals some of the differences between acute and chronic diseases.

With the control of infectious and parasitic disease and the reduction of maternal deaths, chronic disease has become the main area of need, but not the area of emphasis in health care. Physical chronicity refers to the disease process. The biomedical model focuses upon the treatment of the disease process and assumes chronicity stems from the disease process itself. Treatment is directed towards the causes of the disease process and the pathological progression that results from it. The emphasis is on the cure or the technological fix instead of psychosocial management. Strauss and Glaser (1975) point out that there is a difference in treatment goals between acute illness and chronic illness. The treatment goal for acute illness is cure, while the treatment goal for chronic illness is management or symptom control. Figure 2 illustrates the theoretical trajectory of a chronic physical condition.

Table 1.

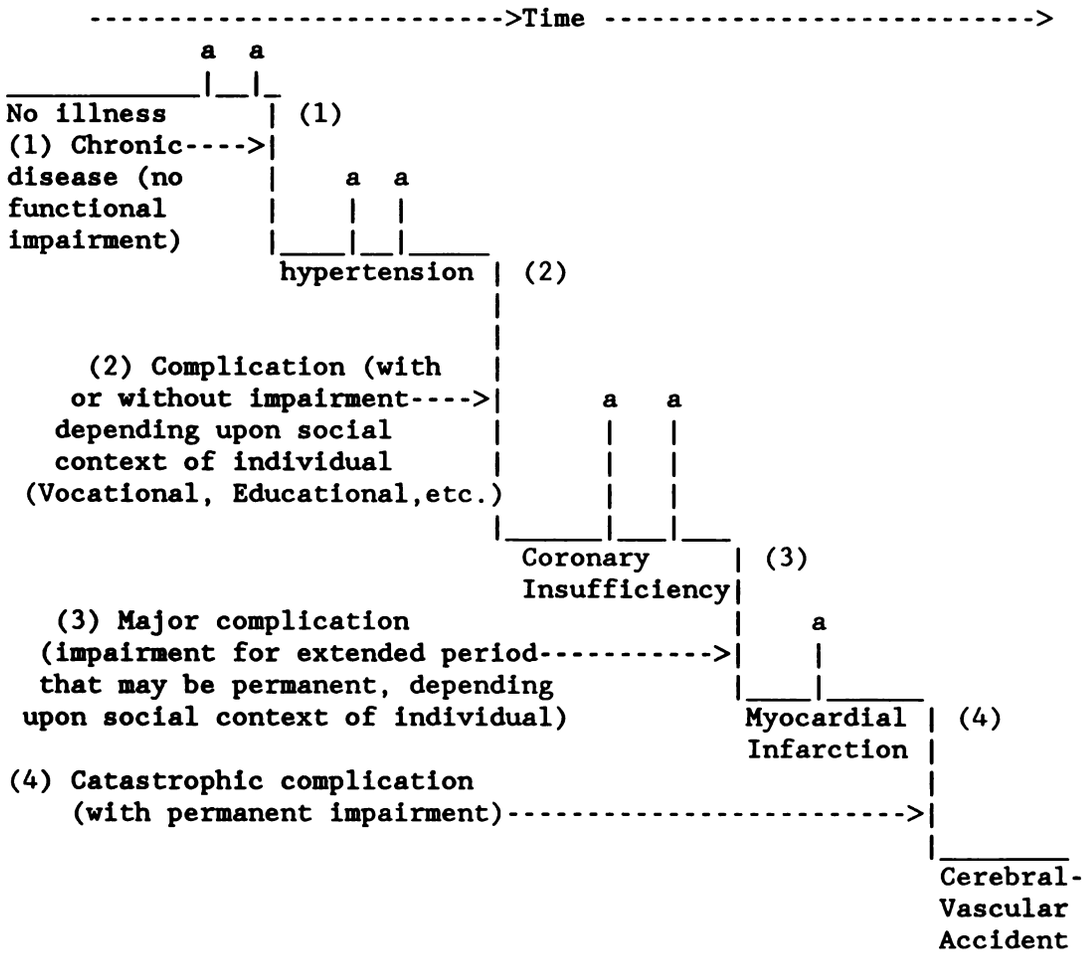
Some Differences Between Acute and Chronic Diseases

Category	Diagnostic & Treatment Capability	Disease Duration	Treatment Location	Health Provider Function
Acute Disease	High	Short	Specific	Highly Defined
Chronic Disease	Low	Long	Inter-changeable	Diversified, poorly defined

Category	Cost Factors*	Psycho-social Factors	Rx Performance Factors
Acute Disease	High over a short period of time	Minor	Relatively high
Chronic Disease	Low over a long period of time	Major	Relatively low

* In part, improved productivity in the treatment of acute disease is demonstrated by a reduction in treatment time. In chronic disease, when treatment capability has remained essentially unchanged and longevity has improved, productivity could be said to have decreased (Jerome Hammerman, 1971).

A Theoretical Case Study: Hypertension



(a) indicates acute illness episode with no disability. Numbered vertical lines indicate a disabling or potentially disabling episode.

Figure 2. Progression to chronic disability (Schaeffer, 1971, p. 39).

The concept of chronicity has been presented in this part of the literature review as a dynamic process. Individuals affected by the process of chronicity experience one of two predictable outcomes resulting from this process, either chronic illness or chronic lifestyle.

Chronic Illness

Chronic illness is a global concept. One of its most salient dimensions is phenomenological. Fabrega (1974) argued that the meaning of illness for the individual is derived from cultural factors. These cultural factors govern perception, identification, explanation, and the evaluation of the discomfort experience. The current system of medical education devalues and deemphasizes long-term chronic disease care. Nursing places more emphasis on the management of chronic illness than medicine, but the overwhelming percentage of nursing graduates (62%) practice in facilities designed for acute tertiary care (Research Triangle Institute, 1980). Jerome Hammerman stated in 1971: "This professional avoidance is perhaps best represented by our confusion over definitions. 'Long-term care,' for example, offers little agreement as to meaning other than it is care for 30 days or longer" (p. 20). The situation has not changed much in the last 13 years. However, the individual with a chronic disease knows what long-term care is--it is forever. Strauss et al. (1981) characterize chronic illness as more than passive suffering; they argue it involves long, hard, skilled work on the part of patients. This is true outside the hospital as well.

There is a conceptual difference between chronic disease and chronic illness that is supported in the literature (Fabrega,1974;

Strauss & Glaser, 1975; Kleinman, Eisenberg, & Good, 1978). The Western biomedical paradigm conceptualizes disease as maladaptation or malfunctioning of biological and psychophysiological processes, whereas illness has a different scope. Illness is shaped by cultural reactions as well as interpersonal and personal reactions to discomfort and disease (Kleinman, et al.,1978, p. 252).

Stoeckle (1964) points out that 50% of physician's visits are for complaints without an identifiable physiological basis. This is significant because it emphasizes the fact that individuals will seek help from a health care provider for reasons that the biomedical model can only classify as idiopathic in nature. Stoeckle's belief that illness may occur in the absence of any diagnosed disease is even more significant for the construct of chronicity because it means the course of a disease is distinct from the illness trajectory. There are empirical as well as experiential data available. Westbrook and Viney (1982) reveal that chronically ill adults, as compared with healthy adults, exhibit significantly more anxiety, depression, and anger (both direct and indirect) and they perceive of themselves as more helpless.

Chronic disease affects the biological and the psychological dimensions of an individual's life while chronic illness is a broader term that includes biopsychosocial dimensions as well. The holistic view of illness postulates it is a composite phenomenon contributed to and shaped by a number of influences that may or may not have a direct causal relationship to each other and to the chronic disease process. Taken together these influences make up the chronic illness trajectory that includes all of the effects of the illness upon one's biography.

Strauss and Glaser (1975) proposed that these effects are often multiple in nature and used seven areas of social and psychological problems as a framework to consider the multiple problems of daily living:

1. The prevention of medical crises and their management once they occur.
2. The control of symptoms.
3. The carrying out of prescribed regimens and the management of problems attendant upon carrying out the regimens.
4. The prevention of, or living with, social isolation caused by lessened contact with others.
5. The adjustment to changes in the course of the disease, whether it moves downward or has remissions.
6. The attempts at normalizing both interaction with others and style of life.
7. Funding (Strauss & Glaser, 1975, p. 7-8).

Lipowski (1969) argues that patients view illness as being problems or difficulties in living caused by the disease process. For them the difficulties in living are the disorder itself. In contrast, physicians generally view the disorder as the disease process itself and often ignore difficulties in living caused by the illness problems. The two views are not congruent.

Disability. One characteristic of chronicity is disability. Disabilities are a part of chronic illness as well as chronic lifestyle Individuals vary in terms of degree, and in terms of the stabilizing or progressive destabilizing nature of the problem. Disabilities may fit into any of the following categories: visceral, locomotor, visual,

communication, invisible, or aversive. The World Health Organization (WHO) definition of disability can be expanded to include emotional, intellectual, and psychological categories as well as the senses. Disabilities affect mobility, self-care, leisure activity, relationships, and one's concept of self. They may be viewed as different aspects of impairment.

There are four dimensions to disability (Christopherson, 1962). These dimensions include: (1) duration, (2) intensity, (3) extensity, and (4) viability. Duration implies the temporal dimension with its different stages of the disease and chronicity trajectories. Intensity involves the relative severity of the disabling agent in relation to others suffering from similar conditions. It is based upon measures of endurance, the degree of impairment, the activity of the symptoms, and the requirements of the therapeutic regimen. Extensity refers to the effects of the limitations upon individuals and their significant others. It contains an element of adjustment to the disability. Finally there is viability. Viability addresses the individual's resources and the degree to which he is using them in daily living.

In response to the disability with its direct as well as indirect effects, the individual implements a long-term care plan. In such situations medical management is relatively static. There may be possibilities for recovery, but these are frequently limited. Physician involvement is limited; often nursing provides the formal health care for the individual (especially within the community). For affected individuals it is a twenty-four hour situation to which they must adjust at a psychological, social, and a behavioral level.

Stigma and restriction. There are other characteristics of chronicity. For example, Goffman (1961) wrote about the stigma that accompanies a handicap or a disability. Another aspect of chronicity is restriction, which addresses the limiting dimensions of chronicity. The very nature of the chronic condition often forces an individual into coping with stigma and restriction because it directly affects the individual's biography. People who experience chronicity attempt to deal with the problem in different ways, all of which involve adjustments to the chronicity.

Chronic Lifestyle

The second outcome of the chronicity process may be a chronic lifestyle, which can occur even without the presence of chronic disease. For example, there is the elderly recluse who refuses to go out because "I'm just too weak," or the post-cardiac cripple who may physiologically be recovered from the MI but still refuses to perform the activities of daily living. Stigmatized adults are often in this category.

The degree to which one's biography is altered or changed by the chronicity process, its outcomes, or its treatment regimen is one way of measuring chronic lifestyle. But chronic lifestyle is also phenomenological; it can be caused by one's perceptions of subjective reality without a chronic disease being present.

Chronic lifestyle affects one's biography both in-home and out-of-home because it can affect the individual's mobility, self-care, leisure activities, relationships, and work. It may affect in-home and out-of-home activities equally or unequally, but it will affect them nonetheless. In a phenomenological sense, individuals redefine their

understanding of self and develop a new normal. Significant others must also redefine a new sense of what is normal in terms of that individual. Nineteenth century society recognized chronic lifestyle and labeled individuals experiencing it invalids.

Chronic Illness versus Chronic Lifestyle

What has been said about chronic lifestyle could also be said about chronic illness. What makes chronic lifestyle distinct from chronic illness is dependency. Goffman explored this concept in his book, Asylums: Essays on the Social Situation of Mental Patients and Other Inmates (1961). It contains an "I can't" rather than an "I can" attitude. It is learned; it can be self-imposed or it can result from institutionalization. Either way it is a brittle state with a devalued social status and significant restrictions upon activities.

Another way of differentiating is between disability and handicap. Disability is defined as the consequences of impairments in terms of functional performance and activity, whereas handicap is defined as the disadvantages experienced by the individual as a result of an impairment and disability. Impairment includes abnormalities of body structure and appearance that involve organ or system dysfunction (WHO, 1975). Chronic lifestyle involves a handicap. Chronic illness does not.

Chronic lifestyle involves more severe limitations upon one's biography. There is often more instability because the situation is more labile, more uncertain, more serious.

The two terms are not simply different stages of a process called chronicity. They are not stages in the sense that one must go through illness to reach lifestyle. Neither are they stages in the sense that

stage implies hierarchy. Rather they are outcomes of the chronicity process. It is important to recognize the fact that these two outcomes are phases rather than stages. Nursing must consider how to intervene to prevent individuals, if possible, from experiencing the kinds of declines in health status that result in a chronic lifestyle.

Summary of Chronicity

The concept of chronicity as a process was developed and examined in relationship to chronic illness, chronic lifestyle, and chronic disease. The chronicity process involves two different types of chronicity: physical chronicity and interactional chronicity. Physical chronicity involves the disease process and its pathological progression, the effects that may vary with the specific disease entity involved. Interactional chronicity, on the other hand, involves the affected individual's transactions with the environment. The effects of interactional chronicity do not vary with the specific disease entity. Interactional chronicity consistently involves the same social and psychological problems of daily living. The chronicity process itself is dynamic with relative instability, ambiguity, and uncertainty as important characteristics of interactional chronicity; the disease process is the primary characteristic of physical chronicity.

The stress of the chronicity process is a significant aspect of the individual-environmental transaction (how individuals interact with their environment) because it can potentially affect all aspects of the transaction. Therefore, chronicity requires attention and care by the affected individual because of the disability outcome that accompanies the chronicity process. This outcome may be either a chronic lifestyle

or a chronic illness, although an individual may experience both at different points in the chronicity process.

Chronicity-related stress itself is related to the individual's perception that environmental demands exceed his capabilities and resources if he were to meet them alone. This is because the chronicity process results in a poor fit between the individual and the environment, which results in unmet personal needs (French, Rodgers, & Cobb, 1974). Chronicity-related strain results from the adverse perceptions of the role occupant about his environment and the role conflict, negative feelings, and reduced satisfaction experienced because of chronicity-related stress.

This interaction between stress, strain, and health status depends upon what LaRocco et al. (1980) call conditioning variables. These variables are characteristics of individuals, or environmental situations, that moderate the relationships between the variables of stress, strain, and health status. Social support is hypothesized as one such conditioning variable that may have direct or indirect effects upon role stress, role strain, and health status, by providing the role supplementation an individual needs to manage his chronic condition.

In conclusion, the fundamental hypothesis of this section was that the construct of chronicity is a biopsychosocial process that leads to outcomes of chronic illness or chronic lifestyle. Whether an individual experiences a chronic illness or a chronic lifestyle depends upon the effectiveness of coping responses and the effectiveness of the role supplementation, which is provided by conditioning variables such as social support.

Social Support

According to Kahn (1979, p. 83), and for the purposes of this study, social support is viewed as personal interactional expressions that consist of aid (materials, information, and time), affirmation (endorsement of a person's perceptions, beliefs, values and actions), and affect (positive feelings such as liking, respect, and admiration).

Kahn's definition of social support is one of a number of different definitions proposed by researchers from many different disciplines who have been interested in studying social support. This interest comes from the assumption that social support is an important environmental variable for individuals coping with environmental stress. Since the concept of social support itself is relatively atheoretical, investigators in the health field use their own disciplinary perspective, as well as a number of different theoretical frameworks, in studying the relationships between social support and health. The resulting confusion over definitions and underlying assumptions has created a great deal of ambiguity among health researchers. These issues are extensively discussed in a number of reviews of the literature (DiMatteo & Hays, 1981; Wallston Alagna, McEvoy, DeVellis, & DeVellis, 1983; Wortman , 1984) and they will not be discussed here.

Social Support: Areas of Convergence

Kahn's definition of social support is one of a number of different definitions. Despite the diversity of definitions of social support, Dimond and Jones (1983) contend there are four areas of general agreement among researchers. First, social support involves

communication of positive affect. Second, social integration, which provides a sense of sharing and belonging, is an important part of social support. Third, instrumental behavior in the form of material or tangible aid plays an important part in social support. Finally, reciprocity, or what Mitchell (1969) calls directedness, in interactions is a requirement for mutual satisfaction and the continuance of social support transactions.

Caplan (1974) provides further insight by explaining how social aggregates can provide many types of support related to both an ongoing or a specific situation. Such support therefore helps the individual to deal with life in general or with specific long-term or short-term problems. Both short-term and long-term support consists of four elements according to Caplan. These elements are: assisting the individual's psychological resource mobilization; sharing in the accomplishment of process tasks; providing the individual with additional material assistance in the form of money or skills; and the provision of information.

The process of social support is not static because it changes over time and from situation to situation and may be specialized with different sources for different problems. For instance, Schaefer, Coyne, and Lazarus (1981) point out that almost every study of social support emphasizes the attachment and affiliation support functions over material and instrumental functions; therefore, it may be useful to distinguish between different types of support to examine the possibility that they may have separate, independent effects upon health status and adaptation. Although there are some areas of agreement in social support research as noted above, there are also areas of controversy.

Social Support: Areas of Divergence

A number of controversies exist within the field of social support, perhaps the most important of which involves the issue of significance. Research to empirically demonstrate the effects, or significance, of social support upon health has produced mixed results. Cassel (1974) says there is no agreement that social factors are important for health, or if they are, which social support factors are most important and what are the links between social support and health. If one assumes social support is important for individual health status then the question becomes how. First, how to measure social support and second, how to measure the effects of social support? Each of these questions is discussed in turn as it pertains to this study.

The Measurement of Social Support

The most important issue in measuring social support is whether to use an instrument that measures social network or an instrument that measures social support. An instrument that focuses upon social network properties places its emphasis upon the number of relationships an individual has available. Supporters of the social network concept argue this network can potentially be positive, negative, or neutral for agiven individual (Gottlieb, 1983; Wellman, 1983). Social network places a strong emphasis on structure, and the implication is that relationship equals social support (Hirsch, 1979, 1980; Tolsdorf, 1976; Wellman, 1983). In contrast, Schaefer, Coyne, and Lazarus (1981) point out that structural measures of social support make two questionable assumptions--first, that benefits to the individual are directly proportional to the social network characteristics of size and range,

and second, that the existence of a relationship guarantees social support.

Mitchell (1969) identifies social network as the structural component of social relationships and social support as the functional component. He regards the social network as a specific set of linkages among a defined group of individuals that can be of use in understanding the social behavior of the persons involved. Networks describe the social boundaries of an individual's environment. Walker, MacBride, and Vachon (1977) use four characteristics to describe networks: size, density, membership homogeneity, and membership dispersion. Size refers to the number of people maintaining social contact with an individual; density refers to the number of network members that know and contact each other independently of the individual who is the network focus; membership homogeneity refers to the demographic characteristics shared by the network members; and membership dispersion is a measure of proximity and how easily network members can make face-to-face contact.

Whitten and Wolfe's 1973 review of sociological literature identified the most important structural characteristic of social network as density. Pearlin (in press) noted how social networks vary on an individual basis in terms of resources and scope. Collectively, networks vary at different socioeconomic levels and individual networks change over the course of time. Moreover, networks are only potential sources of social support that may or may not be used by the individual. Perceived social support, on the other hand, refers to those social network members who the focus individual actually believes offer assistance in a given situation such as a chronic illness-related emergency.

Focusing upon perceived social support assumes that it is the most active and intense personal links within the social network that provide most of the individual's social support in a given situation. Barrera (1981) raised the question of stability for perceived social support by suggesting transient positive or negative mood states might affect individual reporting of perceived social support. However, Procidano and Heller (1983) addressed this issue and found perceived social support scores for family were stable in experimental situations when individuals were subjected to positive and negative mood induction techniques.

In the area of chronicity, research in perceived social support must take into consideration the dynamic aspect of social support during the course of an individual's chronicity trajectory. One helpful way of conceptualizing this dynamic aspect is Kahn's convoy of social support (1979). Kahn and Antonucci (1980) proposed the concept of convoy as a way of viewing the social structure within which people give and receive social support. The term convoy was chosen instead of social network to emphasize the dynamic character of an individual's social support structure throughout life. Therefore, it adds an important temporal aspect to the concept.

In the development of this construct, Kahn drew on other constructs such as role theory, role set, and role ambiguity. In the convoy construct, the function of social support is to reduce the consequences of external stress on the individual's health status. Furthermore, this effect is most likely to be observable during an individual's major life changes, particularly unpredicted or unwanted change, such as chronicity changes. The conceptualization of convoy as presented by Kahn and

Antonucci appears to be congruent with this researcher's conceptualization of chronicity.

The selected sample of the social support literature presented here focuses upon perceived social support rather than social network research. The concept of perceived social support assumes that the individual is able to recognize and identify the support qualities of relationships. Such an assumption seems logical in a situation where disabled individuals must be able to effectively mobilize and use social support to successfully maintain themselves within the community. Social environments may exert different kinds of influences on individuals but, as Kirtz and Moos (1974) note, it is the individual perception of environment that directly affects the individual. For the purpose of this study the use of perceived social support answered the question of what to measure as social support.

Global versus Discrete Social Support

In addition to the question of whether to use social network or social support for measurement purposes is the question of global versus discrete social support. The question of global or discrete measures of social support involves whether the effects of social support should be considered in a unitary or combined manner (global), or as separate, independent effects (discrete). The majority of the studies reported here use social support as a global variable. In contrast, some of the more recent studies such as Schaefer, Coyne, and Lazarus (1981) and Norbeck and Tilden (1983) examine social support with an emphasis on its discrete components. Most of the research involving social support that does use discrete components of social support generally assumes that

the emotional component is more important than the tangible component (Dean & Lin, 1977; Gore, 1978). But this assumption may not be valid in relation to health care involving chronic conditions where affected individuals must deal with problems related to both physical and interactional chronicity, the relative significance of emotional and tangible perceived social support can not be taken for granted. With chronic conditions researchers can not assume that social support necessarily functions in the same manner in affecting psychological and physical health.

The Measurement of the Effect of Social Support

The second question about measurement was: How does social support affect health? Researchers present three possible hypotheses about this relationship. Social support has a direct or main effect upon individual health status; social support has an indirect effect upon individual health status; or social support has both direct and indirect effects upon individual health status.

This question can only be answered by a predictive model in which both direct and indirect effects are included. One such model was hypothesized by LaRocco, House, and French (1980), who described the direct and indirect effects of social support upon occupational stress, occupational strain, and health. LaRocco et al. (1980) offered support for their model by reanalyzing data used in earlier studies of the indirect social support hypothesis by using a regression technique in which the moderator variable (social support) was calculated as a continuous variable (rather than subgrouping the sample into high and low perceived social support groups). They then compared the resulting

data to their own predictive hypothesis of perceived social support and found support for both direct and indirect effects of social support. This study also tested main effects of social support and found there were main effects for work-related social support upon work-related role stress and role strain.

This work was done in order to examine the apparently contradictory results reported from three earlier studies involving occupational stress, perceived social support, and its indirect effect upon mental and physical health variables such as anxiety, depression, irritation and somatic symptoms. House and Wells (1978) had reported indirect effects, whereas neither Pinneau (1975) nor LaRocco and Jones (1978) had found any indirect effects. Other studies indicate that social support may affect physical or mental health. For instance, Cobb (1974) used a repeated measures longitudinal design that indicated unemployed men with high spouse support had lower serum uric acid and serum cholesterol levels than their counterparts who had low spouse support. In another study that used a longitudinal design, Gore (1978) found that among a group of men who had lost their jobs, those with higher reported levels of social support from friends and family had less reported depression, fewer somatic complaints, and lower serum cholesterol levels. While the findings are open to questions about internal validity based upon the alternative argument that depressed individuals would report more somatic symptoms and lower levels of perceived social support, the findings are suggestive of how social support may influence health status and the results included both physiological and psychological health status measures.

Lin, Simenone, Ensel, and Kuo (1979) analyzed data from a sample of Chinese-Americans (N=170) to test a theoretical model that proposed that stressful life events were positively related to illness (psychiatric symptoms), while social support (non-kin) was negatively related to illness. Multiple regression analysis supported both propositions. In other illness-related studies that examine social support and its influence upon health, DeAraujo, Van Arsdel, Holmes, and Dudley (1973) examined a sample of chronic intrinsic asthma patients and found strong support for the indirect hypothesis. It should also be noted that in a separate study DeAraujo, Dudley, and Van Arsdel (1972) found patients with emphysema who had high psychosocial resource scores and repressive psychologic defenses adapted well to their chronic illness. Dimond (1979) studied a sample (N=36) of hemodialysis patients and found a positive relationship between morale, family cohesiveness, and spouse support.

Kelman, Lowenthal,and Muller (1966) found social support in the form of a coordinator for health-related services was a critical factor in medical and physical functioning of recently discharged chronically ill patients. Robertson and Suinn (1968) studied a sample (N=20) of stroke rehabilitation patients and found increased empathy by significant others was directly associated with improved levels of rehabilitation as well as with progress in rehabilitation.

All of the studies noted thus far have been retrospective studies of the indirect social support hypothesis. Such designs are not as powerful as prospective studies. Cook and Campbell (1979) note that the strength in prospective designs comes from their predictive or forecasting ability as well as their ability to provide causal

inference when 'structural regression' techniques are used by the researcher.

At this time, most of the social support research in the area of health status concentrates upon psychological health (Dimond, 1979; Lin, Simeone, Ensel, & Kuo, 1979; Wilcox, 1981). Among the relatively few social support studies that do examine the relationship between social support and physical health, most study social support for global effect (DeAraujo, Van Arsdel, Holmes, & Dudley, 1973; Lynch, Thomas, Mills, Malinow, & Katcher, 1974; Nuckolls, Cassel, & Kaplan, 1972), although other research is also studying the discrete effect of each component of social support by examining the separate independent effects of each individual component (Norbeck & Tilden, 1983; Schaefer, Coyne, & Lazarus, 1981).

This section on theoretical and methodological implications ends with prospective studies that provide support for the effects of social support upon health. Medalie and Goldbourt (1976) studied a stratified sample of 10,000 Israeli male civil service personnel for a five year period to identify factors associated with new cases of angina pectoris. At the end of this five year study multivariate analysis of the data suggested that the participant's perception of spouse support significantly reduced the incidence rate of angina in men with high anxiety levels from 93 to 52/1,000.

Nuckolls, Cassel, and Kaplan (1972) used a prospective design to examine complications of pregnancy among military wives. In their study, neither life stressors nor psychosocial asset scores were significant by themselves. However, when they were examined for interactional effect the data indicated that women with high stress and

high psychosocial assets had only one-third the pregnancy complications of women who experienced high stress and low psychosocial assets. The findings of this study provide support for the effects of psychosocial assets upon the health of the sample population.

Norbeck and Tilden (1983) also studied pregnant women (N=117) in a prospective design similar to the one used by Nuckolls et al. However, theirs controlled for prior medical health status and used a sample of medically normal women from the general population. These two facts make their study results more generalizable than those of Nuckolls et al. Results offer support for the indirect hypothesis and indicate an interaction effect between stressful life events, tangible support and three types of pregnancy complications examined in the study (gestation complications, labor and delivery complications, and infant condition complications).

Schaefer, Coyne, and Lazarus (1981) used a predictive study to compare the effects of social network and the components of perceived social support (emotional, tangible, and informational) upon psychological symptomatology (Hopkins Symptom Checklist), morale (Bradburn Affect Balance Scale), and physical health status (which was measured by a self-report instrument, the Health Status Questionnaire developed by the California State Health Department Human Population Laboratory) and recent stressful life events (loss and nonloss).

It is interesting to note that, in the preliminary data analysis, informational and tangible social support had a high intercorrelation of $r=0.85$ ($p \leq 0.001$). Also, the prospective relationships were tested for stability over time (social support measures were stable over time with test-retest correlations from .56 ($p \leq 0.001$) for tangible support to .66 ($p \leq 0.001$) for emotional support).

Multiple regression analysis indicated that perceived social support was a better predictor of health than social network. Further results of multiple regression analyses indicated low tangible support and low emotional support were both significant predictors of depression with both low emotional and low tangible support inversely related to depression ($b=-0.33$, $p \leq 0.01$, and $b=-0.38$, $p \leq 0.05$).

The overall relationship between perceived social support and depression and morale and perceived social support was highly significant at the third month for both relationships. Perceived social support accounted for 20% of the variance in depression, 22% of the variance in negative morale, and 14% of the variance in positive morale. However, of the three components of perceived social support only tangible support contributed significantly to explained variance in negative morale, while information was positively associated with positive morale.

None of the perceived social support components were significantly related to physical health status; however, the sample was a healthy middle-aged population who did not face chronicity-related problems. It should be noted that results of this study do not support the buffering hypothesis for social support. Instead, the significant correlation of social support with depression and morale indicated that low levels of perceived tangible and emotional support had a direct additive effect upon depression and negative morale. Because social support had different effects upon psychological and physical health status indicators, this study presented clear evidence for researchers to conceptually split the possible effects of social support.

Summary

There are a number of studies with results indicating that social support affected health. Most are retrospective, but several prospective studies have also been reported. A global measure of social support was used most frequently, although the Norbeck and Tilden study (1983) and the Schaefer, Coyne, and Lazarus (1981) study separated components of social support in their analysis. None of the reported studies used experimental designs.

The Norbeck Social Support Questionnaire (NSSQ) was used to measure social support in this study because it measures global perceived social support, as well as each component of the global score. These scores could then be used to test direct and indirect effects of social support in the predictive model. Support for the selection of the NSSQ was provided by a critical review of social support instruments. Each instrument was evaluated for reported data its development that included criteria such as sample size, content, bias of responses, format, and reliability and validity testing (Rock, Green, Wise, & Rock, 1984). The NSSQ was one of the few social support instruments Rock et al. recommended for use out of the 29 instruments evaluated.

Health and Health Status

In the predictive model tested by the present study, health status is the outcome variable of interest. Goldsmith (1972) notes the difficulties in conceptualizing health present a major obstacle to the development and utilization of health status indicators that could be used to predict health status or to evaluate health care delivery.

Because of these difficulties the focus of this section is two questions. First, what is health and health status? Second, having defined health and health status for this study, how can the definition be operationalized for measurement purposes?

Definition of Health

Patrick, Bush, and Chen (1973) defined health as an individual's ability to conform to social norms of well-being, including the ability to perform the normal daily activities of living for a person's age and social role. For the purposes of this study Patrick, Bush, and Chen's definition of health is combined with the concept of man as a biopsychosocial being whose health must be measured as a multidimensional construct. The concept of man as a biopsychosocial being reflects the belief that health is a multidimensional construct with biological, psychological, and social components whose interrelationships are best explained in terms of the model of health presented in Figure 3.

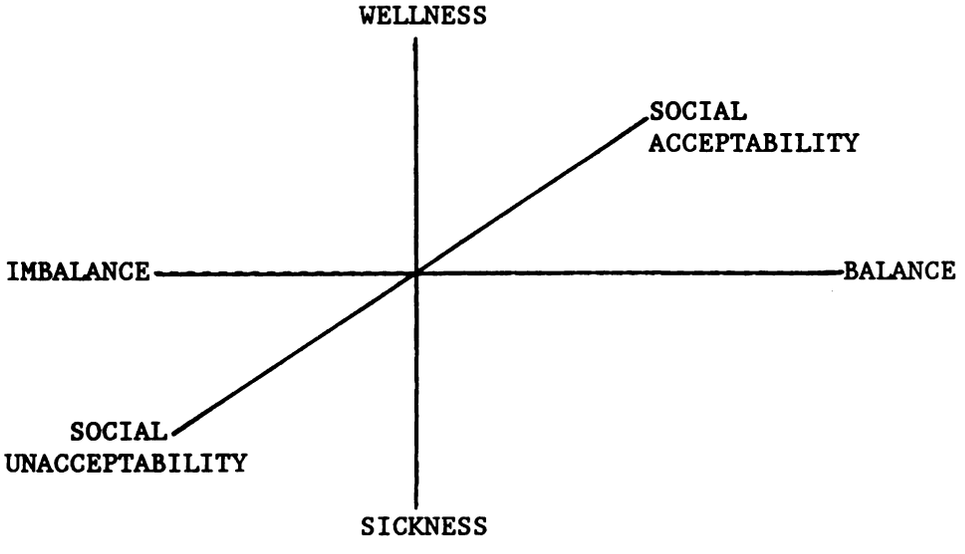


Figure 3. Dimensions of Health

The Components Of Health: A Model

Dolfman (1974) pointed out that the problem in developing operational definitions of health focuses upon the question: "What are the components of health?" The model of health presented in Figure 3 illustrates the definition of health that this study used as a basis for measurement of the concept.

This model of health care includes three continua: a biological continuum, a psychological continuum, and a social continuum. Such an approach goes beyond the simple functional or the symptomatic definitions of health to include a more global conception of health at a personal level that includes areas such as feelings and the performance of social roles. It also enables the nurse to focus upon an individual's health assets as well as the immediate diagnosis.

The model presented in Figure 3 uses three continua. The horizontal axis reflects the biological dimension. Imbalance is the endpoint to the left with concomitants of disability, dysfunction, and nonfunction and as one moves right the individual would move towards balance with the concomitant of optimal function. This continuum deals with the processes of daily physical and functional maintenance. The second continuum on the vertical axis ranges from wellness, with concomitants of positive adjustment, strong sense of positive well-being, happiness, high morale, equilibrium, and fulfilled development of potential, to sickness, with its concomitants of maladjustment, lack of any strong sense of positive well-being, sadness, low morale, disequilibrium, and unfulfilled development. The third axis represents social roles. It ranges from unacceptable at one end, with concomitants of stigma and the nonfulfillment of role expectations, to acceptable,

with corresponding concomitants of social integration and the fulfillment of role obligations.

This model of health draws upon Schlenger's work. Schlenger (1976), in his review of health definitions, states that the most significant area of agreement among current definitions of health is the unidimensionality of the concept. Schlenger argued that the imposition of unidimensionality on the concept of health creates a great deal of conceptual confusion. He proposes two relatively independent dimensions of health status. These two components are the negative feedback process and the positive feedback process. The negative feedback process includes factors related to negative health such as disease. This is called the equilibrium dimension, and it includes what Schlenger calls the balance factors, which contribute to the maintenance and function of the individual within his environment. The second dimension includes actualization factors that enable the individual to effectively interact within his environment as well as actualize individual potential.

Schlenger's conceptualization of health along two continua resolves a major dilemma that arises in unidimensional concepts of health. When health is conceptualized along one dimension ranging from death to perfect health, any movement in a positive direction along the continuum must imply that an increase in health status means a decrease in disease. This implication is at odds with the realities of chronic illness. Among the chronically ill the concept of presence or absence of disease as health has very little utility because everyone would have poor health status. In contrast, with this model an individual with a chronic condition may still be considered healthy because he is able to

perform his daily maintenance requirements, meet the criteria for psychological wellness, and fulfill his role obligations.

The model takes into account Akpom, Katz, and Densen's (1973) point that in describing health status it is not enough to use only function and disability measures because health is a multidimensional concept with psychological and social components in addition to the physical component; such a model also takes into account Bruhn's belief that wellness is not a static state of being but a changing and evolving process involving the integration of physical, mental, social, and environmental well-being.

This model addresses Mechanic's statement: "Disability is as much a social definition as a physical status, and the outcome of the problem depends not only on the psychological state of the patient, but also on the ways clinical staff, family, and friends react to the situation" (1977, p. 82). Suchman (1965) also states that the individual's response to illness is defined by social as well as medical considerations. Further support for this point is provided by research done by Reif (1975), who found that many patients with coronary artery disease defined themselves as disabled and were defined by others as disabled despite minimal biodysfunction.

This model places an emphasis not only on the ability to function on a daily basis but also on the ability to integrate and the capacity to fulfill social roles. At any given point the dynamic nature of health status may emphasize one of the three continua over the others, but all three continua interact to affect overall health status. The result is a model of health in which individuals with chronic health conditions are not automatically considered unhealthy because chronic disease is present.

Health Status

Health status, as used by this researcher, is that state of adjustment at which the individual is currently located. It is the outcome of the individual's dynamic environmental transactions and may change over time (in either direction along any or all of the three continua presented in Figure 3). Many of the properties associated with health status closely fit Neugarten's (1979) concept of phase: phase carries with it dimensions of dynamic change and has no hierarchical association. The concept of phase also carries with it the implication that a phase may be reversible, that is, individual at one phase of health status can return to a higher level of health status at any time as a result of different interventions. For example, diabetics with elevated blood glucose levels can stabilize and manage their blood glucose level within a normal range as a result of nursing interventions such as nutrition counselling, diabetic teaching, and medication instruction. A phase may be long or short. Therefore, when people speak of good health they are referring to their state of adjustment at a given point and at a phase of life when they are well-adjusted to their environment.

The concept of health status as a state or phase of wellness that is the outcome of a dynamic process has three important characteristics. First, there is the temporal characteristic, which means health status can change over time. Second, there is the dynamic characteristic, which means that it is not a passive or static status. Finally, there is the characteristic of multiple causation, which indicates health status is not a single entity but the result of many interacting

health-related factors. Health status can be used to measure the level of health for a individual at a given point.

The Measurement of Health Status

The conceptual ambiguity that surrounds health is reflected in the instruments developed to measure health status. Questions about what to measure, how to measure it, and the validity of the measurement abound. This section addresses the questions of how to measure health status and what to measure as health status.

The question of how to measure health status is particularly important for clinicians who must be concerned with the cost, time, resources, and effectiveness of any clinical client measurement. One answer to these concerns was the development of self-reported health status instruments.

Self-Reported Psychological and Physical Health Status

The clinician, as researcher and theorist, is most interested in defining the current emotional and social health status in regard to the current life situation. Kane and Kane (1981) explained that the underlying concept for subjective measures of happiness, morale, life satisfaction, and subjective well-being involved measurement of the inner aspect of coping. In other words, what is the subjectively experienced aspect of personal adjustment. Instruments that rely upon self-reported health status have been challenged by critics for a number of reasons, two of the most important of which are questions of reliability and validity.

Mossey and Shapiro (1982) suggest self-rated health status may well reflect not only the observed objective health status associated with physical indicators but also the individual's emotional health status as well. Garrity (1973) found an association in first-time myocardial infarction patients between individual perceptions of health status, morale level, and return to work. Rawlinson (1976) also found health status perceptions, in conjunction with other individual characteristics, to be predictive of post-cardiac surgery morale levels.

The debate about objective versus self-reported measures of health status has produced a great deal of research, most based on the assumption that the physician's assessment of health status is the objective "actual" health rating that will be used to measure the accuracy of self-reported health status. The work of Valanis and Yeaworth (1982) in subjective and objective ratings of mental and physical health among widowed individuals (N=60) suggests there is little difference between the two rating methods for mental health, although the widows rate themselves physically better than do objective assessors.

Garrity (1973) studied a sample of 62 myocardial infarction patients for social involvement and morale levels six months after hospital discharge. The variables tested in the study included: subjective health perception, severity of heart attack, age, chronic health problems, non-associational activity, associational activity, and presence or absence of gainful employment. Multiple regression analyses of the variables upon morale level indicated all variables except subjective health perception were nonsignificant (subjective health perception: $b=0.91$, $p \leq .001$). Garrity (1973) noted that in another,

earlier, unpublished 1971 research study he found that subjective health perception correlated strongly with post-heart attack physical status as measured by treadmill testing and physical examination.

Mossey and Shapiro (1982) used self-rated health as measured by response to the question: "For your age would you say, in general, your health is excellent, good, fair, poor, or bad?" They then compared the responses to objective health status definitions, including type and seriousness of health-related conditions as reported by the individual's physician and the number of times health problems resulted in hospitalization or surgery. Data from these questions were analyzed against mortality figures to see if there was an increased risk of mortality for individuals who perceived themselves in poor health. Analysis demonstrated this was the case and indicated self-related health status might be predictive of mortality by itself.

Brown and Rawlinson (1975) and Garrity (1973) found evidence in their research to support the stability of individual health status assessments over time. Another study by LaRue, Bank, Jarvik, and Hetland (1979) enrolled a geriatric population to study the relationship between longevity, self-reports of health, and physician's ratings. Using self-reported health status and physician assessments of status for comparison, they found that self-reports were significantly correlated with physician ratings. Also, that both ratings were significantly related to five year survival rates for persons between 77 and 85 years old, although neither was significant for adults over 85.

Fillenbaum's research (1979) compared objective measures of health (number of problems, kinds of medications, and number of diagnosed illnesses) with health self-assessments in a random sample (N=937) of

adults age 65 and over who lived in the community compared with a similar sample (N=61) of institutionalized adults. Separate calculations for each cohort utilizing a two-way analysis of variance indicated a statistically significant relationship between health self-assessments and objective measures of health (as defined above) at the .05 level for community residents but not for institutionalized residents. The data also indicated a sex-related difference in the assessment responses, with women tolerating more health problems than men in self-assessment level ratings.

Another question raised about self-reported health status concerns the stability of such reports over time. Maddox and Douglass (1973) report data from a longitudinal study of aging over a 15 year period, with health assessments completed at six points. At each point health was both self-rated and physician-rated (after a medical and psychiatric evaluation) among a sample of adults over 60 years of age (N=270 for the initial ratings and N=87 for the sixth rating). This study provides support for three identified relationships between physician and self-rated health status. First, there was a consistent relationship between both ratings over each of the six observations, with correlations ranging from .31 to .43. Second, when an incongruity did exist the tendency was for the self-rating to be higher than the physician rating. Third, both types of ratings were substantially stable over time with self-ratings ranging from .32 to .65 for the group between measurements, while the range between times for physician rated measurements went from .40 to .58.

Perhaps the most important correlations of all come from the cross-lagged correlational analysis of ratings. Self-ratings of health were

persistently and consistently correlated with the next physician's rating (correlations ranged from .31 to .43) and when physician ratings were correlated with the next self-rating of health status the correlations ranged from .16 to .30. Clearly, self-rated health status was more highly correlated with the next physician-rated health status rather than the reverse. One possible interpretation of this relationship is that the individual has a better sense of the ongoing changes in his or her health status than the physician can objectively measure.

The evidence presented in the research noted here supports the use of self-rated health status measurements as a means of collecting data. Other studies suggest they are positively correlated with physician assessments of health and patient charts.

Functional Measurement of Health Status

In this research, self-reported health status provided the answer to the question of how to measure health status; the second question related to health status was what to measure as health status. The question of what to measure as health status was answered by conceptualizing health status as the present state of psychological and physical health for individuals who had been affected by the impact of chronicity. This meant that health status would be measured as the outcome variable of interest in the predictive model tested.

Health status as an outcome. Health status as presented in the predictive model is an outcome. Outcome measures are an attempt to capture what results from something, in other words, that consequence or issue that is present as a result of preceding events (Donabedian,

1966). When an outcome, such as health status, is used for comparative purposes it must provide scores for each dimension of health status. Otherwise, there is no objective basis upon which to assess either the comparative health status of individuals or the possible covariation of different environmental factors with either global health or its discrete components. Therefore, subscales within each component must allow score disaggregation for separate subscale score analysis. Results of such subscale score analysis are then reported by verbal descriptions of results from the subscale score analysis. To do subscale score analysis, the instruments used in this study divided health status into components measured on ordinal or interval scales.

Functional health status. Smith's (1981) review of health identified four categories of health definitions: clinical, role performance, adaptative, and eudaimonistic health. However, the majority of the measurements used in health status assessment today fall into the clinical and performance-related categories. The instruments used to measure the outcome variable of health status in this study are from what Smith identified as the performance category.

Role performance or functional health status measurement is associated with several important concepts; for instance, one way to view health is the concept of health as an enabler that allows people to do whatever they consider important. Pender (1975) takes this perspective and suggests that people do not necessarily value health in of itself. Instead, people value good health because it facilitates their pursuit of meaningful activities and engagement in social roles that they highly value, i.e., good health enables us to do the things we like to do while poor health prevents us from doing them.

Pender's idea of health as an enabler is closely related to the conception of health taken by Maddox and Douglas (1973), who utilize a functional health perspective. They describe good health not in terms such as the presence or absence of illness but in terms of absence of an enervating illness that would hinder personal and social functioning. The functional perspective has appeal for many nurses, and some nurse authors (Mallick, 1979; Patrick, Bush, & Chen, 1973; Lawton, 1971) argue in favor of using the functional health perspective in clinical nursing.

It is generally accepted that function is an important part of health. Katz (1983) presents function as an enabler and cites Lawton's hierarchical model of function, as well as writings by Freud, Havinghurst, and Kuhlen, to support the position that function is not adaptation nor is it adjustment, but that it does provide the opportunity for adaptation. Patrick, Bush, and Chen (1973) defined optimal function as an individual's ability to conform to social norms of well-being, including the ability to perform the usual daily activities of living for a person's age and social role.

Bergner, Bobbitt, Kressel, Pollard, Bilson, and Morris (1976) identified five reasons for using function as a measure of health status. First, function or behavior can be directly reported by the affected individual. Second, the affected individual's function or behavior can also be reported by an observer. Third, the effect of health care interventions upon health status as measured by function can be observed and assessed regardless of whether or not the disease is curable. Fourth, function or behavior can be assessed and evaluated whether or not the individual is being treated by the formal health care system. Finally, Fabrega (1975) has pointed out that different ethnic

groups or cultures define the concept of disease within their own social context, which means there are many different ethnic and cultural constructs of disease. For health care providers and researchers who must measure health status among different ethnic or cultural groups, a functional approach provides a more objective means of health status measurement.

The first part of this chapter explained the construct of chronicity in detail. It was noted that individuals associate certain signs and symptoms with the outcomes of chronic lifestyle or chronic illness. When individuals relate their perception of these signs and symptoms to self, then those individuals perceive themselves as sick. As hypothetically presented by the holistic model of health (see Figure 3), the health status of people who successfully adjust to their chronic condition would be placed on the wellness, socially acceptable, and balanced ends of the three continua while those experiencing great difficulties in adjusting to their chronic condition would develop a chronic lifestyle and be placed on the sickness, socially unacceptable, and imbalanced ends of the three continua. When adjustment involves chronic problems such as disease, disability and role fulfillment, then it also includes the dimensions of ambiguity, uncertainty, and instability as well as severity, mobility, and duration that all affect how individuals respond to their perceived health condition.

In other words these dimensions have an impact upon the function of the individual. Here the impact of sickness is defined as Bergner et al. (1976) use it, namely as "self-reports of dysfunction, clinical reports of dysfunction, others reports of dysfunction, and tests of dysfunction using other instruments" (p. 399). The effect or impact of

chronicity may reveal itself through alterations in social role fulfillment, alterations in self-perceptions and attitudes, alterations in levels of behavior and performance, alterations in feelings, or through chronicity-related symptoms.

Bergner et al. (1976) conceptualize the impact of sickness as alterations in the function and behavior of the affected individual's daily life-related activities. The researcher would expand this to encompass all three continua presented in Figure 3, namely, lack of social role fulfillment, sickness, with disability and disease. Bergner et al. (1976 p. 398) developed the diagram that this author presented in modified form labeled Figure 4, to depict how changes in an individual's daily life-related activities can be measured as outcomes by a functional instrument.

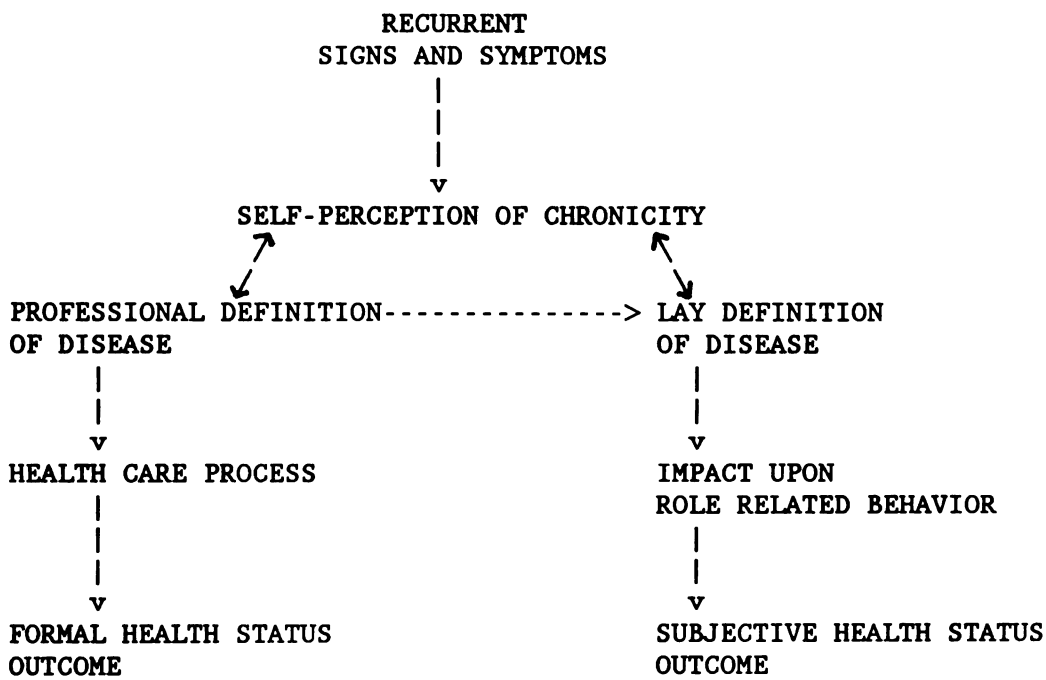


Figure 4. A Model of Chronicity-Related Behavior

The figure indicates that the affected individual experiences alterations, or chronicity-related signs and symptoms, which lead to the self-perception of chronicity. The degree of alteration in daily functional levels and the severity of the symptoms in conjunction with the duration will help to determine when and where the affected individual seeks assistance. As noted earlier in the chronicity section, chronicity-related assistance may be sought on an informal basis from friends, relatives, or neighbors, or it may be sought on a formal basis through the health care system. Either action on the part of the affected individual will influence the impact of chronicity upon the individual because his self-perception of chronicity will be redefined both by his chronicity-related interactions with those from whom he sought assistance and by any restrictions upon role fulfillment that he experiences in other contexts as a result of chronicity. Bergner et al. (1976, p. 399) transformed the model presented in Figure 4 into a set of working definitions that are depicted in a modified form as Figure 5.

The physical and functional effects of chronicity upon health status as depicted in Figure 5 were measured in this study by the use of the Older American's Resources and Service's Multidimensional Functional Assessment Questionnaire (MFAQ).

The MFAQ is a widely used functional-oriented health measurement that is weighted towards identification of problems. It is designed to assess objective and subjective ratings of mental and physical functional health for the five domains of social resources, economic resources, mental health, physical health, and activities of daily living (ADL). The longer version of the instrument has undergone

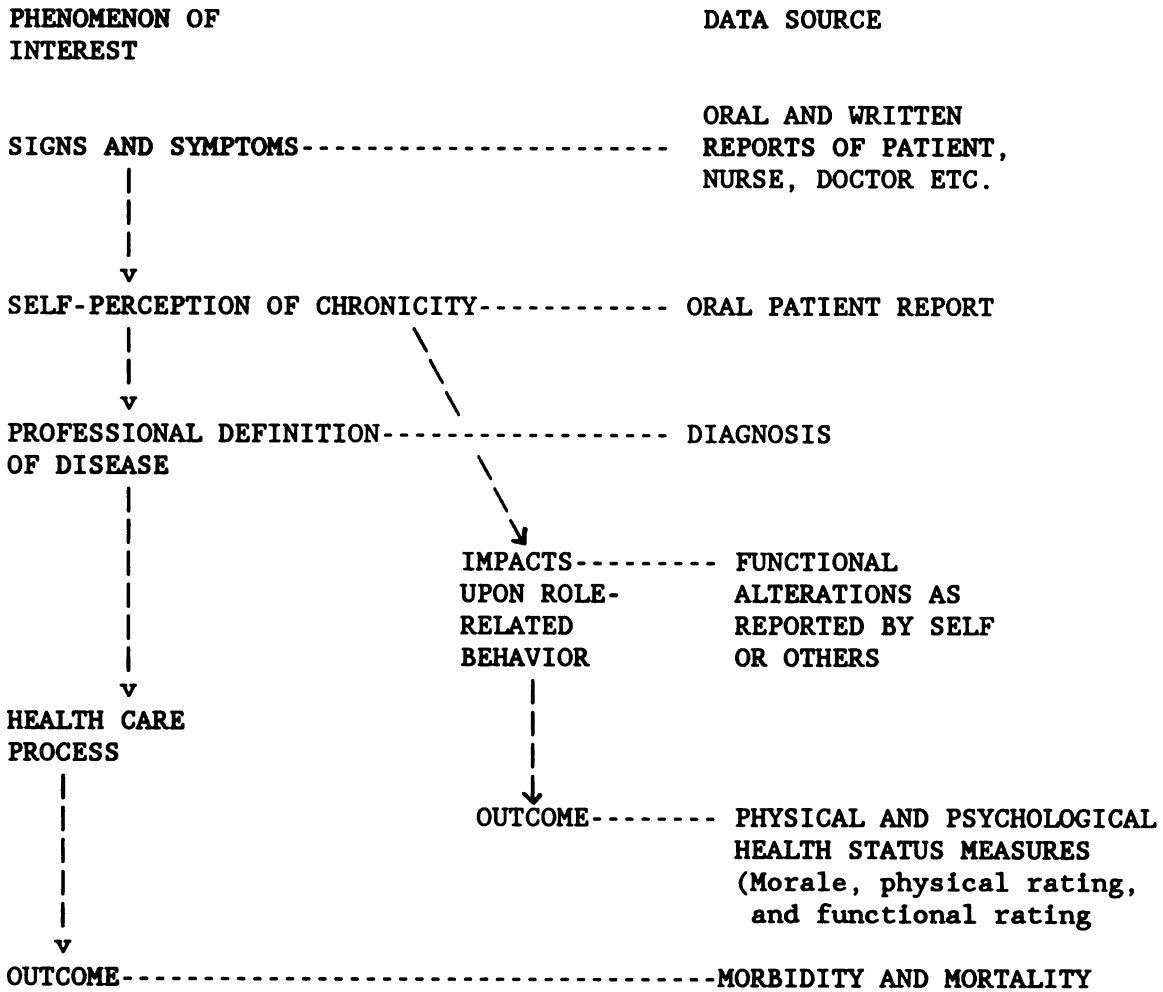


Figure 5. Transformation of a model of chronicity-related behavior into a set of working definitions.

extensive reliability and validity testing and is widely used in geriatric research (Blazer,1982; Fillenbaum, 1979; Fillenbaum & Smyer, 1981). Use of the MFAQ captures the individual's physical and functional level as two different measures of health status reflecting the dimension of health related to daily health maintenance. The MFAQ is discussed in greater detail as part of the methodology chapter.

The effects of chronicity upon psychological well-being as depicted in Figure 5. were measured by use of Bradburn's Affect Balance Scale

(ABS). The ABS measured both negative affect (morale) and positive affect (morale). George (1979) noted morale and happiness are often used interchangeably and Bradburn's definition of happiness is the one most frequently accepted and used in social science research. Bradburn defined happiness as the degree to which positive affect (morale) was greater than negative affect (morale).

In reporting their research results Bradburn and Caplovitz (1965) stated three underlying assumptions were that there is a dimension of health that has been variously labeled as subjective adjustment, happiness, or psychological well-being. This dimension of psychological affect (well-being) could be measured and individuals could be ranked as high or low on the scale; and, psychological well-being or "affectivity" must be considered as relative in terms of the amounts of positive and negative affect that are present rather than in terms of the presence or absence of positive or negative affect. Use of the ABS captured the individual's psychological well-being dimension of health status as measured by positive and negative affect. The ABS is discussed in greater detail as part of the methodology chapter.

Conceptual Framework

Nursing utilizes an applied field of knowledge in its daily professional practice. The goal of this research was to contribute information and theoretical insights that may help improve nursing's practice knowledge and understanding of perceived social support and its possible effects upon ambulatory CHF patients living within the community. The present research built upon the investigator's

qualitative results by using a role theory framework to test a predictive model adapted from LaRocco, House, and French (1980).

Role theory notes that people do not live in social isolation. Even when people live alone there are significant others with whom they interact as part of a role set. Often kin, particularly one's spouse, are the primary source of social support. In such cases Litman (1966) believes there are interactional systems functioning that can be viewed in terms of reciprocal interacting role sets during which behavior is guided by established norms. The term interaction, as used here, means a situation involving two people engaged in verbal or non-verbal communication (Kuhn, 1974, p. 139), while role is a behavioral constellation defined in terms of values, sentiments or goals that govern ones interactions (Hadley, 1967).

The conceptual framework underpinning this study synthesized role theory, the symbolic interactionist perspective, and the concept of disease from the biomedical model to develop the concept of the chronicity process in physically ill adults. It focused upon role theory and the effects of chronicity-related role stress that might directly affect the health status of the role occupant. Chronicity-related stress also created role strain that could in turn influence health status. In this model strain is conceptualized as the subjective counterpart of stress.

The outcome variable of interest in this proposed model was health status, conceptualized here as being multidimensional, with three continua based upon the concept of man as a biopsychosocial being. Health status is a concept associated with temporal and fluid properties. It is the point where an individual is located upon the

three different continua of health (social, psychological, and physical) at a given point in his life.

The intervening variable of interest in the proposed model is perceived social support. The increased dependence upon social support resources among those who are sick is a common assumption made by health care providers from every discipline. The concept of perceived social support has been an area of increasing interest for health-care researchers and the review of the literature reflects that fact. However, much of this research relates to either a single significant negative event such as the death of a spouse or the loss of a job, or a time-limited event such as pregnancy. Also, there is a growing body of social support research related to mental health status (Pearlin et al., 1981) but there is surprisingly little social support research that examines the effects of social support upon chronic physical conditions. Nor is there any generally accepted model of how perceived social support helps the individual whose role status is affected by chronic physical problems.

Given the current state of research within the field of social support, the development and testing of a prospective model that explains the actions of perceived social support upon chronicity related role stress, chronicity-related role strain, and health status is essential both for further understanding of the concept and its application to improve nursing's clinical practice.

Summary

In summary, this research is based upon a conceptual framework utilizing role theory in order to test a prospective model of perceived social support. The variables of interest include: chronicity-related role stress, chronicity-related role strain, social support, and health status. The relationship between these variables is presented in the model described as Figure 6. Chronicity-related role stress was measured by recent life events, a classification of the individual's cardiac functional status, and physical sign and symptom-related data. Chronicity-related role strain was measured by anxiety. Social support was measured as perceived social support. The outcome variable of health status had two measured dimensions. The psychological dimension of health status was measured by morale or what Bradburn called affect, while the physical dimension of health status was measured by a physical rating and an activities of daily living functional rating. A summary of the theoretical variables, their operational form, and the instruments used to measure them is presented in Table 2. Detailed information about the instruments used to measure each predictive model variable is presented in the methodology chapter.

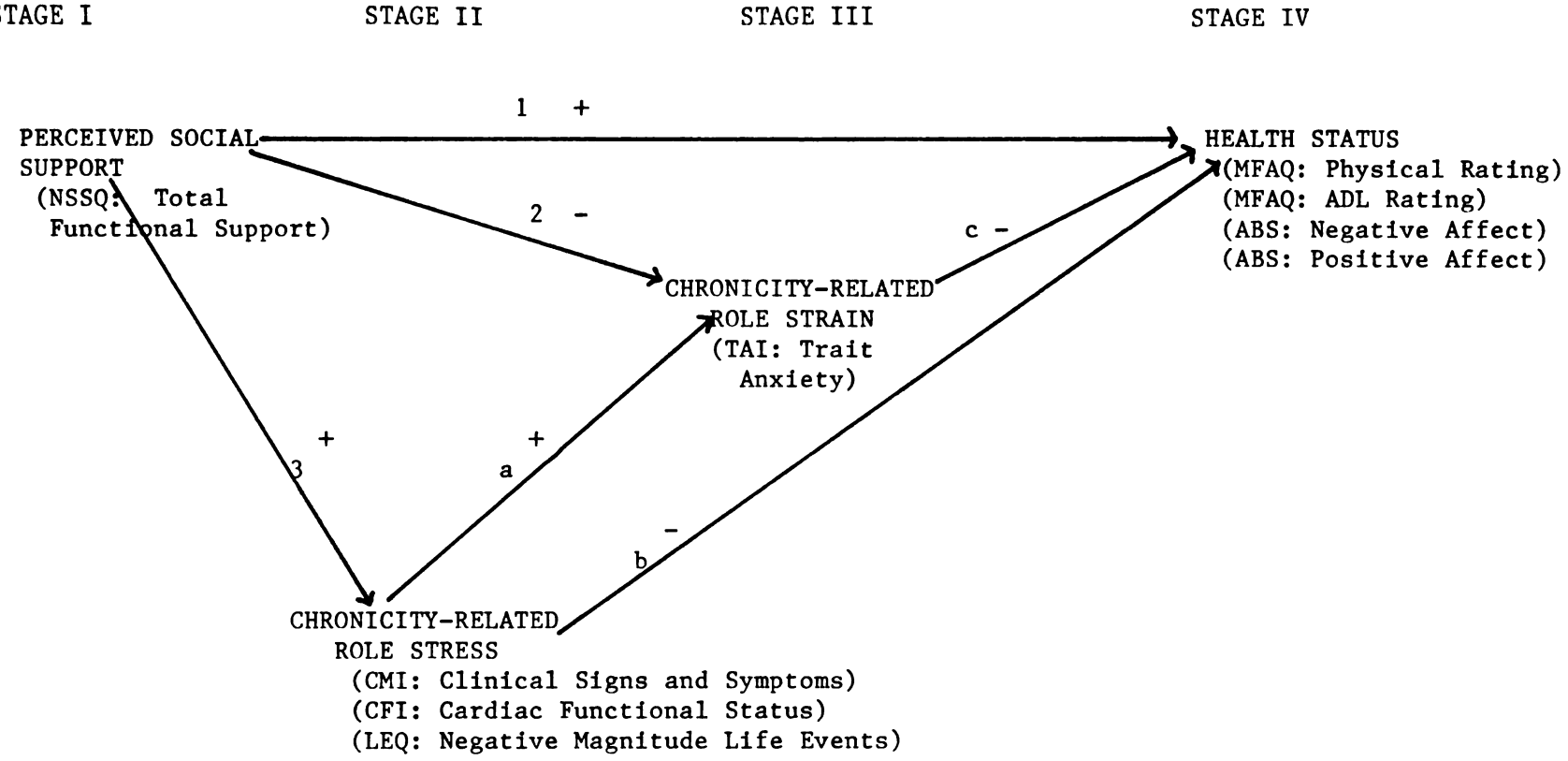


Figure 6. Operational model of potential relationships among perceived social support, chronicity-related role stress, chronicity-related role strain, and health status. Arrows 1, 2, and 3 show hypothesized direct effects of perceived social support. Arrows a and b represent hypothesized effects of chronicity-related role stress on chronicity-related role strain and health status. Arrow c represents the hypothesized effect of chronicity-related role strain on health status. A positive relationship between variables is indicated by a "+." A negative relationship between variables is indicated by a "-" (modified from LaRocco et al., 1980, p. 203).

Table 2

Theoretical Variables, Their Operational Form and Measurement Instruments

Theoretical Variable	Operational Variable	Measurement Instrument
1. Perceived Social Support	Total Functional Support	Norbeck Social Support Questionnaire (NSSQ)
2. Chronicity-Related Role Stress[a]	Clinical Signs & Symptoms	Cornell Medical Index (CMI)
	Cardiac Functional Index Status	New York Heart Association Cardiac Functional Index Status Classification (CFS)
	Negative Magnitude Life Events (NMLE)	Sarason Life Events Questionnaire (LEQ)
3. Chronicity Related	Trait Anxiety	Spielberger Trait Anxiety Inventory (TAI)
4. Health Status[b]	Negative Affect	Bradburn Affect Balance Scale (ABS)
	Positive Affect	Bradburn Affect Balance Scale (ABS)
	Physical Rating	Multidimensional Functional Assessment Questionnaire (MFAQ)
	Activities of Daily Living Rating	Multidimensional Functional Assessment Questionnaire (MFAQ)

[a]Chronicity-related role stress includes physical and interactional chronicity.

[b]Health status includes psychological and physical health.

CHAPTER III

METHODOLOGY

Design

This research utilized a nonexperimental design in order to test a theoretical model with four health status outcomes. The use of a cross-sectional sample (N=86) required one interview with a questionnaire-interview format to measure the four model variables (perceived social support, chronicity-related role stress, chronicity-related role strain, and health status). This chapter describes the sample population, instruments, and procedures from the study.

Sample

The study included a convenience sample of subjects from two different sites. Subjects included geriatric Visiting Nurses Association (VNA) patients as well as ambulatory geriatric outpatients from a Veterans Administration (VA) Cardiology clinic and a Veterans Administration (VA) Adult Medicine Clinic.

Criteria for sample selection included the requirements that patients were between the ages of 55 and 80, were living in the metropolitan area, able to speak English, and diagnosed as having Congestive Heart Failure (CHF) at least six months prior to the study. Age criteria were used to obtain data from a geriatric population that

did not include the special problems associated with frail patients over 80 years old. The study was limited to a West Coast metropolitan area and to patients who understood and spoke English because data collection involved personal interviews by nurses. The study was limited to patients who had been diagnosed with CHF at least six months previously in order to remove the effects of a recent CHF diagnosis upon the variables presented in the predictive model. Patients with CHF whose patient charts listed a psychiatric diagnosis were excluded from study because of the special problems related to psychiatric treatment as well as reported differences in social support for psychiatric clients. Subjects were recruited from all diagnosed CHF cases at both agencies during the 8 month period of data collection.

Procedure

Human Subjects

Approval of the University of California, San Francisco Committee on Human Research was obtained prior to the collection of any research data. Subjects were recruited through contact with with VNA and VA coordinators, nursing staff, and patient chart reviews. There were some difficulties with obtaining client charts at the Veterans Administration because they were kept at a central chart area and called up by written request as needed when clients were seen. Although the centralized chart storage area was difficult to access, there was access to brief notations from the Adult Medicine Clinic where a separate set of notations for patients were available. Patients who were seen at both outpatient clinics were often initially identified from Adult Medicine

Clinic charts, then assessed for study entry criteria when their complete patient charts from central records were available at the outpatient cardiology clinic during scheduled appointment days.

Potential subjects were contacted by letter. The contact letter explained that the risks to potential subjects were minimal, mainly involving inconvenience and at the end of the completed interview, subjects would be reimbursed for their time and possible inconvenience with a $5.00 payment. Also enclosed was a stamped self-addressed envelope with a note to indicate refusal to participate in the study. A follow-up telephone call was made whenever the refusal note was not returned to the investigator (see Appendix B for a copy of the contact letter, refusal slip, and consent form).

In an effort to minimize risks, the letter explained that participation was entirely voluntary and that participants could withdraw at any time. The potential study participants were assured that their decision regarding participation in the study would not influence their care at either the VNA or the VA. Risks related to privacy and confidentiality were addressed through coding of identifying data. Privacy of subjects was assured by assigning subjects a number that was used in all data analyses; the list associating names with numbers was kept in a locked file and was destroyed when the study was completed. Participants were assured confidentiality would be safeguarded by maintaining the anonymity of participants. Study results were reported in aggregate form to further protect confidentiality.

At the time of the telephone contact the study was explained again. Potential subjects were informed that there were no direct costs to the subjects for participating in the study and that an indirect benefit

might be an improved level of future nursing care provided for chronically ill patients by home health agencies as a result of knowledge gained through this research.

Eighty-six persons participated in the study while 101 persons declined to participate in the study. Reasons given for not participating in the study included being too tired, too busy, and not feeling well enough. An additional 34 people, of the 221 persons initially contacted by letter, could not participate in the study for one of two reasons: either they were in the hospital and therefore no longer eligible (13 people) or they had expired (21 people). The participation rate was 46% for the 187 eligible persons initially contacted by letter.

Data Collection

If the individual was willing to participate, the interviewer scheduled an interview at a mutually agreeable site. At the start of the interview the interviewer again explained the study and asked each subject if he or she was willing to participate in the study. Subjects were given an opportunity to ask questions that were answered by the interviewer. After all of the potential participant's questions were answered, a written consent was obtained on the attached consent form, and a copy was left with the subject (See Appendix B for a copy of the subject consent form).

During the interview subjects were asked to complete six instruments and answer several health-related questions. These instruments included: the Sarason Life Experiences Survey (LES), New York Heart Association Cardiac Functional Impact Status Classifications

(CFS), Spielberger Trait Anxiety Inventory (TAI), Norbeck Social Support Questionnaire (NSSQ), Cornell Medical Index (CMI) sections A-L, the physical health section of the Older Americans Resource and Services Multidimensional Functional Assessment Questionnaire (MFAQ), and the Bradburn Affect Balance Scale (ABS). Interviews averaged approximately 1 hour and subjects were compensated ($5.00) for their time at the end of the interview. Three people were involved in the telephone contacts and subsequent subject interviews described above. All interviewers were registered nurses including the investigator himself. The other two interviewers were University of California, San Francisco masters students involved as research assistants.

Instruments

The predictive model had one exogenous and three endogenous variables that must be operationalized. These four variables included: perceived social support, role stress from chronicity, role strain from chronicity, and health status. The instruments used to measure each of these four variables and the demographic questionnaire are described next.

Demographic Data Questionnaire

Demographic data about the study sample was collected at the beginning of the interview (See Appendix C). This information included age, sex, educational level, marital status, living arrangements, and months since diagnosis.

Perceived Social Support

Norbeck Social Support Questionnaire. The first independent variable in the predictive model was perceived social support; it was measured by one instrument, the Norbeck Social Support Questionnaire (NSSQ). The Norbeck Social Support Questionnaire is a 13-item instrument designed to measure multiple dimensions of perceived social support (See Appendix D for a copy of the NSSQ). The instrument provides information about three important social support concepts; total functional social support, total social network, and the total amount of social support that has been lost (Norbeck, Lindsey, & Carrieri, 1981; 1982). The functional aspect of social support is measured by the dimensions of affect, affirmation, and aid. The instrument allows the researcher to obtain information about the specific categories of social support available to the respondent (such as spouse, or friends) as well as social network properties of size, stability, and availability for up to 25 people. Finally, the property of change over time is measured by questions related to recent loss of important relationships. Support was rated for each listed source on a scale ranging from one (not at all) to five (a great deal). Completion of the NSSQ took between 10 and 20 minutes.

Reported internal consistency scores for the three subscales were high and range from .89 for aid to .97 for affect. Test-retest reliability for the three subscales on the instrument ranged from r=.85 to r=.92 over a one week period (Norbeck et al., 1981). Initial data for concurrent, construct and predictive validity have been reported (Norbeck, Lindsey, & Carrieri, 1981; 1983).

Evidence for construct validity came from correlations between the NSSQ and the Fundamental Interpersonal Relations Orientation (FIRO-B) instrument. The FIRO-B instrument measures three interpersonal needs: inclusion, affection, and control. There were significant correlations between each of the three NSSQ subscales and the FIRO-B constructs of inclusion and affection, but not for control. The correlations between the FIRO-B construct for inclusion and the three NSSQ subscales ranged from r=.18 to r=.26 while the correlations between the FIRO-B construct for affection and the three NSSQ subscales ranged from r=.20 to r=.27 among a random sample of university medical center employees (Norbeck, et al., 1983).

Evidence for concurrent validity was provided from correlations between the Norbeck subscales of affect and affirmation and the emotional subscale of the Cohen and Lazarus Social Support Questionnaire. The correlation between the Cohen and Lazarus emotional subscale and the NSSQ subscale for affect was r=.51 while the correlation between the Cohen and Lazarus emotional subscale and the NSSQ subscale for affirmation was r=.56 among a group of 44 first year masters students (Norbeck et al., 1981).

Additional support for concurrent validity was provided by correlations between the NSSQ and Brandt and Weinert's Personal Resource Questionnaire (PRQ). The PRQ measures social resources for specific needs or situations. Norbeck et al. (1983) reported moderate correlations of r=.35 to r=.41 between all three NSSQ social support subscales and the PRQ while lower correlations were reported between NSSQ network properties and the PRQ among a group of 55 female nursing graduate students.

Evidence of predictive validity was provided by a prospective study on the indirect or buffering effects of social support upon life stress. The three NSSQ social support subscales explained 35% of the variance in this model among a sample of 44 female graduate students for social support properties, while the NSSQ network subscales explained 36% of the variance among a sample of 55 female graduate students for network properties (Norbeck et al., 1983).

Chronicity-Related Role Stress

The second independent variable in the predictive model was chronicity-related role stress; it was defined as a general term used to include psychological and pathophysiological conditions in which role demands and obligations became difficult or impossible to meet. The psychological conditions have been described earlier and labeled interactional chronicity, while the pathophysiological conditions were described and labeled physical chronicity.

In this study chronicity-related role stress was measured by three different instruments to tap both the psychological and physical dimensions of stress. The Sarason Life Experiences Survey was used to identify and differentiate recent role-related psychological stress. The physical dimension was measured by two instruments, the New York Heart Association Cardiac Functional Impact Status Classification provided a means of differentiating among individuals experiencing cardiac-related functional limitations while the Cornell Medical Index was used to identify clinically-related physical signs and symptoms within the subject population.

Sarason Recent Life Experiences Survey. The Life Experiences Survey (LES) is an instrument designed to measure the number and the significance of life experiences within the past year (See Appendix E for a copy of the LES). The LES format allows subjects to indicate whether an event experienced within the past year was positive or negative and to rate these events for the magnitude of their impact on a four point Likert scale ranging from zero (no effect of the event upon the respondent's life) to three (great effect of the event upon the respondent's life). A modified version of Sarason, Johnson, and Siegel's (1978) Life Experiences Survey developed by Norbeck (1984) was used in this study as one measure of chronicity-related life stress. This version included 82 items, nine additional items of specific relevance to women were added to the original version. The resulting 82 items were grouped into categories: health, work, school, residence, love and marriage, family and friends, parenting, personal and social, financial, crime and legal matters, and other.

The LES can be scored for a total positive, negative, or combined score; however, there is evidence that the negative life experience scores are both more reliable and more predictive of stress (Sarason, Johnson, & Siegel, 1978; Vinokur & Selzer, 1975). Therefore, only negative life experience scores were reported in this study. Negative experience scores can be reported as either a negative change score or a negative magnitude change score, the two scores represent two related but different results. The negative change score is a summed total of the number of negative experiences while the negative magnitude change score is a summed total of the negative experiences including their magnitude of impact. The negative magnitude change score was reported

in this study because its conceptual basis is more congruent with the role theory framework used because role theory emphasizes the meaning and significance of an experienced event for the person. Potential scores range from zero to 82 on the negative experiences total score and from zero to 246 on the negative magnitude total score.

Test-retest reliability for the negative change LES ranged from r=.56 to r=.88 over a five to six week period for two relatively small samples (n=34 and n=58) college undergraduates (Sarason et .al, 1978)). Norbeck (1984) reported a test-retest reliability of r=.78 over a one-week period for the modified LES. Initial data for construct and concurrent validity have been reported (Sarason, Johnson, & Siegel, 1978). Evidence for construct validity was reported in studies comparing change scores from the LES with Schedule of Recent Experiences (SRE) scores (Holmes & Rahe, 1967) by correlating both instruments with the Beck Depression Inventory, which is a well-established measure of depression, and the Psychological Screening Inventory (PSI), which measures five psychological areas: alienation, social nonconformity, discomfort, expression, and defensiveness. Sarason et al. (1978) reported comparative data for the LES, the SRE, and the Beck Depression Scale showed there was a significant correlation for the negative change LES r=.37 ($p \leq .01$) but not the SRE r=.17 (ns) for a sample of 69 female college undergraduate students. The correlation of the LES with the Beck Depression Inventory is similar to another study of 34 male and 30 female college students in which the correlation was r=.24. Sarason et al. (1978) also reported comparative data for the LES, the SRE, and the PSI showed that there were significant correlations of r=.26 and r=.25 for negative LES scores with social nonconformity and discomfort

respectively while LES scores were not significant (Sarason et al., 1978). This correlation with the PSI is similar to a separate study of 34 male and 30 female college students in which negative change scores were correlated r=.20 with the social nonconformity scale and r=.23 with the discomfort scale. Additional support for criterion validity came from a correlation of r=.29 between the negative change LES score and the Spielberger State Trait Anxiety Instrument (STAI) among a sample of 100 male and female college students (Sarason et al., 1978). These results suggest that there is construct validity for the LES, and that it is a more sensitive instrument than the SRE as a measure of life stress.

New York Heart Association Cardiac Functional Status. The New York Heart Association Cardiac Impact Functional Status Classification (CFS) divides patients into four ranked cardiac functional status categories with each individual being placed into one of the four status classification categories based upon the physical limitations and cardiac-related symptoms the patient experiences in day-to-day living as a result of cardiac functional status (see Appendix F for a copy of the CFS). These limitations and cardiac-related symptoms that are associated with each status as criteria for classification range from class one to class four based upon chart review by the investigator. Class one includes patients with cardiac disease but without any concomitant limitations of physical activity such as undue fatigue, dyspnea, angina, or palpitations whereas class four includes patients with cardiac disease who have severe concomitant physical activity limitations and who experience symptoms of cardiac insufficiency even at rest, symptoms that are generally exacerbated by any physical activity.

It is evident from the relationship between class one and class four that under this method of cardiac functional status classification a higher classification would indicate a worse level of cardiac functional status (Criteria Committee of the New York Heart Association, 1973). In considering these four status classifications Cohn and Francis (1982) noted this classification method utilizes the effects of exercise upon cardiac performance as the primary classification criterion and this point is exemplified by factors that the committee listed as indicators for differential classification criteria, factors that include an evaluation of the rate and distance the individual can go without symptoms, the number of stairs the individual can climb without symptoms, and whether or not the individual needs to rest during the day or to get additional rest at night. Additional criteria for classification include data from the patient chart, the patient history, direct observation, and the results of standardized exercise tests (Criteria Committee of the New York Heart Association, 1964). The Criteria Committee of the New York Heart Association did not report reliability or validity data on the classifications in any of the editions from 1928 through the current edition.

Cornell Medical Index Health Questionnaire. The Cornell Medical Index Health Questionnaire (CMI) is a self-administered 195 item health screening instrument with questions arranged in a dichotomous (yes/no) format designed to identify physical and psychiatric symptoms. CMI instrument was designed to reflect the kinds of questions asked in a comprehensive health interview and therefore serves as a clinical screening tool. This study used only the 105 questions about physical sections in A through G and I. The psychiatric questions were omitted

(see Appendix G for a copy of the CMI). The physical sections that were used in this study contained four kinds of questions related to physical symptoms, past illnesses, and family history. These questions were grouped into the following sections--eyes and ears, respiratory system, cardiovascular system, digestive tract, musculoskeletal system, skin, nervous system, and fatiguability. Brodman, Erdmann, and Wolff (1974) state the full 195 item CMI instrument takes between 10 and 30 minutes to complete although the 105 physical items used in this study took between 10 and 15 minutes to complete in an interview format. The CMI is scored by adding together the total number of yes answers. It has been used with all ages from 18 to 80. Reported American population norms suggest that scores of 30 on the total CMI indicate serious health problems (Brown & Fry, 1962).

Content validity of the CMI was established by using a panel of experts (physicians) for item selection. Initial validity was established by comparing 179 consecutive New York Hospital General Medical Outpatient Clinic admissions where the client completed the CMI with hospital records containing the written results from oral interviews with questions similar to the CMI that were performed by the admitting physician (Broadman et al. 1974). In another study investigators found evidence that CMI interview items related to arthritis had criterion-related validity when compared to examinations (Rubin, Rosenbaum, & Cobb, 1956; Cobb, Warren, Merchant, & Thompson, 1957). Steinhardt, Zeman, Tuckman, and Lorge (1953) reported additional evidence of criterion-related validity in a study that showed total CMI scores were significantly related to over-all daily functional levels and medical diagnoses as determined by physical evaluation among a

sample of 171 New York geriatric adults. Predictive validity for the total CMI was reported by Lin, Tazuma, and Masuda (1979) in a study of Vietnamese refugee adaptational problems.

Chronicity-Related Role Strain

Role-related strain was the third independent variable in the predictive model. Role-related strain was measured by one instrument in this study, the Spielberger State-Trait Inventory.

Spielberger State-Trait Inventory. The Spielberger State-Trait Anxiety Instrument (STAI) is a 40 item instrument with separate measures for state and trait anxiety. The 20 item Trait Anxiety Inventory (TAI) (Form Y-2) was used in this study to measure chronicity-related role strain (see Appendix H for a copy of the STAI-trait form Y-2). Trait anxiety has been described as "dispositional", it is a construct involving residue of past experiences that influences an individual to view the world around him in a particular way (Campbell, 1963). The trait-anxiety scale measures how people generally feel and it has been extensively used in studies to assess clinical anxiety in medical, surgical, and psychiatric patient populations for a wide spectrum of research questions (Spielberger, Gosuch, Lushene, Vagg, & Jacobs, 1970). It takes between six and ten minutes to complete the scale with items being scored from one (almost never) to four (almost always). A score of four indicates the presence of high anxiety for the eleven anxiety-present items. The nine anxiety-absent items are reverse scored in order to obtain a combined sum of the weighted scores for the 20 items with a possible range from a low anxiety score of 20 to a high anxiety score of 80 (Spielberger et al., 1970). Actually there are two forms of

the Inventory (X and Y) with high correlations of r=.98 and r=.96 reported between the two for a sample of college students. Internal consistency scores for trait-anxiety forms x and y are both high with form x reported as r=.89 and form y reported as r=.90 for a sample of 351 high school students and 197 college students. Test-retest reliability scores for trait-anxiety were moderately high and ranged from r=.73 to r=.86 for 197 college students over one hour, 20 day and 104 day periods (Spielberger, 1972) while good test-retest reliability ranging from r=.65 to r=.75 was reported among a sample of 351 high school students over 30 day and 60 day periods (Spielberger et al., 1970).

Data for construct, concurrent, and convergent validity have been reported (Spielberger et al., 1970). Evidence for construct validity came from comparison of higher mean scores among a group of 451 neuropsychiatric patients with lower mean scores among normal population samples including students, military, and working adults; additional construct validity is provided by comparison of higher means for 34 general medical-surgical patients with psychiatric complications to lower means for 110 general medical-surgical patients without psychiatric complications. Concurrent validity for the Spielberger State-Trait Anxiety Inventory has been demonstrated through comparison with other established anxiety instruments when moderately high correlations ranging from r=.73 to r=.83 were obtained between the STAI and two other widely used measures of anxiety, the Taylor Manifest Anxiety Scale (TMAS) and Cattell and Scheier's IPAT Anxiety Scale. These reported correlations came from a study involving a sample of 206 college students and 66 neuropsychiatric patients. Evidence for

convergent validity came from correlations between STAI scores, Minnesota Multiphasic Personality Inventory (MMPI) scores and Cornell Medical Index (CMI) scores among two samples of hospitalized neuropsychiatric patients (n=129 and n=79). Convergent validity evidence is based upon expectations that there would be higher correlations between STAI scores and MMPI constructs measuring emotional disturbance or character disorders and lower correlations between the STAI and other constructs. Correlations between STAI scores and MMPI constructs ranged between r=.16 for the Mf subscale to r=.75 for the Sc schizophrenia subscale and r=.81 for the Pt (Psychasthenia) subscale. A moderately high correlation of r=.70 was reported between the STAI-trait score and total CMI scores for the same two neuropsychiatric inpatient samples and a correlation of this nature was expected because sections M-R of the CMI measure mood and feeling symptoms (Spielberger et al., 1970).

Normative data for 488 working adults age 50-69 (heterogeneous for age, education, and job level) is reported for men (M=33.86 SD=8.86) with an internal consistency of .96 and women (M=31.79, SD=7.78) with an internal consistency of .89. Normative data for a sample of 161 general medical-surgical patients is also reported (M=41.91, SD=12.70) (Spielberger et al., 1970).

Health Status

Health status was the dependent variable in this model. Health status was measured by two different instruments to examine the different effects of the independent variables upon psychological and physical health status. Physical health status was measured by the use

of Part A from the Older Americans Research and Service Center Instrument, the Multidimensional Functional Assessment Questionnaire (MFAQ). Pyschological health status was measured by using the Bradburn Affect Balance Scale.

Multidimensional Functional Assessment Questionnaire. The OARS Multidimensional Functional Assessment Questionnaire (MFAQ) measured physical status. It is an interview instrument developed from a series of surveys with adults 50-75+ for use with geriatric populations and was designed to assess five different dimensions: social resources, economic resources, mental health, physical health, and activities of daily living (ADL). Data from the MFAQ can be reported in several different ways. For instance, if the complete MFAQ is administered a Cumulative Impairment Score (CIS) based upon ratings from each of the five measured dimensions may be reported. A second method of reporting results is to report each dimension on an individual basis, as this study did, by separately reporting the summary score for each of the two measured dimensions of the MFAQ (see Appendix I for a copy of the physical health and ADL dimensions of the MFAQ). The physical health dimension of the MFAQ provides a means of rating on global physical health scales the respondent from 1 (excellent) to 6 (totally impaired). This rating is based upon items about doctor visits, sick days, hospital days, nursing-home days, exercise participation, and the presence of an alcohol-related problem. There is also a checklist for 18 medication categories, a list of 26 illnesses with ratings on a three point Likert scale for perceived degree of impairment ranging from 1 (not at all) to 3 (a great deal), and a section for ten supportive or prosthetic devices. The total physical rating score is based upon a composite number calculated from answers to these questions.

The ADL dimension consists of fifteen items divided into two parts, the Instrumental Activities of Daily Living (IADL) and the Physical Activities of Daily Living (PADL). Data from this dimension are also summarized as a score on a six point ADL rating scale that ranges from a low of one (no ADL problems) to a high of six (total ADL problems). Designed for use in interviews, the MFAQ averages 45 minutes to complete. Completion of the physical section used in this study took between 10 and 20 minutes.

Several different types of reliability results are reported for this instrument. Internal consistency data reported by Robb and Stegman (1983) for the subscales of the MFAQ used in their study had a coefficient alpha level of .85 for physical ability and an alpha level of .89 for functional ability. Test-retest reliability was provided by the Robb and Stegman study with a reliability coefficient of 96% agreement for 25 factual items from the questionnaire when the items were administered in a second interview with randomly chosen respondents three to five weeks after the initial interview. Fillenbaum (1978) reported test-retest MFAQ reliability scores ranged from $r=.59$ ($p\leq.001$) for the physical health dimension to $r=.71$ ($p\leq.001$) for the IADL subscale of the ADL dimension and $r=.82$ ($p\leq.001$) for the PADL subscale of the ADL dimension over a five week average for a sample of 30 geriatric subjects living in the local community. In evaluating the test-retest correlation scores reported by Fillenbaum, it is necessary to consider that during the retest subjects were asked about major life events that had occurred in the interim, and one-third of them indicated that they had experienced personal injury or sickness or the death of a close friend or family member.

Inter-rater reliability is another type of reliability reported for the MFAQ. Inter-rater reliability was calculated separately for each MFAQ dimension and ranged from r=.83 for physical health to r=.93 for the ADL dimension over a period of time by eight raters (Fillenbaum, 1978). In a separate study, inter-rater agreement ranged from .66 for physical health to .87 for the ADL dimension when 11 users (six clinicians and five research staff from nine different states) were compared for consistency. In this study, results indicated complete agreement 74% of the time for the ratings with 1 point difference on 24% of the ratings, 2 points difference 2% of the time, and 3 points difference 1% of the time (Fillenbaum & Smyer, 1981).

In two different studies, one by George, Landerman, and Fillenbaum (1982) and the second by Robb and Stegman (1983), the results of reliability analysis revealed raters from the same discipline tended to rate subjects at similar dimensional levels. The results of the inter-rater agreement for this study were consistent with results from these two studies. A third kind of reliability is intra-rater reliability. Intra-rater agreement over a 12-18 month period ranged from .78 to .96 ($p \leq .001$) for the physical health dimension and from .88 to 1.00 ($p \leq .001$) for the ADL dimension in a study of seven different raters (Fillenbaum, 1978). Subsequent to these studies, George, Landerman, and Fillenbaum produced a computer program to help reduce personal bias and consistently score summary ratings for each dimension of the MFAQ (1982).

There are no extensive validity data for the MFAQ. Content validity for the MFAQ is based upon the fact that the instrument was developed by researchers and clinicians from multiple disciplines with

expertise in the areas of clinical assessment, geriatrics, community and long-term care settings. It is well recognized that content validity is the weakest form of validity. Fillenbaum did report evidence for criterion validity by comparing interviewer ratings with physical exams performed by physician's assistants (Spearman rank order correlation of .70, $p \leq .001$) for 82 geriatric community residents selected to have all levels of dimensional impairment (1978). Finally, data from a series of surveys using community, clinic, and institutional populations indicated the MFAQ scores did discriminate among these groups. The means for each population fell as predicted with the community population having the lowest mean level of impairment, the clinic population having the middle mean level of impairment, and the institutional population having the highest mean and therefore, the most impairment.

Bradburn Affect Balance Scale. The second instrument used to measure health status was the Bradburn Affect Balance Scale (also called the Bradburn Morale Scale), a widely used instrument for the measurement of psychological well-being. The Bradburn Affect Balance Scale (ABS) is a 12-item instrument with two scales called the Negative Affect Scale (NAS) and the Positive Affect Scale (PAS) that measure negative and positive psychological affect or what Bradburn called well-being. These two scales can be combined to yield an overall scale called the Affect Balance Scale (ABS) whose score is derived by subtracting the total negative affect score from the total positive affect score (Bradburn & Caplovitz, 1965; Campbell, 1976; Schaefer, Coyne, & Lazarus; 1981). Other researchers (Himmelfarb & Murrell, 1983) have added NAS and PAS scores together for a total ABS score. The ABS is often used in research although data analysis by Bradburn and Caplovitz in 1965 indicated the two scales act independently of each other.

Two versions of the Bradburn Scale are frequently used today, the Bradburn and Caplovitz 9 item scale (1965) is one and the Bradburn 10 item scale (1969) is the other. The difference is the addition of one more question to the positive affect scale and revised wording in the Bradburn version. The Bradburn and Caplovitz (1965) version of the scale is used in this study with completion of the ABS taking between 5 and 10 minutes (see Appendix J for a copy of the ABS).

In the Bradburn and Caplovitz version of the ABS the positive affect scale consists of four positive items scored in a yes/no format. If the subject indicates yes then the response can vary from one (felt that way once in the past week) to three (felt that way often in the past week) when summed, scores range from 0 to 12 with 0 a low positive morale or affect score and 12 a high positive morale or affect score. The negative affect scale consists of five negative items scored in a yes/no format. If the subject indicates yes then scores range from 1 (felt that way once in the past week) to 3 (felt that way often in the past week). Summing negative responses yields a range of scores from 0 to 15 with 0 representing a low negative morale or affect score and 15 representing a high negative morale or affect score. A second frequently used scoring method is to use a yes/no format and assign one point for each yes answer; this scoring method would produce a range of one to four for the positive morale subscale and a range of one to five for the negative morale subscale.

Reported internal consistency scores for the ABS were moderate (alpha=.65) for a geriatric community sample (n=254) and moderate (alpha=.70) for a geriatric inpatient clinical sample (n=60) in a reliability and validity study by Himmelfarb and Murrell (1983).

McDowell and Praught (1982) using data from the Canadian National Health Survey (n=17,279) report relatively low internal consistency scores for the negative morale subscale that ranged from alpha=.17 to alpha=.45 and relatively low internal consistency scores for the positive affect scale that ranged from alpha=.26 to alpha=.41; however, the item-total correlations between each question and the overall score were higher and ranged from r=.49 to r=.63 (indicating each item did contribute to the subscale construct). A second type of reliability is test-retest reliability. Bradburn (1969) reported ABS test-retest reliability scores from between .80 to .97 for a large national survey sample.

Evidence for construct and criterion validity came from the ability of the ABS to discriminate between the community and clinical geriatric populations with the clinical population reporting higher levels of negative affect than the community population. Further analyses indicated the ABS discriminated between samples for both males and females, for all categories of marital status, for people over and under the age of 66, and for people who were categorized as being in both good and in poor physical health (Himmelfarb & Murrell, 1983).

These ABS scores discriminated in the same direction as 3 other psychological instruments including the Center for Epidemiological Studies Depression Scale (CES-D), Dupuy's General Well-Being Scale, and Spielberger's State-Trait Anxiety Inventory that were all administered at the same time to both the community and the clinical geriatric samples.

Additional support for construct and criterion validity has been reported by Moriwaki (1974) in a study of two geriatric samples involving small numbers of psychiatric community center outpatients

(n=8) and Lutheran Church members (n=16) in which PAS and NAS scores for the community geriatric sample were significantly higher for the PAS (t=3.61, $p \leq .005$) and significantly lower for the NAS (t=4.98, $p \leq .001$) than the psychiatric outpatient sample. Additional evidence of validity comes from statistical analyses that tested predicted correlations between the NAS, the PAS, and degree of role loss scores. As predicted, correlations between the NAS and role loss measured by Rosow's Comprehensive Role Index (1967) were moderately correlated at r=.48, $p \leq .05$ while correlations between the PAS and role loss measured by Rosow's Comprehensive Role Index were not significantly correlated at r=-.38, although there was a trend toward an inverse relationship. Other evidence is provided by correlations between the NAS, the PAS, and morale as measured by the Rosow Morale Scale where again correlations between the NAS and morale were inversely correlated at a moderate though not significant level of r=-.40. The correlation between the PAS and morale was moderately high at r=.62, $p \leq .01$ (Moriwaki, 1974). These findings lend support to Bradburn's (1969) finding that the NAS and the PAS, and the ABS correlates significantly with individual ratings of "very happy, pretty happy, and not too happy."

Data for criterion validity are reported by McDowell and Praught (1982) in which the positive affect scale had a correlation of r=.42 with an overall happiness rating while the negative affect scale had a correlation of r=-.30. In a different study Costa and McCrae (1980) provide data to support convergent validity for the Bradburn Affect Balance Scale. Here correlations between the Bradburn scales and three alternative happiness measures (Hopelessness Scale, Personality Security Inventory, Life Satisfaction Index) ranged from .18 ($p \leq .05$) for the

Hopelessness Scale to .64 ($p \leq .001$) for the Personal Security Inventory. These results from McDowell and Praught's research provided evidence to support the theoretical basis for the Bradburn scale and since McDowell and Praught used a sample (N= 17,279) from the Canada Health Survey not only do their results argue that the items in the ABS measure two different dimensions of affect they also argue for cross-cultural validity.

Data Analysis

Data analysis was done in phases. Before the completion of data collection, the minimum acceptable sample size was established by two different means. First, the conservative guideline of a minimum of 10 subjects for each independent variable in the predictive model was chosen. Sample size was established by a power analysis that suggested the sample size (N=80) was adequate to statistically discriminate for significant differences among the independent variables. Internal consistency reliability was calculated for the instruments and their subscales when the construction of the instrument indicated that an internal consistency estimate was appropriate. The internal consistency of the CMI, the TAI as well as the PAS and the NAS from the the Bradburn's ABS was established. The use of a cross-sectional design precluded test-retest reliability estimates. Inter-rater reliability was checked during the study.

Following the completion of data collection a correlation matrix of the exogenous and endogenous variables was examined for multi-collinearity before making the final selection of independent

variables for the multiple regression analyses. Multicollinearity was considered present when any intercorrelation reached or exceeded .70. Multiple regression equations were established and analyzed for both the hypothesized and unhypothesized direct and indirect links for each of the four health status outcomes of the predictive model. Four separate health status outcomes of the predictive model were to discriminate how the independent variables differentially affected the four separate health status outcomes. The order in which the predictive variables were entered in the regression equation was hierarchical and consisted of three steps: first, the variable of perceived social support was entered then the role stress variable and finally the role strain variable. Within the second step a set of three separate measures of role-related stress including the CFS, LES and CMI scores were entered simultaneously and competed among themselves to empirically determine which provided enough explained variance to enter the regression equation.

Results of the regressions for each of the four outcomes were examined separately to distinguish how well each outcome was predicted by the independent variables of the predictive model. In testing each outcome of the model, an overall level of 20% explained variance for each health status outcome was considered as substantively significant. The 1983 revised Statistical Package for the Social Sciences (SPSSX) at the University of California: San Francisco computing facilities was utilized to conduct the regression analyses.

Residual analysis was performed to confirm that regression analysis met six mathematical assumptions. These included evidence that:

1. there is a zero mean for the residuals,
2. there is independence of the residuals,
3. there is homoscedasticity of the residuals,
4. there is a fixed independent variable distribution,
5. there is a normal distribution of the residuals,
6. there is measurement without error for the independent variables (Verran & Ferketich, 1984).

The last assumption of no measurement error was examined before proceeding with the other five assumptions. This assumption was examined by assessing the reliability of study instruments. Next the first assumption of zero mean was checked by computation of 95% confidence intervals for residuals from each set of model equations.It was expected that the 95% confidence interval would cover 0 and there would be no evidence that the mean of the residuals was statistically different from zero. Graphic residual analyses were done through the use of scattergrams to visually examine and evaluate residual data for lack of evidence of violation of the second through fifth assumptions.

Homoscedasticity of residuals was assessed by plots of standardized residuals against predicted values in which a random scatter or equal variance of the points above and below the mean was consistent with homoscedasticity. Independence of the residuals was assessed by plots of standardized residuals against each independent variable as well as length of interview. Here a random scatter about the zero mean was consistent with the assumption of independence. Fixed distribution of the independent variables was examined by scattergrams of standardized residuals against independent variables within the equation. A random scatter about the zero mean was expected when there was no dependence.

The fifth mathematical assumption of normally distributed residuals was examined by the use of a chi square goodness of fit test to test if the residuals were normally distributed. To fail to reject the null hypothesis of a normal distribution, the chi square goodness of fit test required the sum total of the calculated chi squares from each categorized set of residuals to be less than the critical chi square value at the .01 probability level for k-2 degrees of freedom (minus 2 because mean and SD are estimated). The fifth mathematical assumption was evaluated by failure to reject the null hypothesis that indicated the distribution of residuals from that specific equation was not significantly different from normal. After assessing the residuals for violation of the six mathematical assumptions, the results of each regression could be analyzed.

Analysis of the results from the four models required several steps. The first step required an evaluation of how much each independent variable that entered the equation contributed to the explained variance of the full model R^2. Evaluation criteria for each independent variable included the amount of change in the explained variance (R^2) each contributed, the F test significance at the .05 level of probability for each specific independent variable as well as its effect upon the overall F test result at the .05 level of probability. Additional criteria for evaluation were that the standardized beta weight was significantly different from 0 at the .05 level of probability. The theoretical model also predicted the direction of the relationship between model variables; direction of the relationship between model variables was indicated by the positive or negative sign for each standardized beta weight. Congruency between the theoretically

predicted relationship and the empirical relationship was required as a criteria for inclusion in the empirical model.

The final decision whether or not to retain each independent variable for the best-fit outcome of the predictive model was based in part upon statistical criteria. Each independent variable retained in the best-fit model met the individual and overall F test of significance at the .05 level; each had a standardized beta weight that was significantly different from zero at the .05 level of probability, and each contributed at least 5% to the total amount of explained variance for the full model (Land, 1969). A different kind of criterion considered as important as the statistical criteria was the theoretical basis for the inclusion of each independent variable within the predictive model. The final consideration for the inclusion or exclusion of each independent variable was the need to weigh the relative value of maximizing the total amount of explained variance by the full model with the need for parsimony.

Decisions were made by keeping in mind the statements of several experts that included Gordon's warning (1968) that failure to consider the theoretical context creates ambiguity around the relative importance of each independent variable and their relative importance to the overall model. Blalock (1984) and Asher (1983) also cautioned against model oversimplification and reliance upon one explanatory variable in developing models that explain complicated outcomes. Consequently the decision to include or exclude an explanatory variable depends upon weighing the value of how much additional explained variance it provides against the possible costs of including it. The inclusion or exclusion of variables as part of the modified predictive model was based upon an

evaluation using theoretical relevance, statistical criteria, and context as the three guidelines.

Summary

This chapter provided a description of the methodology used in this study. The description included a presentation of the research design, the procedures for data collection, and data analysis. The results of the study are described in the next chapter where the findings include demographic and agency characteristics of the sample, reliability data, tests of mathematical assumptions and the results of hypotheses testing for the predictive model.

CHAPTER IV

RESULTS

The sample for this study consisted of 86 Congestive Heart Failure patients living within a specified West Coast metropolitan area. Preliminary results from this CHF patient sample are reported first and include demographic and agency characteristics of the sample, results of reliability testing, correlations among different variables, and tests of the mathematical assumptions. Results of hypotheses testing for each outcome of the predictive model are reported in the next section of the chapter, which concludes with a summary section.

Study Sample

A convenience sample of 86 geriatric subjects with a diagnosis of CHF who lived in a large metropolitan area of California were recruited from those eligible after review of medical records and staff identification of CHF patients. Subjects were recruited from two sites, A West Coast metropolitan Visiting Nurses Association and a West Coast metropolitan Veterans Administration Hospital Cardiac Outpatient Clinic. Out of the initial group of 86 subjects recruited from these two sites, there were three cases that were excluded from analyses. One did not finish the interview while the other two subjects were judged unreliable by both their nurse case-manager and by the nurse coordinator as a result of recent medication changes that affected their level of consciousness and short-term memory.

This final sample of 83 subjects included 38 subjects (53.5%) from the Visiting Nurses Association and 45 subjects (46.5%) from the Veterans Administration Cardiac Outpatient Clinic. The participation rate for subjects recruited from the Visiting Nurses Association was 43% while the response rate for subjects recruited from the Veterans Administration Cardiac Outpatient Clinic was 49%.

Demographic Findings

Demographic findings for this sample of CHF patients are presented in Table 3. This sample was typically married, white males whose average age was 68.3, and who had been diagnosed with CHF 3.4 years ago, and who had a Business School or Junior College education.

This sample ranged in age from 55 to 80 (Mean=68.3,SD=7.43). Subjects reported that the time since an initial CHF diagnosis ranged from 6 months ago (13.2%) to 47 years ago (1.2%). Although the reported mean number of years since initial diagnosis is 7.3, the mode was six months (13.25%) and the median was 3.4 years; the mean statistic was skewed by nine subjects initially diagnosed for CHF over 20 years ago. The pattern of living arrangements had important implications. While almost two-thirds of the sample lived with at least one other adult, over one-third (37.3%) lived alone. An assessment of the ethnic distribution for the sample suggests limits on generalizability; Asians represented 4.8% of the sample and Hispanic populations represented 3.6% of the sample. Finally, this sample consists of a group almost evenly distributed between those who completed at least a high school education and those who did not. Furthermore, among the 44.6% who did not graduate from high school there were 8 subjects (9.6%) whose highest level of formal education was sixth grade.

Table 3

CHF Study Demographic Data

Characteristic	Mean	S.D.	Range	Median	N
Age (years)	68.3	7.4	55-80	68	83
Duration since 1st diagnosis (years)	7.3	8.9	.5-47	3.4	83

Characteristic	Frequency	Percentage
Sex		
Male	56	67.5
Female	27	32.5
Marital Status		
Single	14	17.1
Married	34	41.5
Divorced	13	15.9
Widowed	21	25.6
# of Adults in Household		
Living Alone	31	37.3
Two Adults	39	47.0
Three Adults	6	7.2
Four Adults	2	2.4
Five Adults	1	1.2
Six Adults	4	4.8
Ethnicity		
White	54	65.1
Black	22	26.5
Asian	4	4.8
Hispanic	3	3.6
Education		
Elementary	8	9.6
Jr. High(7-9)	13	15.6
Sr. High(10-11)	16	19.2
HS Graduate	12	14.6
Business School/ Junior College	20	24.2
College	3	3.6
College Graduate	6	7.2
Graduate School	5	6.0

Chronicity-Related Findings

The chronicity-related findings for this sample indicated that they had multiple health-related problems. Findings related to these problems are presented in Table 4.

In response to questions about limitations in activity from a listing of 25 illnesses, 64 subjects (87.8%) reported at least one illness seriously interfere with their daily activities. Among this group of 64 subjects, 24 or 37.5% reported one illness, but 62.5% (40 subjects) reported at least two illnesses. In addition to their diagnosis of CHF, these other problems were reflected in the kinds of medications taken. The six most common medications in descending order were: diuretics (64 subjects; 77.1%), digitalis (48 subjects; 57.8%), medications to improve circulation (43 subjects; 51.8%) while 42.2% (35 subjects) reported high blood pressure medications and 13 (15.7%) reported arthritis medications.

Additional descriptive data about the chronic conditions reported by this sample are summarized in Table 5. This table provides information about the seven most commonly reported chronic conditions affecting health status among this sample. Perhaps the most interesting finding here was the number of chronic conditions that were reported as not affecting ADL levels. The most prevalent was high blood pressure (reported by 31 subjects; 37.3%). The second most common condition was heart trouble (reported by 17 subjects; 20.5%), while diabetes (16 subjects; 19.3%) was fourth and circulatory conditions (11 subjects; 13.3%) was the fifth.

Table 4

Chronicity-Related Characteristics Among Congestive Heart Failure Patients (N=83)

Characteristic	Frequency	%
Number of Serious Conditions Affecting ADL		
0	19	22.9
1	24	28.9
2	16	19.3
3	16	19.3
4	5	6.0
5	1	1.2
6	2	2.4
Unable to Do Usual ADLs (in weeks)[a]		
No Trouble	24	28.9
1-3 weeks	34	41.4
4-12 weeks	14	16.9
12-24 weeks	10	12.0
Length of Hospitalization (in days)[a]		
None	41	49.4
1-7 days	15	18.1
over 7 days	27	32.5

[a]In last 6 months. Figures represent combined category totals for some and a great deal of affect upon ADL.

Table 5

Seven Most Commonly Reported Conditions Affecting ADL Among Congestive Heart Failure Patients (N=83)

Condition	Frequency	%
Cardiac		
Not Present	10	12.0
No Affect	17	20.5
Minimal	30	36.1
Significant	26	31.3
High Blood Pressure		
Not Present	41	49.4
No Affect	31	37.3
Minimal	10	12.0
Significant	1	1.2
Circulation-Related in Extremities		
Not Present	50	60.2
No Affect	11	13.3
Minimal	13	15.7
Significant	9	10.8
Arthritis		
Not Present	54	65.1
No Affect	6	7.2
Minimal	13	15.7
Significant	10	12.0
Diabetes		
Not Present	61	73.5
No Affect	16	19.3
Minimal	2	2.4
Significant	4	4.8
Respiratory-Related		
Not Present	62	74.7
No Affect	2	2.4
Minimal	7	8.4
Significant	12	14.5
Stroke[a]		
Not Present	73	89.0
No Affect	1	1.2
Minimal	4	4.9
Significant	4	4.9

[a] N=82

It is unclear whether this means medications are effective in controlling problems related to these conditions or whether the CHF condition has so seriously affected the individual's health status that these other conditions made very little difference to them on a global health basis. On the other hand it is clear from the responses that 42 subjects (50.6%) had someone available to help them during the past six months. Twenty-two people (26.5%) expressed a need for continuous help at the time of the interview, these data suggest those 22 individuals used social support to get the kinds of help they needed in order to maintain themselves in the community. Additional evidence supporting this inference comes from subject responses to the question "How much do your health troubles stand in the way of your doing the things you want to do?" Forty-two subjects (50.6%) responded "a great deal" and an additional 30 subjects (36.1%) responded "with some effect."

Considering these findings it is interesting to examine responses to the question: "how would you rate your overall health at the present time?" One subject said "excellent," 28 (33.7%) said "good," 36 (43.4%) said "fair," and 18 (21.7%) said "poor."

This section focused on characteristics of the sample population chronicity-related patterns. The next section reports the instrument-related findings associated with each model variable.

Instrumental Data Findings

Social Support

Findings for social support among this sample of CHF patients are reported below. Statistical results from analyses of the Norbeck Social Support Questionnaire are presented.

Norbeck Social Support Questionnaire. Social support as conceptualized in this study consisted of aid, affect, and affirmation. As presented in Table 6, aid had a 30.33 mean score (SD=22.62, n=81) on a scale with a range from 0 to 102. Affect had a 37.61 mean score (SD=26.74, n=81) on a scale with a range from 2-103. Affirmation had a 32.0 mean score (SD 24.06, n=81) on a scale with a range from 0 to 112. Total functional support is the combined aid, affect, and affirmation scores for each respondent, the total functional support mean score was 100.75 (SD=70.92, n=81) on a scale with a range from 2 to 314.

Table 6

Characteristics of Perceived Social Support Among Adults with CHF

Scale	Mean	SD	Score Range	N
Aid	30.33	22.62	0-102	81
Affect	37.61	26.74	2-103	81
Affirmation	32.00	24.06	0-112	81
Amount of lost support	.46	.93	0-4	81
Total functional support	100.75	70.92	2-314	81
Number in network	6.07	3.98	1-17	82
Number lost	.60	1.05	0-5	82

The source of this social support was the number of people in each respondent's social network. Respondents reported a mean network score of 6.07 with a range of network scores from 1 to 17. The 17 people reported as the highest number of people in any network among the people in this sample was a number well below the 24 person maximum allowed by

the NSSQ format. Examination of Table 6 indicates that a minimal amount of social support was lost by this sample over the past year (mean .46, SD=1.32).

Each respondents' social network was analyzed for the availability of social support from seven sources; the total amount of functional support provided by each source, and the average amount of functional support provided by each source within the network were calculated and reported in Table 7. These seven sources of social support are reported in ascending order by the average amount of functional support available from each source.

Table 7

Total and Average Functional Social Support Among Congestive Heart Failure Patients by Source (N=83)

Source	Total Functional Support			Average Functional Support		
	Mean	SD	N	Mean	SD	N
Work/School	.72	3.30	83	12.00	7.28	5
Neighbors	5.53	11.44	83	13.26	5.58	26
Health Care Providers	4.64	11.26	83	13.29	5.67	18
Friends	29.99	37.03	83	15.69	4.93	55
Family	46.00	44.51	82	16.89	4.91	72
Minister/Priest Rabbi	1.84	5.72	83	17.00	6.76	9
Spouse/Partner	7.54	16.13	83	19.19	4.76	27

Examination of Table 7 indicates spouses provided the greatest amount of average functional support while clergy were the second

highest source (among the 9 individuals who listed clergy as part of their social network). Family and friends were the next highest source of average functional support; therefore the greatest overall source of total functional support was the family, with friends providing the second most common source. The other sources of total functional support were minor in comparison to family and friends.

Interrelationships Among Social Support Variables

Norbeck et al. (1981) reported very strong interrelationships among aid, affect, and affirmation. The interrelationships among aid, affect, and affirmation in this study were also strong, which indicated they were all measuring social support. These interrelationships showed aid was significantly correlated with both affect and affirmation ($r=.89$, $n=81$, $p\leq.001$ and $r=.88$, $n=81$, $p\leq.001$), while affect and affirmation were also intercorrelated ($r=.95$, $n=81$, $p\leq.001$). These correlations are also presented in summary format as part of Table 10, which is located at the end of this section on instrumental data findings, and summarizes correlations among all model variables. These high intercorrelations indicated multicollinearity so only one variable could be used in the regression equations. Total functional social support was selected to measure social support in the regression analyses reported for this study because it represents the combined total of aid, affect, and affirmation (Norbeck et al., 1981).

Sex-linked differences in levels of social support have been reported in the literature, a t-test indicated there were no sex differences in social support among males and females in this sample. Neither total functional social support nor any of the three dimensions

of social support (aid, affect, and affirmation) were correlated with demographic characteristics.

Chronicity-Related Role Stress

Three different instruments measured chronicity-related role stress. These were Sarason's Negative Life Events instrument, the New York Heart Association Cardiac Impact Status Classification, and the Cornell Medical Index. Results for all chronicity-related role stress measures are reported below. In addition, mean scores, sample range scores and range scores for each instrument are reported in summary format in Table 8. Correlation data are also reported both as part of this section and in summary format at the end of the instrumental data findings section in Table 10.

Table 8

Mean Scores on Chronicity-Related Role Stress and Strain Among Congestive Heart Failure Patients (N=83)

Scale	Mean	SD	Score Range	Scale Range	N
Chronicity-Related Role Stress					
Negative Magnitude Life Events	7.7	6.29	0-31	0-246	83
New York Heart Cardiac Impact Status	2.33	.61	1-4	1-4	83
Cornell Medical Index	23.38	10.20	6-51	0-105	83
Chronicity-Related Role Strain					
Spielberger State-Trait Anxiety Inventory	38.21	9.60	21-65	20-80	82

Negative Magnitude Life Events. One measure of chronicity-related role stress was the modified version of Sarason's Life Experiences Survey that produced scores for negative magnitude life events (NMLE) that were low and ranged from 0 to 31 with a mean score of 7.7 (SD=6.29), N=83) on an instrument with a potential range from 0 to 246. The reported number of negative life events experienced among this sample population were also low, with the mean score at 3.96 (SD 2.57, n=81). Assessment of reported negative life events showed a marked clustering of responses around three groupings of negative life events. These clusters were in the area of health where major illness, major changes in eating habits, and major changes in sleeping habits accounted for most of the problems in that category. In the area of family and close friends, there were two events that greatly affected the respondents-- major changes in the health or behavior of a family member and the death of a family member or a close friend. In the third cluster, decreased finances and change in social activities were the two life events that most greatly affected this sample.

Cornell Medical Index. A second measure of chronicity-related role stress was the Cornell Medical Index. Cornell Medical Index scores ranged from 6 to 51 with a mean score of 23.38 (SD=10.20, N=83). As expected, disease-related symptoms were reported in four different categories: sensory-related symptoms (such as vision and hearing), respiratory-related symptoms (such as diaphoretic episodes and dyspnea), cardiac and circulatory-related symptoms (such as angina, palpitations, tachycardic episodes, numbness and swelling of the extremities), and fatigue-related symptoms (such as getting tired before other people and exhaustion after brief physical activity).

Cardiac Functional Status. The third measure of chronicity-related role stress was the New York Heart Association's Cardiac Functional Impact Status Classification that is based upon an individual's cardiac functional capacity. Among people in this sample, cardiac functional status scores ranged from 1 to 4 with a mean score of 2.33 (SD=.61, n=81), which would be high in a normal population. This level of limitation, however, would be expected among a CHF patient population where a mean score of 2.33 was indicative of slight cardiac functional limitations.

Correlations Among Chronicity-Related Role Stress Variables

Although none of the chronicity-related role stress variables were correlated with demographic variables, they were correlated with each other. These correlations are also reported in a summary format as part of Table 10. The three measures of chronicity-related role stress were significantly intercorrelated so that higher scores for Negative Magnitude Life Events related to higher scores for both Cardiac Functional Status ($r=.34$, $N=83$, $p\leq.01$) and the Cornell Medical Index, ($r=.27$, $N=83$, $p=\leq.01$). These scores suggested individuals who reported worse cardiac functional status and more physical symptoms also reported more negative life events.

Chronicity-Related Role Strain

Spielberger's Trait Anxiety Inventory was used to measure chronicity-related role strain, the mean score, scale and instrument range scores for the TAI are reported earlier in summary format as part of Table 8. They are also reported below.

Trait Anxiety. Trait anxiety inventory scores ranged from 21 to 65 with a mean score of 38.21 (SD=9.60, n=82). Chronicity-related role strain scores were not significantly correlated with any demographic characteristics although TAI scores were significantly correlated with the NMLE measure of chronicity-related role stress (r=.42 N=83, $p \leq .001$).

Health Status

Four different scales from two different instruments measured health status. These measurements were the Positive Affect Scale and the Negative Affect Scale from the Bradburn Affect Balance Scale and the Activities of Daily Living Rating and the Physical Rating from the OARS Multidimensional Functional Assessment Questionnaire. Results for each measure are reported below, mean scores, sample range, and instrument range scores are also reported in summary format in Table 9.

Table 9

Mean Scores on Health Status Among Congestive Heart Failure Patients

(N=83)

Scale	Mean	SD	Score Range	Scale Range	N
Psychological					
Positive Affect	3.58	2.72	0-9	0-12	81
Negative Affect	3.70	3.10	0-11	0-15	81
Physical					
Physical Rating	5.13	1.07	3-6	1-6	81
ADL Rating	3.48	1.29	2-6	2-6	81

Table 10

Significant Correlations Among Model Variables (N=81)

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Social Support												
1. Aid			.87[c]	.95[c]								
2. Affect	-.89		.95[c]	.98[c]								
3. Affirmation				.97[c]								
4. Total functional												
Cronicity-Related Stress												
5. Negative magnitude life events												
6. Cardiac functional status					.34[b]		.34[b]					
7. C.M.I. physical symptoms					.27[b]							
Chronicity-Related Strain												
8. Anxiety					.42[c]							
Health Status												
9. Positive affect					-.30[b]					.30[b]		
10. Negative affect	-.30[b]	-.30[b]	-.29[b]	-.28[b]	.51[c]	.24[a]	.34[b]	.48[c]			.34[b]	
11. Physical rating		-.29[b]	-.28[b]	.27[a]	.29[b]			.25[a]				
12. ADL rating					.40[c]	.44[c]	.41[c]	.30[b]		.23[a]	.41[c]	

[a] P≤.05
[b] P≤.01
[c] P≤.001

Positive Affect. One measure of health status was Bradburn's scale for positive affect. Positive affect scale scores ranged from 0 to 9 with a mean score of 3.58 (SD=2.72, n=81). A score of 3.58 is a relatively low score for this scale.

Negative Affect. A second measure of health status was Bradburn's scale for negative affect. These scale scores ranged from 0 to 11 with a mean score of 3.7 (SD=3.1, n=81). Like the PAS score, the NAS score is low.

Physical Rating. The third measure of health status used in this study was the MFAQ: Physical Rating whose scores ranged from 3 to 6 with

a mean score of 5.13 (SD=1.07, n=81). A mean score of 5.13 or "severely impaired" was very high on this scale and indicative of the level of compromised physical status experienced among this CHF patient sample.

ADL Rating. The fourth measure of health status used in this study was the MFAQ: ADL Rating, scores on the ADL rating scale ranged from 2 to 6 with a mean score of 3.48 (SD=1.29, n=81). A mean score of 3.48 or "mildly impaired" was lower than what one might expect if the physical rating mean scores reported above were considered first.

Correlations Between Model Variables and Demographic Characteristics

There were correlations among demographic characteristics and some model variables. Sex and a lower educational level were correlated with higher rates of ADL impairment with sex correlated at r=.33 (N=83, $p \leq .002$) and educational level correlated at r=-.22 (N=83, $p \leq .05$) suggesting females characteristically had lower ADL levels than males and subjects with less education were more likely to to have higher rates of ADL impairment. T-tests were done to determine whether there were significant agency-related differences; these results are reported in Table 11.

Agency-Related Characteristics

These results appear to reflect the different criteria used by the agencies to enroll clients. The VA Cardiac clinic was primarily an ambulatory outpatient clinic while VNA. patients reflect a population that was more seriously affected by CHF and require home visits.

Table 11

Comparison of Sample Characteristics According to Recruitment Site

Characteristic	Frequency	%
Sex		
Female		
VNA	24	63
VA	3	7
Male		
VNA	14	37
VA	42	93

Characteristic	Mean	SD	N	T	P
Age				3.10	.005
VNA	70.9	6.54	38		
VA	66.1	7.51	45		
Variable					
Total Functional Social Support				-1.74	NS
VNA	86.66	53.85	38		
VA	113.21	81.78	43		
Negative Magnitude Life Events				2.42	.05
VNA	9.76	6.73	38		
VA	6.29	6.24	45		
Cardiac Functional Status				3.91	.001
VNA	2.61	.64	38		
VA	2.11	.49	45		
ADL Rating				3.74	.001
VNA	4.08	1.30	38		
VA	3.07	1.14	45		

Table 11 (continued)

Comparison of Sample Characteristics According to Recruitment Site

Characteristic	Mean	SD	N	T	P
Variables (cont.)					
Physical Rating				1.93	NS
VNA	5.39	.95	38		
VA	4.96	1.13	45		
Positive Affect				-2.52	.05
VNA	2.78	2.57	37		
VA	4.25	2.65	44		
Negative Affect				2.01	.05
VNA	4.47	2.87	37		
VA	3.09	3.33	44		

VNA=38
VA=45

Examination of health status outcome scores by agency indicated that as a group the VNA patients scored worse than the VA Cardiac Clinic patient population. The two agency populations are combined for subsequent data analysis to provide a wider range of scores, increase the generalizability of the study data, and provide a sample size large enough to meet the requirements of 10 cases per variable for the regression analyses of the predictive model.

Reliability of Instruments

Before describing the results of hypothesis testing for the predictive model, reliability testing for study instruments are reported. Internal reliability analyses were done for the Bradburn Negative and Positive Affect Scales, the Cornell Medical Index, and the Spielberger Trait Anxiety Index. The results are reported in Table 12.

Table 12

Internal Reliability for Three Study Instruments

Instrument	Number of Items	N	Standardized Alpha
Spielberger Trait Anxiety Inventory	20	82	.84
Cornell Medical Index	102	64	.86
Bradburn Affect Balance Scale			
Positive Affect	4	4	.56
Negative Affect	5	5	.62

Examination of Table 12 indicates both the Spielberger Trait Anxiety Inventory and the Cornell Medical Index have strong internal consistency scores, which further support the basic reliability work on these instruments. On the other hand, the internal reliability scores for the positive and negative affect scales are only moderate and results related to scores from these two scales must be interpreted with caution.

A second kind of reliability is inter-rater reliability. Inter-rater reliability was determined for the physical rating and the ADL rating of the MFAQ by comparing the information recorded from two different interviews by each of the masters student interviewers with the investigator. Agreement on the recorded data was above 95% for both interviews.

Results of Model Testing

Results of testing of the theoretical model's four health status outcomes are presented in this section. The entry order for each of the four different health status outcomes of the theoretical model was tested using a hierarchical multiple regression with three steps. The variable for perceived support (total functional social support) was entered first. In the second step the three measures of chronicity-related role stress (cardiac functional status, negative magnitude life events, and Cornell Medical Index) were entered as a set. In the third step the measure of chronicity-related role strain (trait-anxiety) was entered into the equation. After the best-fit regression equation was established for each health status outcome, the residuals checked for adherence to mathematical assumptions.

Mathematical Assumptions

Faith in both the substantive quality of the theoretical model and in the stability of the results from regression analysis procedures is based upon knowledge that the mathematical assumptions have been assessed to see that there was no evidence of assumption violations. These mathematical assumptions include: zero as the expected mean of the residuals; normal distribution of the residuals, independence of the residuals, and homoscedasticity of the residuals (Verran and Ferketich, 1984).

The first assumption required a zero mean for the residuals and it was tested by examining the 95% confidence interval for the mean of the unstandardized residual to see if it contained zero. Examination

indicated this was true for each case. The second assumption required a normal distribution of the residuals and it was tested by several different methods. The first method was to examine unstandardized residual data to assess skew and kurtosis and to evaluate that information in conjunction with a visual examination of a normal probability plot for the unstandardized residuals. There was evidence of some skew and kurtosis but visual examination suggested that these deviations were not serious.

However, a second test was done to determine if there was any significant deviation of the unstandardized residuals from normality, this test involved the use of chi square goodness of fit tests to check each of the four health status outcomes. In order to use a chi square goodness of fit test, the unstandardized residuals were categorized into five different groups reflecting standard mean deviations with the first group located at the mean (it had zero deviation). The second group consisted of categorized residuals one standard deviation below the mean while the third group consisted of categorized residuals two standard deviations below the mean. The fourth and fifth categories were respectively grouped one and two standard deviations above the mean. By grouping unstandardized residuals into five categories a chi square goodness of fit test can be used to test whether the number of observed differed from the number of expected unstandardized residuals within each category when the distribution was normal.

Next, each cell of the five cells for each distribution was evaluated in order to test for violations of the chi square goodness of fit rule stating that no more than 20% of the categorized groups contain less than five observations (Zar, 1974). None of the four categorized

groupings violated this test and calculations for the chi square goodness of fit test were completed as the next step. The calculated chi square for the positive affect health status outcome was 2.14 (df=3, $p \geq .01$, n=81). The chi square calculated for the negative affect health status outcome was 6.97 (df=3, $p \geq .01$, n=81). The calculated chi square for the physical rating health status outcome was 4.73 (df=3, $p \geq .01$, N=83). The calculated chi square for ADL rating as the fourth health status outcome was 7.13 (df=3, $p \geq .01$, N=83). Scores from these calculations (which involved observed and predicted categorized residuals) indicated none of the chi square goodness of fit tests were significant because none of the four calculated chi square figures exceeded the critical chi square value therefore the distribution of residuals from the regression equations was normal.

Even when there are deviations from normality they can be considered minor and regression analysis is robust with respect to them unless they are combined with heteroscedasticity (Verran & Ferketich, 1984). The third assumption that there was homoscedasticity of the residuals was tested next. For residuals to be homoscedastic there must be equal distribution across all values of X. Evidence of homoscedasticity was derived from visual analysis of scattergram plots where the predicted values of health status were plotted against standardized residuals from each regression equation. Visual analysis indicated equal variance of the residuals for all four health status outcome equations.

The last tested assumption, independence of residuals was assessed by examining scattergrams of standardized residuals plotted against time of data collection. Visual analysis indicated equal distribution of the

residuals about the zero line. The combined results of these different tests provided support that there was no violation of the mathematical requirements for each best-fit model outcome. (Verran & Ferketich, 1984).

Hypotheses

The four predictive model variables have been operationalized earlier, but are repeated again to facilitate interpretation of the model testing results. Perceived social support was measured by a score for Total Functional Social Support (TFSS). Chronicity-related role stress was measured by three different scores, these scores were a Negative Magnitude Life Events (NMLE) score from the Sarason Life Events Survey, a Cardiac Functional Status (CFS) score from the New York Heart Association's Cardiac Functional Impact Status Classification, and a score from the Cornell Medical Index (CMI). Chronicity-related role strain was measured by a score from Spielberger's Trait Anxiety Inventory (TAI). Health status was measured with scores by four different scales, which were a Negative Affect Scale (NAS) score and a Positive Affect Scale (PAS) score from the Bradburn Affect Balance Scale. There were also two scores from the Multidimensional Functional Assessment Questionnaire (MFAQ), which were a Physical Rating (PR) score and a Activities of Daily Living Rating (ADL) score.

Model Testing

Model Testing Results For Negative Affect. The first health status outcome to be tested for each of the three hypotheses was negative affect. These hypotheses and a structural equation depicting the stated

relationship for this health status outcome are presented in the operationalized form:

1. Health status (negative affect [NA]) is predicted by perceived social support (as measured by total functional social support [TFSS]), chronicity-related role stress (as measured by cardiac functional status [CFS], negative magnitude life events [NMLE], and physical signs and symptoms measured by the Cornell Medical Index [CMI]), and chronicity-related role strain (as measured by trait-anxiety [TAI]). This hypothesized relationship is presented in structural equation form as:

   NA= f(TFSS, NMLE, CFS, CMI, TAI).

2. Chronicity-related role strain (trait anxiety) is predicted by perceived social support (total functional social support), chronicity-related role stress (cardiac functional status, negative magnitude life events, and physical signs and symptoms measured by the Cornell Medical Index). This hypothesized relationship is presented in structural equation form as:

   TAI= f(TFSS, NMLE, CFS, CMI).

3. Chronicity-Related Role Stress (as measured by cardiac functional status, negative magnitude life events, and the Cornell Medical Index) is predicted by perceived social support (total functional social support). This hypothesized relationship is presented by three separate structural equations as:

   NMLE= f(TFSS).

   CMI= f(TFSS)

   CFS= f(TFSS).

The results of hypotheses testing for negative affect are presented in Figure 7.

The first hypothesis was partially supported by empirical testing. The first predicted link between perceived social support (TFSS) and negative affect held with total social support contributing 8% of the variance of negative affect. A standardized beta weight of -.23 indicated that people with lower total functional support were generally experiencing a higher negative affect. The link between chronicity-related role stress and negative affect also held, which meant individuals with more chronicity-related role stress generally reported a higher negative affect score. However, only one of the three measures of chronicity-related role stress entered the equation (NMLE; R^2=.19 $p \leq .001$). The standardized beta weight of .45 indicated people who had experienced more negatively-rated stressful life events were more likely to have a higher negative affect score. The other two measures of chronicity-related role stress, cardiac functional status and the Cornell Medical Index, did not enter the equation. Finally, chronicity-related role strain (TAI) also entered the equation as predicted and contributed 8% of the explained variance with a standardized beta weight of .31. The three variables that did enter the equation (TFSS, NMLE, and TAI) were able to explain a combined total of 35% of the variance for negative affect (R^2=.35, N=83, F=13.84 $p \leq .01$).

The second hypothesis stated chronicity-related role strain (TAI) is predicted by perceived social support (TFSS) and chronicity-related role stress (CFS, NMLE, and CMI). Only the Chronicity-related role stress link predicted in the second hypothesis was empirically supported for negative affect. Only NMLE of the three measures of chronicity-

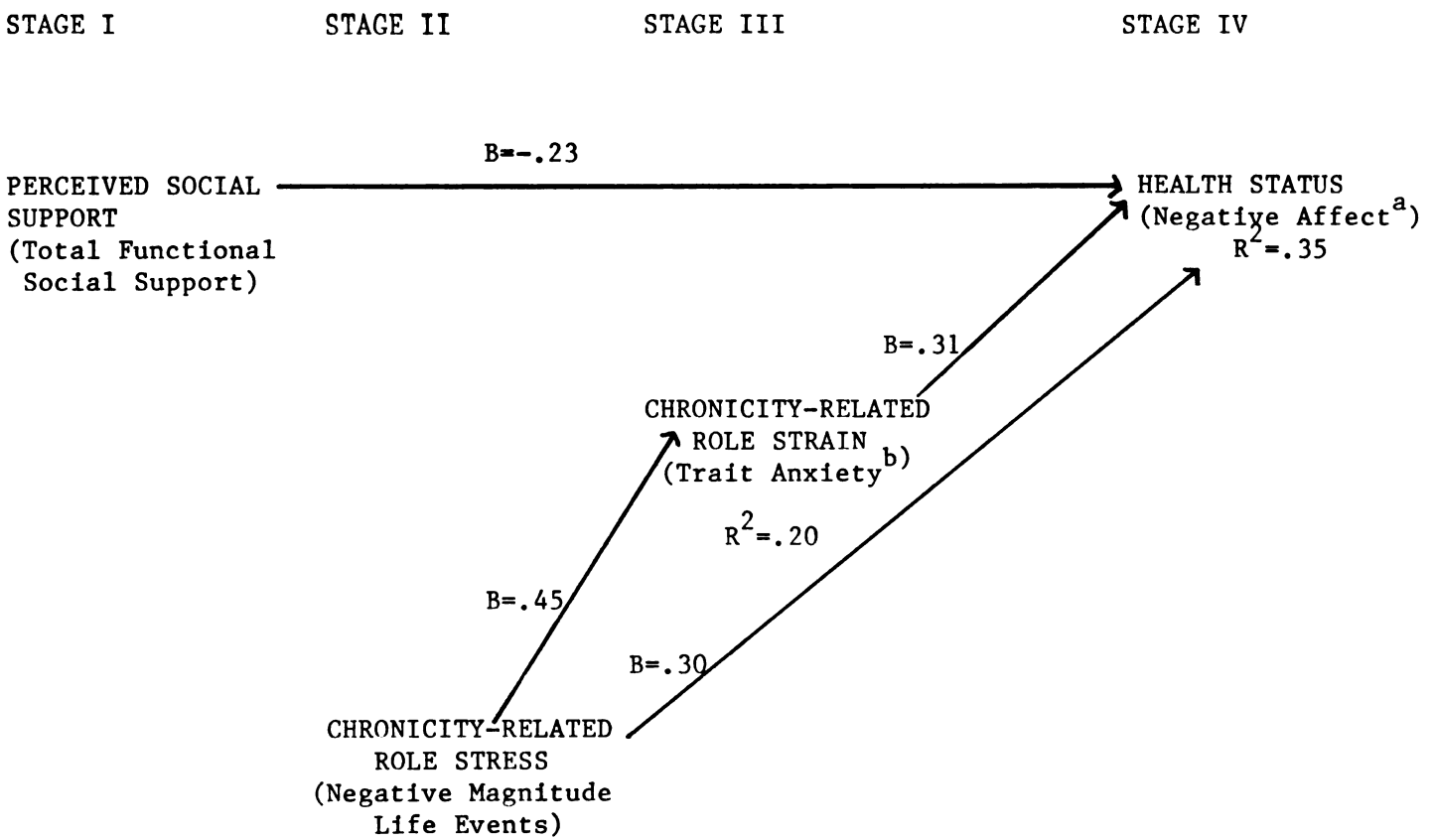


Figure 7. Empirical model for negative affect (N=81) with standardized betas for variables that entered the equation ($p \leq .05$). R^2 significant at $p \leq .005$.

[a] $\hat{Y}$= 4.608 - .2266 TFSS + .3003 NMLE + .3146 TA

[b] $\hat{Y}$= 32.952 + .4470 NMLE

related role stress (NMLE, CFS, CMI) was statistically significant and explained 20% of the variance of chronicity-related role strain (N=83, F=19.49, $p \leq .001$); it had a standardized beta weight of .45. The predicted link in Figure 1 between perceived social support and chronicity-related role strain was not statistically significant.

None of the links predicted in the third hypothesis were empirically supported for the negative affect measurement of health status.

Model Testing Results For Positive Affect. The second health status outcome was positive affect. Each of the hypotheses and a structural equation depicting the stated relationships are presented below.

1. Health status (positive affect [PA]) is predicted by perceived social support (as measured by total functional social support [TFSS]), chronicity-related role stress (as measured by cardiac functional status [CFS], negative magnitude life events [NMLE], and physical signs and symptoms measured by the Cornell Medical Index [CMI]), and chronicity-related role strain (as measured by trait-anxiety [TAI]). This hypothesized relationship is presented in structural equation form as:

   PA= f(TFSS, NMLE, CFS, CMI, TAI).

2. Chronicity-related role strain (trait anxiety) is predicted by perceived social support (total functional social support), chronicity-related role stress (cardiac functional status, negative magnitude life events, and physical signs and symptoms measured by the Cornell Medical Index). This

hypothesized relationship is presented in structural equation form as:

TAI= f(TFSS, NMLE, CFS, CMI).

3. Chronicity-Related Role Stress (as measured by cardiac functional status, negative magnitude life events, and the Cornell Medical Index) is predicted by perceived social support (total functional social support). This hypothesized relationship is presented by three separate structural equations as:

NMLE= f(TFSS).

CMI= f(TFSS)

CFS= f(TFSS).

The results of hypotheses testing for the positive affect scale are presented in Figure 8.

The first hypothesis was partially supported by empirical testing. The first predicted link between perceived social support (TFSS) and positive affect did not hold because total social support did not meet the predetermined .05 level of significance. On the other hand, the predicted link between chronicity-related role stress and positive affect was empirically confirmed, although only NMLE of the three measures of chronicity-related role stress (NMLE, CFS, CMI) entered the equation (R^2=.11, N=83, F=9.32, $p \leq .005$); therefore negative magnitude life events explained 11% of the variance with a standardized beta weight of -.33 indicating people who had experienced more chronicity-related role stress were more likely to have lower positive morale. Finally, contrary to the hypothesis, the predicted link between positive affect and chronicity-related role strain (TAI) did not meet the

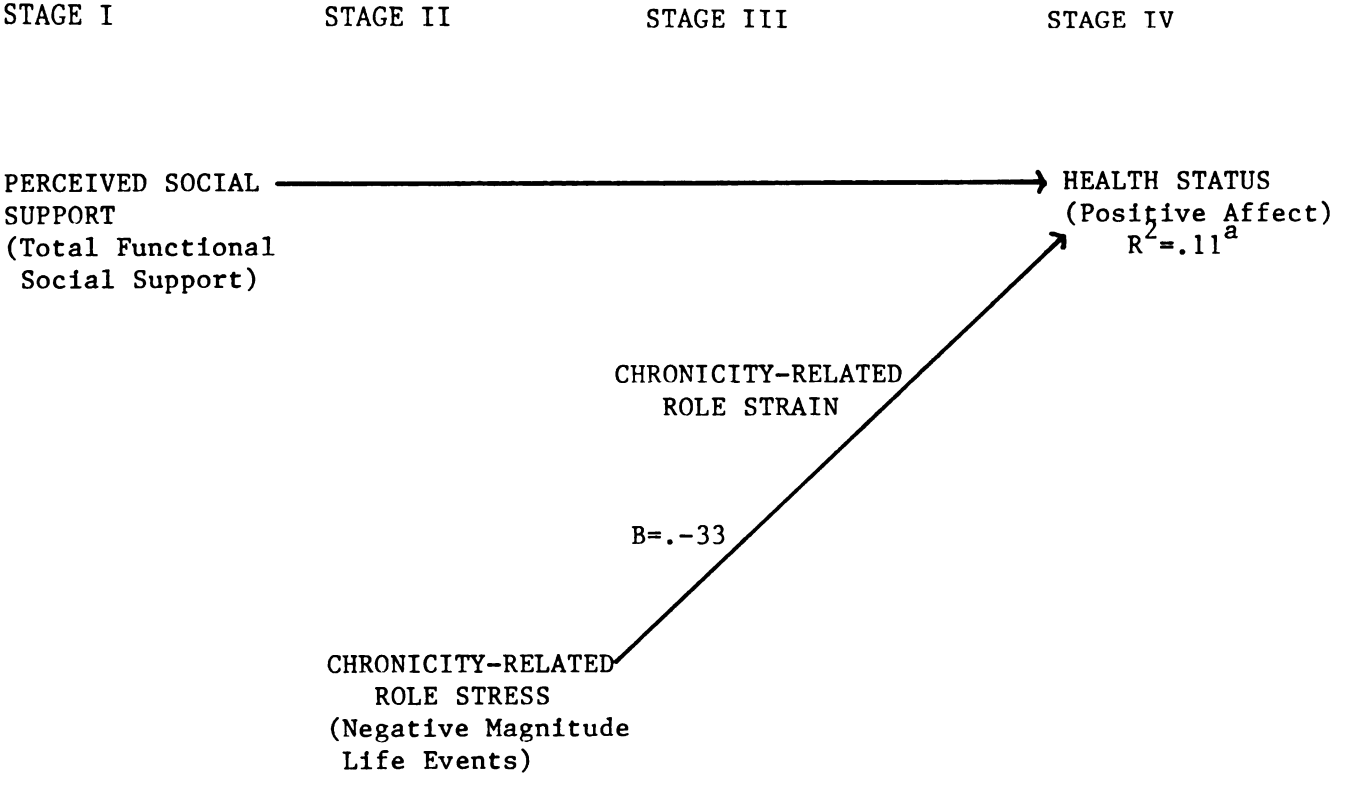


Figure 8. Empirical model for positive affect (N=81) with standardized beta weights for variables that entered the regression ($p \leq .05$). R^2 significant at $p \leq .005$.

[a] $\hat{Y}$= 8.662 - .3267 NMLE

pre-established .05 significance level criterion for inclusion and was rejected. None of the predicted links were empirically supported for the positive affect component of health status (hypothesis 2) or for the third hypothesis.

Physical Rating. Physical rating was the third health status outcome to be tested. Each hypothesis, and an equation depicting their stated relationship, are presented below.

1. Health status (physical rating [PR]) is predicted by perceived social support (as measured by total functional social support [TFSS]), chronicity-related role stress (as measured by cardiac functional status [CFS], negative magnitude life events [NMLE], and physical signs and symptoms measured by the Cornell Medical Index [CMI]), and chronicity-related role strain (as measured by trait-anxiety [TAI]). This hypothesized relationship is presented in equation form as: PR= f(TFSS, NMLE, CFS, CMI, TAI).
2. Chronicity-related role strain (trait anxiety) is predicted by perceived social support (total functional social support), chronicity-related role stress (cardiac functional status, negative magnitude life events, and physical signs and symptoms measured by the Cornell Medical Index). This hypothesized relationship is presented in equation form as: TAI= f(TFSS, NMLE, CFS, CMI).
3. Chronicity-Related Role Stress (as measured by cardiac functional status, negative magnitude life events, and the Cornell Medical Index) is predicted by perceived social support (total functional social support). This hypothesized

relationship is presented by three separate structural equations as:

NMLE= f(TFSS).

CMI= f(TFSS)

CFS= f(TFSS).

The results of hypotheses testing for the physical rating measurement of health status outcome are presented in Figure 9. The first hypothesis was partially supported by empirical testing. Perceived social support (TFSS) entered the equation (R^2=.07, $p \leq .05$) with a standardized beta weight of -.26. This inverse relationship had been predicted and indicated that individuals with more social support were more likely to have better physical ratings (i.e., a lower score on the physical rating scale indicated a better physical rating).

Also as hypothesized, chronicity-related role stress affected physical status. However, only cardiac functional status of the three measures of chronicity-related role stress (CFS, NMLE, CMI) was statistically significant and explained 18% of the variance of physical rating ($p \leq .05$) with a standardized beta weight of .42. This relationship between cardiac functional status and physical rating was also in the direction predicted by the theoretical model, with people experiencing worse cardiac functional status being more likely to have worse physical ratings. When the two theoretical variables that were statistically significant (perceived social support and chronicity-related role stress) were considered together the combined explained variance of physical rating was 25% (N=83, F=12.57, $p \leq .001$).

Finally, and contrary to the hypothesis, the link between chronicity-related role strain and health status (PR) did not meet the pre-established .05 significance level criterion.

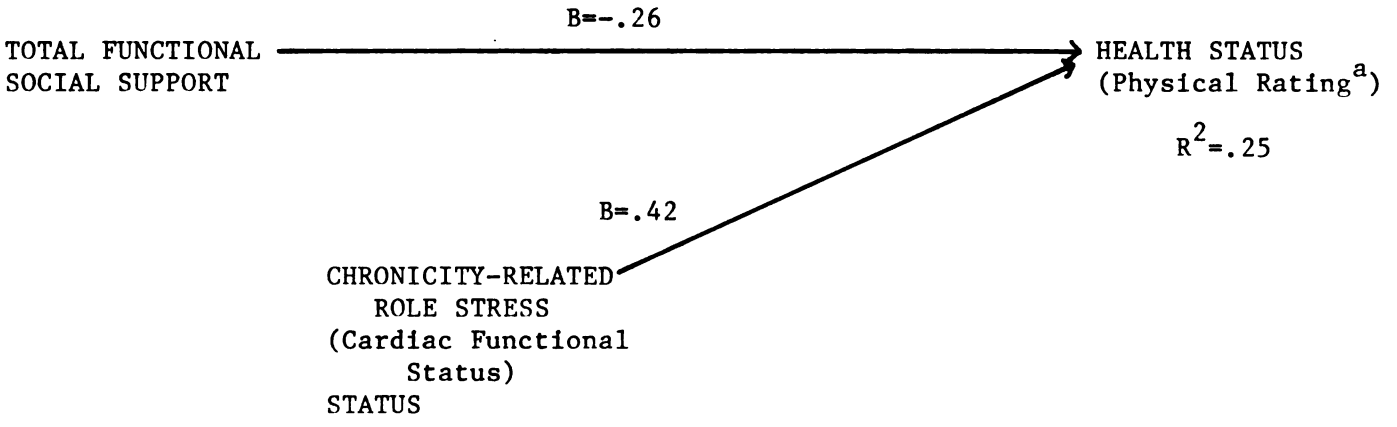


Figure 9. Empirical model for PHYSICAL RATING (N=81) with standardized betas for variables that entered the equation ($p \leq .05$). R^2 significant at $p \leq .05$.

[a] $\hat{Y}$= 33.814 - .2639 TFSS + .4202 CFS

None of the links predicted in the second or hypothesis were empirically supported.

Model Testing Results for ADL Rating. The final health status outcome was ADL rating. These hypotheses and a structural equation depicting the relationship are presented below.

1. Health status (activities of daily living rating [ADLR]) is predicted by perceived social support (as measured by total functional social support [TFSS]), chronicity-related role stress (as measured by cardiac functional status [CFS], negative magnitude life events [NMLE], and physical signs and symptoms measured by the Cornell Medical Index [CMI]), and chronicity-related role strain (as measured by trait-anxiety [TAI]). This hypothesized relationship is presented in structural equation form as:

   ADLR= f(TFSS, NMLE, CFS, CMI, TAI).

2. Chronicity-related role strain (trait anxiety) is predicted by perceived social support (total functional social support), chronicity-related role stress (cardiac functional status, negative magnitude life events, and physical signs and symptoms measured by the Cornell Medical Index). This hypothesized relationship is presented in structural equation form as:

   TAI= f(TFSS, NMLE, CFS, CMI).

3. Chronicity-Related Role Stress (as measured by cardiac functional status, negative magnitude life events, and the Cornell Medical Index) is predicted by perceived social support (total functional social support). This hypothesized

relationship is presented by three separate structural equations as:

NMLE= f(TFSS).

CMI= f(TFSS)

CFS= f(TFSS).

The results of hypothesis testing for the ADL rating are presented in Figure 10.

The first hypothesis was partially supported by empirical testing. The first link between perceived social support (TFSS) and ADL rating did not hold because perceived social support did not meet the predetermined .05 level of significance criterion. As predicted, chronicity-related role stress affected ADL status although only two (CFS, and NMLE) of the three measures (CFS, NMLE, CMI) of chronicity-related role stress entered the equation. Cardiac functional status explained 10% of the variance ($p \leq .001$) with a standardized beta weight of .34. The direction of relationship between cardiac functional status and ADL rating was as predicted, with people experiencing poorer cardiac functional status being less likely to perform different daily activities. Negative magnitude life events also entered the regression equation with an R^2=.20 ($p \leq .001$) and a standardized beta weight of .34; that indicated people who had experienced higher amounts of negatively rated stressful life events were more likely to experience difficulties in performing their physical and instrumental activities of daily living. Together, these two chronicity-related role stress variables (CFS and NMLE) explained 30% of the variance for the ADL measurement of health status (N=83, F=16.67, $p \leq .001$). Finally, and contrary to the first hypothesis, chronicity-related role strain did not meet the

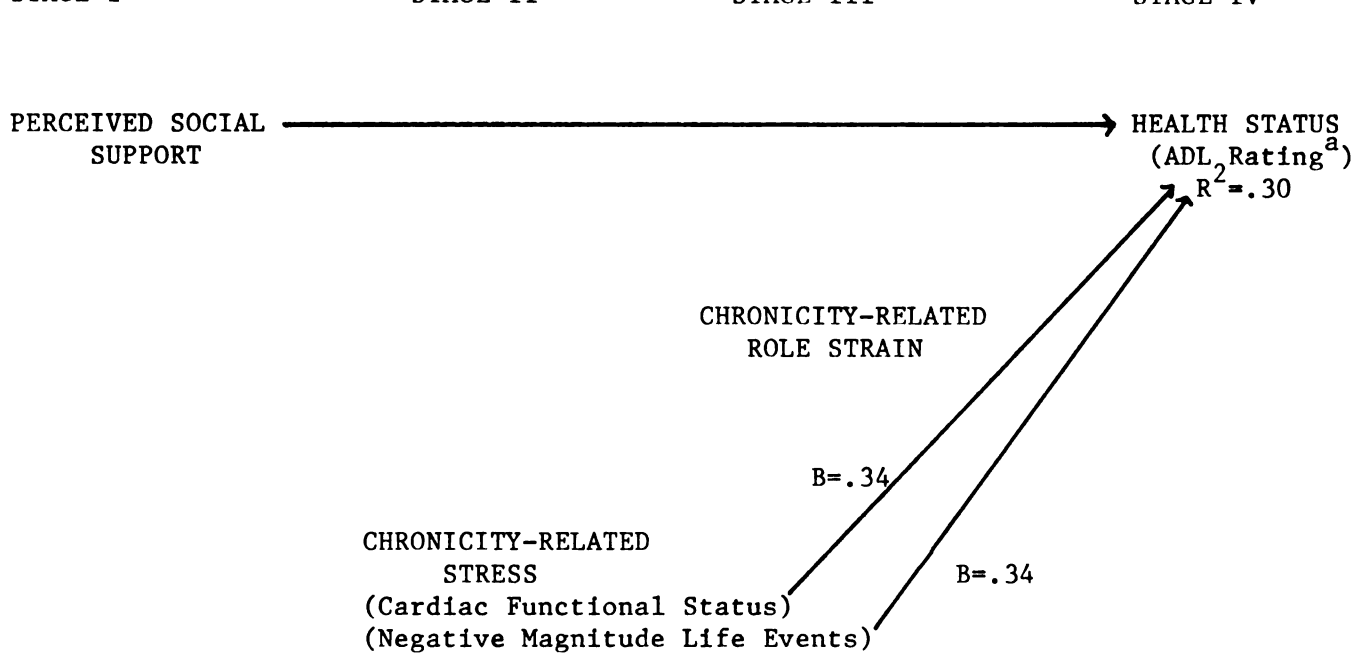


Figure 10. Empirical model for ADL RATING (N=81) with standardized betas for variables that entered the regression equation ($p \leq .05$). R^2 significant at $p \leq .001$.

[a] $\hat{Y} = 1.283 + .3358\ CFS + .3428\ NMLE$

pre-established .05 significance level criterion for inclusion as a predictive variable and was therefore rejected. None of the links predicted in the second hypothesis were empirically supported for the ADL rating measurement of health status, nor was the third hypothesis supported.

Summary of Results for Hypotheses Testing

When the predictive model was empirically tested by regression analyses for each of the four measures of health status, the hypothesized relationships between perceived social support and health status only met the pre-established criteria for two outcomes (negative affect and physical rating). Neither of the predicted links between perceived social support and either chronicity-related role stress or chronicity-related role strain were empirically confirmed.

Among the three different measures of chronicity-related role stress, negative magnitude life events consistently made the most difference and entered the regression equations for three of the four health status outcomes (NA, PA, ADLR). NMLE also had a direct relationship with chronicity-related role strain in only one of the predicted health outcomes (NA). Also, in the predicted health outcomes related to physical status (PR and ADLR) the hypothesized relationships between chronicity-related role stress (as measured by CFS) were empirically confirmed.

The hypothesized effect of chronicity-related role stress upon chronicity-related role strain was not observed in three of the four health status outcomes (PA, PR, ADLR). Chronicity-related role strain

only influenced the health status outcome of negative affect. The hypothesized links between chronicity-related role strain and the other three health status outcomes came close, but did not meet the .05 level of significance criterion. Results of the regression analyses for each of the four health status outcomes are discussed in further detail in the next chapter.

CHAPTER V

DISCUSSION

Through the use of a predictive model this study analyzed the effects of perceived social support, chronicity-related role stress, and chronicity-related role strain upon health status among congestive heart failure patients who were living in the community. The model tested four different health status outcomes (negative affect, positive affect, physical rating, and activities of daily living). Results of the statistical analyses indicated that the amount of explained variance for each of the four different health status outcomes ranged from a high of 35% of the variance of negative affect to a low of 11% of the variance of positive affect.

Regression analyses results for negative affect indicated all three independent variables (perceived social support, chronicity-related role stress, and chronicity-related role strain) contributed to the negative affect outcome (35% of the variance). Chronicity-related role stress also explained 20% of the variance of chronicity-related role strain in the negative affect outcome of the model. Regression analyses results for positive affect indicated only chronicity-related role stress helped to explain any of the variance (11%). Physical rating was the third health status outcome to be examined by regression analyses; 25% of the variance of physical rating was explained by two of the independent variables (perceived social support and chronicity-related role stress). Activities of daily living was the fourth and final health status outcome to be analyzed; 30% of the variance of activities of daily living was explained by chronicity-related role stress.

The conceptual framework for this study was derived from role theory and the symbolic interactionist perspective. It is that conceptual framework that is used in examining the results of this study and in the conclusions presented below. A section on significance follows conclusions then implications for theoretical and nursing development with recommendations for future research presented as the final part of chapter five.

Conclusions

"The whole point of multiple regression . . . is to try to isolate the effects of the individual regressors by controlling on the others" (Goldberger, 1964, p. 201). A summary of the findings for each of the four tested health status outcomes of the perceived social support model and a discussion of their meaning are presented. The discussion includes examination of the results in terms of the study hypotheses, the stability of the model variables and interpretation of the results; theory, methodology, and context are also addressed.

Health Status As Measured By Negative Affect

When the predictive model was tested for the health status outcome of negative affect, the resulting empirical model explained 35% of the total variance. This was the highest amount of explained variance for health status among the four tested health status outcomes. In addition to having the greatest amount of explained variance, the confirmed links of the empirical model for negative affect made it the outcome most congruent with the predictive model.

When it was operationalized for negative affect, the major hypothesis of the study stated negative affect would be predicted by total functional support, cardiac functional status, negative magnitude life events, physical symptoms as measured by the Cornell Medical Index, and trait-anxiety. The link between perceived social support and negative affect did hold as hypothesized and it explained 8% of the variance. The negative standardized beta weight indicated there was an inverse relationship between perceived social support and negative affect. This finding offers support for the argument that social support is an environmental variable affecting psychological well-being and this finding is consistent with research in similar areas of social support. Schaefer, Coyne, and Lazarus (1983) have already found direct links at similar levels of explained variance for social support, life events and negative affect among a healthy adult population (R^2=.22, $p \leq .05$).

The direct link predicted between the chronicity-related role stress (negative magnitude life events) and negative affect also held. The positive direction of the relationship was also hypothesized by the predictive model. Although this link explained 19% of the variance for negative affect, only one of the three measures of chronicity-related role stress entered the equation. It may be that cardiac functional level or physical symptoms (as measured by the CMI) do not directly influence negative affect among this population because the effects and symptoms of physical problems have become a part of their daily routines. An alternative explanation is that these people acknowledge their physical problems as a very significant negative life event yet they minimize the effects of their physical disabilities in order to maintain their psychological well-being.

The predicted link between chronicity-related role stress and chronicity-related role strain also held and explained 20% of the variance for chronicity-related role strain. Again, the measurement for negative magnitude life events was the only chronicity-related role stress variable to enter the equation. Perhaps whatever dynamic is working as a part of the direct relationship between negative magnitude life events and negative affect is also working as part of this indirect link from negative magnitude life events through chronicity-related role strain to negative affect. Research investigating the structure of coping by Pearlin and Schooler (1978) provides one possible explanation for the dynamic between both chronicity-related role stress and chronicity-related role strain as well as between chronicity-related role stress and health status. Pearlin and Schooler's work on the structure of coping argued that what people believe they cannot change (for example, functional cardiac status or physical symptoms) they minimize to successfully cope with the environmental stress.

Two other hypotheses were proposed for testing by this study. The first hypothesis stated that trait anxiety is predicted by total functional social support, cardiac functional status, negative magnitude life events, and physical symptoms as measured by the Cornell Medical Index. The second hypothesis stated that cardiac functional status, negative magnitude life events, and physical symptoms as measured by the Cornell Medical Index are predicted by total functional social support. Neither of these hypothesized links from the predictive model held in the empirical model testing for negative affect, nor did they hold for any other health status outcome. Because neither of these two links held in the equation for either negative affect or any of the other

three health status outcomes of the theoretical model, it is assumed that the discussion presented below as part of the negative affect health status outcome section is also valid for the other three health status outcomes of the theoretical model.

The question of why chronicity-related role stress or chronicity-related role strain were not influenced by total functional support is difficult to answer. One possible explanation is that the relatively restricted numbers of people in the social networks sample masked the real additive effects of social support that may be present when there are larger numbers of people in the available social network.

There is research to suggest that a reduced social support network can adversely affect health (Berkman and Syme, 1979). The relatively restricted size of the social support network among CHF patients in this study is clearly illustrated by comparison with a Canadian study that compared social support and network size among users and nonusers of formal home health services for a geriatric population aged 65-95. In Chappell's (1985) study the mean network size for all reported available sources of social support among users of formalized health services was 27.75, while the mean network size for nonusers of formal home health care services was 37.13. The mean number listed as sources of perceived social support among this CHF population was 6.07. The two studies used different measures of social support and network so comparisons must be considered with caution.

However, in a recent study using the NSSQ reported mean social network scores were 9.70 for a sample of younger California diabetics whose mean age was 44 (Crabtree, 1986). It does appear that this group of CHF patients had considerably fewer available sources of social

support than either the diabetic group or the Canadian group who used formalized home health care resources, which suggests the additional positive effects of increasing amounts of social support may have already been eliminated by the reduced social network available to these CHF patients.

Role theory provides a second possible explanation of why total functional support did not affect chronicity-related role stress or chronicity-related role strain; role theory argues reciprocity and obligation are both part of the relationship between two role occupants and people whose chronic condition has compromised their ability to fulfill their role related obligations may find social support from significant others a source of psychological stress as well as a source of help. For example, the spouse may provide instrumental support by shopping for groceries or assisting with the affected individual's personal care yet make it clear in emotional terms that they are unhappy to do so. The recipient of such social support may need the material support but find the emotional content extremely stressful. The effects would offset each other in a regression analysis using a measure of total functional support that combines the effects of material and emotional support. A secondary analysis that divided social support into emotional and material components might offer evidence needed to confirm or reject this explanation.

Health Status As Measured By Positive Affect

In contrast to negative affect, when positive affect was used as a measure of health status, it had the lowest overall explained variance among the four different measures of health status. The overall

explained variance for the model was only 11% with negative magnitude life events as the only predictive variable that entered the equation. When negative magnitude life events entered the regression equation, it partially confirmed the first hypothesis. However, the link described in the first hypothesis between total functional social support and positive affect did not hold. Although total social support explained part of the variance for positive affect, it did not meet the .05 level of significance criterion. Also contrary to the first hypothesis, trait anxiety did not meet the pre-established .05 significance level.

It is clear that there is a problem when only one measure out of three for chronicity-related role stress and neither of the measures for either chronicity-related role strain or perceived social support explained any of the variance for positive affect. This explained variance of 11% was below the 20% limit determined before testing the model in order to consider the results as substantively significant; therefore, the predictive model was ineffective for positive affect. Three different questions must be raised. These questions focus upon whether the problem could be with the theoretical specification of the model itself, the measurement of positive affect, or the statistical analysis itself.

The theoretical basis for the selection of the model comes primarily from two bodies of literature that are related to role theory and to social support. There is a substantial amount of work on each of the variables used in this model. This literature has been discussed earlier as part of the literature review but it is important to reiterate here that a fundamental assumption of the model itself is the person-environmental fit concept. When there is a person-environmental

misfit, there is stress (McGrath, 1970; French, Rogers, & Cobb, 1974). There is research evidence of occupational stress to support the specification of this model (Cobb, 1976; LaRocco, House, & French, 1980). Given the body of published research related to this area, it seems doubtful that the problem centers upon the specification of the theoretical model.

If misspecification of the theoretical model was the problem, it would seem reasonable to assume that there would be little explained variance for all health status outcomes. This is not the case because empirical results for each of the other health status outcomes are above 20%. In fact, when the predictive model was tested for negative affect, it explained three times the amount of variance that it explained for positive affect. However, negative affect together with positive affect make up Bradburn's measure of psychological well-being (Bradburn and Caplovitz, 1965). It would appear that data from this study provide evidence supporting the Bradburn and Caplovitz (1965) statement that their PAS and NAS data indicated these two scales might be measuring two affect constructs acting independently of each other.

Perhaps the answer to why there is such a low explained variance for positive affect can be found in the work of Schaefer, Coyne and Lazarus (1981). In a study exploring the health-related functions of social support and social network among a group of healthy adults, Bradburn's negative and positive affect scales were used. They reported that emotional and material support were significantly correlated with positive morale at low-moderate levels of $r=.21$ and $r=.22$ ($p \leq .05$). Given the low explained variance for positive affect in the Schaefer, Coyne, and Lazarus study, the low amount of explained variance for

positive affect in this study may represent the specific differential effects of perceived social support upon psychological well-being (positive and negative affect).

Another explanation might argue whether a global measure of social support was sufficiently sensitive to capture how social support affected the positive dimension of psychological well-being. Three possible problem areas were noted at the outset of this discussion. The issue of the measurement of positive affect is addressed here as the second of those three problem areas. Regression analysis is based upon specific assumptions that must be present to accurately assess the reality that the model is testing. Among these assumptions are two that relate to the measurement of positive affect. One assumption is measurement without error and the second is that the character of the relations among the variables within the model are linear, additive and causal (Ferketich & Verran 1984; Kerlinger & Pedhazur, 1973). Violation of one or both of these assumptions may have occurred with positive affect. The standardized alpha for the positive affect scale was .56, which was the lowest of all the internal reliability estimates, and that level of reliability raises questions about the measurement scale itself. Any interpretation involving positive affect must be done with care because of the reliability level and the question of reliability for this sample may explain part or all of the low relationship. It also raises possible questions about whether or not replication among a second group of CHF patients or another group of chronically-ill adults would produce similar results since a basic assumption of the regression analysis, measurement without error, was not met because of the low reliability (Murdaugh & Hinshaw, 1986).

The third possible source of error here is in the nature of the relationship between the independent variables and positive affect. The relationship may not be linear and additive between positive affect and the three independent variables of chronicity-related role stress, chronicity-related role strain, and perceived social support. It is possible that one or all of them are curvilinear. One purpose of graphic residual analysis is to identify the presence of such relationships so the variable can be transformed and the regression analysis repeated. Visual analysis of the scattergram with standardized residuals plotted against trait did suggest that a possible square or cube transformation might be necessary in order to more correctly reflect the observed relationship. However, when the transformations were done and the regression analysis was repeated, there was no increase in the amount of explained variance.

In considering recommendations for the measurement of psychological well-being in future research, concern must be expressed for the internal reliability of this scale. Additional research should be able to clarify whether the results from this study reflect the differential influence of social support upon the different dimensions of health or whether the issue is measurement error.

Predictive model specification error, measurement instrument error, and statistical relationships between model variables that violate regression analysis assumptions have all considered and discussed as possible sources of explanation for the low amount of explained variance for the positive affect health status outcome.

Health Status As Measured By Physical Rating

Physical Rating scores ranged from three to six with a mean score of 5.13 (SD=1.07, n=81). Empirical testing of the predictive model for the physical rating measurement of health status resulted in an overall explained variance of 25%. This hypothesis was partially supported by empirical testing when two of the three predicted links to physical rating were confirmed by sample data.

The first link that met the .05 level of significance was the link between total functional social support and physical rating. This link explained 7% of the variance in physical rating and the standardized beta weight of -.26 confirmed that the inverse relationship that had been predicted did exist. In other words, more total functional social support was associated with individuals who generally scored lower (less physical impairment) on the physical rating scale. This relationship has important theoretical implications because it provides additional evidence to support the argument that role supplementation in the form of social support makes a difference by promoting physical adjustment as well as reducing the negative affect of the role occupant affected by a chronic condition such as CHF. A review of the social support literature revealed that the most frequently reported effects of social support are psychological rather than physical in nature. Therefore, findings among a sample with CHF has implications for the effects of social support among other populations with similar reported chronic conditions.

The second link that was also accurately predicted involved the link between chronicity-related role stress and physical status; however, again only one of the three measures of chronicity-related role

stress, cardiac functional status, entered the equation. Cardiac functional status entered the equation and explained 18% of the variance with a standardized beta weight of .42. This meant cardiac functional status strongly influenced physical rating and it suggests people who had poorer cardiac functional status also tended to have poorer physical ratings.

Interestingly, although the third link between chronicity-related role strain and physical rating did not meet the pre-established .05 significance level criterion, it did closely approach that level (which means there is evidence suggesting chronicity-related role strain did function in the predicted manner although not at a .05 level of significance).

Health Status As Measured By ADL Rating

The MFAQ:ADL Rating was the fourth measure of health status used in this study and study sample scores for the ADL rating ranged from 2 to 6 with a mean score of 3.48 (SD=1.29, n=81). When the predictive model was tested with ADL rating as the health status measure, 30% of the variance in the ADL rating was explained by the model. For this outcome the major hypothesis of the study was not supported. Again the reason was because total social support did not meet the established .05 level of significance rule, despite a trend in the hypothesized direction.

Two questions are again raised by the data. Would the link have held if the dimensions of perceived social support had been tested as material aid, affect and affirmation and would the perceived social support link have held if the two kinds of activities of daily living measured by this rating had been tested separately as instrumental

activities of daily living and physical activities of daily living? Although that analysis was beyond the scope of this study a secondary analysis of the data would answer both questions.

The link between measures of chronicity-related role stress and ADL rating was confirmed. This was the only time when two different measures of chronicity-related role stress combined to explain the total variance for that outcome. In this test of the predictive model, cardiac functional status explained 10% and negative magnitude life events explained 20% of the variance in ADL rating. In both cases the sign of the beta weight indicated that a lower cardiac functional level and a higher negative life events impact score were related to poorer ADL performance. These relationships reflect the relationships specified in the predictive model and intuitively make good sense. One would expect to find people with worse levels of cardiac functioning being either unable to perform or greatly limited in their performance of such daily activities as grocery shopping, cooking, or cleaning.

Significance

Social Support

Examination of the results from empirical testing of the predictive model suggest several patterns among the four health status outcomes. Total functional support did not consistently influence either of the two health continua of psychological or physical well-being. Based upon the empirical results of model testing, total functional support appears to differentially influence one dimension of both continua by influencing the negative affect measure of psychological health and the

physical rating measure of physical health. In both of these instances the amount of explained variance contributed by total functional support was about 8%. Standardized beta weights permit comparisons among predictive variables. The standardized beta weights differed in magnitude by only .09.

The third important point to make about these results is that total functional social support clearly acted in a different manner because it had an inverse relationship with negative affect and a direct relationship with physical rating. These findings collectively suggest that it is important to consider the multidimensional effects of perceived social support upon different aspects of health; it does not appear to act in the same manner when different measures capturing separate aspects of the same continuum of health are employed. These inconsistencies may arise because some of the instruments are more valid and reliable than others. However, total functional support did influence negative affect and physical rating (both the amount of explained variance in each instance and the magnitude of standardized beta weights) for both the psychological and the physical health status outcomes.

Norbeck et al. (1983) and Crabtree (1986) reported sex-linked differences in levels of social support with significantly higher social support reported among females. Contrary to those findings, a t-test indicated there were no sex differences in social support levels among males and females in this study. However, there were significant sex differences in age between males and females in this sample population with the mean for males at 66.57 years and the mean for females at 71.89 years. A t-test indicated this age difference was significant (t=3.32,

n=81, $p \leq .01$). Since there is evidence indicating age and social support are inversely related, perhaps the older mean age of females in this sample explains why there were no sex differences in social support levels between males and females despite the identification of such differences in other studies (Berkman & Syme, 1979; Berkman & Breslow, 1983; Lowenthal, 1964). Neither total functional social support nor any of the three dimensions of social support(aid, affect, and affirmation) were correlated with demographic characteristics.

Chronicity-Related Role Stress

Among this sample of CHF patients, cardiac functional status scores ranged from one to four with a mean score of 2.33 (SD=.61, n=81). This mean would be high in a normal population although this level of limitation would be expected among a CHF patient population where a mean score of 2.33 was indicative of slight cardiac functional limitations that would become more noticeable during ordinary physical activity when patients often experienced symptoms such as fatigue, dyspnea, or angina.

Cardiac functional status explained part of the variance for both measures of physical health and in each case the standardized beta weights were relatively similar in magnitude with .34 for ADL rating and .42 for physical rating. CFS did not enter either of the the regression equations for the psychological health status measures. One explanation of this outcome may be that cardiac functional status had a much more direct effect upon physical health than on psychological health where, as was noted earlier, Pearlin and Schooler's (1983) work on the structure of coping indicated people often psychologically minimize what they believe they cannot change.

Negative magnitude life events was the measurement that most frequently predicted a portion of the explained variance in three of the four health outcomes (negative affect, positive affect, and ADL rating). The respective magnitudes of the standardized beta weights were .30, .33, and .34 for negative affect, positive affect, and ADL rating. There is consistency among standardized beta weights and for the theoretically predicted direction of the relationship. It is unclear why negative magnitude life events would enter along with cardiac functional status to explain the ADL rating measurement of physical health yet not explain enough variance to enter the regression equation for the physical rating measurement of physical health.

The third chronicity-related role stress measurement was the CMI whose scores ranged from six to 51 with a mean score of 23.38 (SD=10.20, N=83), which is very similar to scores reported by Brown and Fry (1962) for a younger group of British hospital surgical and medical outpatients aged 20-60 whose respective means were 24.0 and 21.7. Given that the CMI scores were similar to one other sample of medical and surgical outpatients, it is surprising that the Cornell Medical Index measure of physical symptoms did not explain any variance in any of the health outcomes. One possible explanation is that the very nature of the sample population limited the variability of the data. Criteria related to the duration of a six month CHF diagnosis, with a specified age range, and the absence of psychiatric problems may well have combined to limit the range of CMI scores. An assessment of the pattern among the responses indicated that the answers tended to primarily cluster in the areas of circulatory and respiratory symptoms.

Chronicity-Related Role Strain

Trait anxiety inventory scores ranged from 21 to 65 with a mean score of 38.21 (SD=9.60, n=82). This mean score is higher than mean scores reported by Spielberger et al. (1983) for working adults aged 50-69, whose reported mean scores for males were 34.51 (SD=10.34, N=382) and 32.20 (SD=8.67, N=106) for females. Mean scores for the outpatient cardiac population in this study were higher than the mean scores reported by Spielberger et al. (1983) for a normal population of geriatric working adults. However, they were less than a mean score of 41.33 (SD=13.76) reported by Spielberger for a group of Veterans Administration hospital medical and surgical patients without psychiatric complications whose mean age was 55 (Spielberger et al., 1983). These mean scores reflect the expected trend with the normal sample having the lowest scores, the chronically-ill sample the middle scores and the acutely-ill sample group reported the highest anxiety scores.

Health Status

As part of the interpretation of the results for negative and positive affect, it is also important to put these results into a broader perspective by comparing them with findings from other studies. Although separate NAS and PAS mean scores from the Bradburn Affect Balance Scale for other studies were not identified, Himmelfarb and Murrell (1983) reported a combined mean score derived from adding together the NAS and PAS scores for two different samples. A comparison could be made between combined NAS and PAS mean scores of the two sample populations from the Himmelfarb and Murrell study (1983) and the

combined mean score of 11.00 for the CHF Sample. The Himmelfarb and Murrell study involved a community sample from a Louisville Kentucky Senior Citizens Center (N=275) whose combined mean score was 13.00 and a second sample that came from Veterans Administration Hospital inpatient psychiatric units (N=62) with a combined mean score of 16.95. Since VA and VNA patients with psychiatric treatment records were excluded from this study, a lower total score than the VA psychiatric inpatient sample would be expected. The Louisville Kentucky Senior Citizens Center combined mean score was also higher than the CHF patient sample and in this case higher PAS scores could have influenced the combined mean score.

The third measure of health status used in this study was the MFAQ: Physical Rating. Scores ranged from three to six with a mean score of 5.13 (SD=1.07, n=81). The mean score of 5.13 or "severely impaired" was high and indicative of the level of compromised physical status experienced among this CHF patient sample. A better understanding of this is provided by comparing this finding with mean scores from three different samples of community, clinic, and institutional populations from Durham, North Carolina (Blazer, 1978). There the reported mean score for the community geriatric population (N=997) was 2.8; the reported mean score for the clinical geriatric population (n=98) was 3.5 and the reported mean score for the institutional population (n=102) was 4.1. The high mean score from this CHF patient population is above that of the institutionalized population and may reflect the severity of the patient case load within the VNA where one of the criteria for acceptance is a requirement that the patient must be housebound. Also, it is unclear whether implementation of the prospective payment system

for medicare influenced physical rating scores in this study sample. It is generally believed that prospective payments to hospitals have resulted in changes in hospital admission and discharge practices and perhaps these scores reflect some of those influences. In contrast, the Blazer study was completed before Diagnostic Related Groupings (DRGs) were implemented.

The fourth measure of health status used in this study was the MFAQ: ADL Rating. Scores on the ADL rating scale ranged from two to six with a mean score of 3.48 (SD=1.29, n=81). A mean score of 3.48 or "mildly impaired" was lower than what one might expect if the physical rating mean scores reported earlier were considered first. This score can be placed in a broader context by making another comparison between the mean score for this CHF patient sample and mean scores of the three samples of community, clinic, and institutional populations from Durham, North Carolina.

In contrast to the mean score of 3.48 for the CHF sample in this study, the reported ADL mean score for the community geriatric population (N=997) was 2.4; the reported mean score for the clinical geriatric population (n=98) was 3.7 and the reported mean score for the institutional population (n=102) was 5.1. Unlike the results of the physical rating comparison, the mean score from this CHF patient population was very close to that of the Durham clinical population. The reason for the discrepancy between the two relative rankings on physical rating and ADL rating for the CHF patients sample is uncertain, but perhaps this discrepancy reflects better functional adaptation, better use of health care services, or under-reported ADL effects. However, one would intuitively expect an ADL mean score among CHF

patients living in the community to be close to the mean score for a sample of geriatric clinic patients who also live in the community.

Limitations of the Study

There are three design related limitations that require attention. These include the convenience sample, which can create systematic bias from self-selection for participation. Also, although it is generally recognized that participation rates are often lower among geriatric populations the response rate of 46% for this study could introduce bias if those who declined to participate were systematically different from those who did participate in the study. The third consideration is the knowledge that the cross-sectional design of the study precluded study of the nature of perceived social support over time.

Generalizability is a different kind of consideration that must be taken into account. The sample population was predominantly white males who live in a metropolitan area, limiting generalizability of findings. Extrapolation of findings to other kinds of chronic conditions should not be attempted until further research is conducted. Since one of the entrance criteria for this group included a diagnosis for CHF at least six months prior to participation in this study, this would preclude generalization to more recently diagnosed CHF patients.

A different kind of study limitation comes from the fact that internal reliability results for the negative affect and the positive affect scales were relatively low. For that reason, interpretation of results involving these measures must be done with care.

Other limitations of the study come from the lack of subsample analysis due to time and resources. A number of interesting questions that may well contribute to further understanding of the dynamics of social support will remain unanswered until secondary data analysis is done. For instance Brown and Fry's 1962 research study indicated individuals scoring over 30 on the CMI had significantly more health problems than those scoring less than 30. This raises the question of whether those CHF subjects scoring above 30 utilize social support differently than those who scored less than 30.

Theoretical Implications of the Study

Study results supported the hypothesis that perceived social support has a multidimensional influence upon health status. These results help to validate earlier findings related to the impact of social support upon health status (Schaefer et al., 1983) and provide data that support the generalizability of their model from a normal geriatric population to a chronically-ill geriatric population.

Vinokur and Selzer (1975) as well as Sarason, Johnson, and Siegel (1978) have raised the question of whether life events change per se or the undesirable aspect of life events change resulted in stress for an individual. Findings from this CHF sample support the argument that undesirable life events that are perceived as having a negative effect are inversely related to better psychological and physiological health status outcomes (for example, a lower negative affect, a higher positive affect, and a lower physical rating).

A different theoretical question is related to the recursive predictive model itself. The model suggests that chronicity-related role stress leads to chronicity-related role strain yet this link met the statistical criteria for only one health status outcome--negative affect. One initial explanation could be that the model was misspecified, but closer examination of the data reveals there was a moderate trend in the predicted direction for this link of the model that did not meet the established .05 level of significance. Therefore, it may be that for this population the design would have to be longitudinal to use two state measures because state measures can be more sensitive to more immediate recent negative life change scores while one state measure would provide a baseline measure. The second state measure would capture the change between the first and second applications of the stress measurement. Sarason, Johnson, and Siegel (1978) have already demonstrated correlations between negative life event change scores and both state and trait anxiety levels where state anxiety was more sensitive to an immediately recent event.

A different kind of theoretical implication can be inferred from the descriptive statistics. The percentage of people from this study who reported multiple health problems that affected their daily activity supports the argument that chronic illness is not a single entity but a constellation of conditions that together influence the individual's health status. Furthermore, this sample not only reports multiple problems but takes multiple medications in order to manage these problems.

Nursing Implications of the Study

Vulnerable groups such as CHF patients who have been functionally limited by their chronic condition are more likely than others to develop psychological and physical problems. This research provides evidence that recent negative life events can adversely affect both psychological and physical health status when the affected individual considers the event as something that has had an important negative impact upon his lifestyle. At a practice level this research supports nursing's belief that the profession must treat the whole person, and this means assessment of recent lifestyle changes as a possible contributing factor when clinicians detect new symptoms of either a psychological or a physical change in status. Results from this study also provide empirical evidence for something that many public health nurses believe--the role supplementation of significant others can make a difference physically as well as psychologically for patients. Translated into practice this means emotional support and counseling for significant others to make it clear to them that what they do (material support) and how they feel about doing it (emotional support) can be very important to the patient. Previous research about specific negative life events, such as death of a spouse, has demonstrated that the presence of a confidant makes a difference in the psychological recovery of widows. Additional evidence for the value of perceived social support in psychological well-being was provided by this study, which suggests nurses caring for patients with chronic conditions must be sensitive to the need for social contact and provide referrals to the appropriate community resources. These recommendations for nursing

practice are not new. The findings of this study provide scientific evidence for incorporating social support as part of the nursing interventions when nursing intervention studies are being designed for CHF patients.

Recommendations for Future Research

The research findings presented here indicate social support is a multidimensional construct that differentially affects health status. Further research to more clearly identify these effects is needed before the implementation of intervention studies. Two immediate research recommendations are respecification of the predictive model to increase the amount of explained variance and testing of the model with a different group of adults with chronic conditions. Such a study would accomplish the dual purpose of cross-validating the respecified model and provide evidence that this predictive model is or is not generalizable to the concept of chronicity as a separate dynamic apart from the medical diagnosis. Only additional research with different chronically-ill populations can clarify the psychological dynamic of chronicity.

This study included one open-ended question at the end of the interview that asked each subject what they felt was the most important thing that helped them to get along day-in, day-out? Future analysis of that open-ended question should provide direction for more qualitative research into the nature of chronicity. Future structured research interviews could benefit from the inclusion of one or two unstructured probes at the conclusion of the interview as a means of gaining insight

into what the individual considers significant about the context of the question being studied by the researcher.

There are other separate questions arising from the results of this study that involve the nature of informal sources of role supplementa tion. Specifically, what aspects of social support are associated with the use of formal and informal community resources by chronically-ill adults? Role theory stresses the need for role supplementation during periods when affected individuals are unable to meet their role obligations and this raises critical theoretical questions about the nature of the social interactions. Is the nature of this role supplementation reciprocal or is it dependent; and is reciprocal or dependent role supplementation more effective in promoting patient well-being? What nursing interventions specifically aid in promoting the most effective forms of role supplementation?

This model did not include role clarity as a variable, although effective role supplementation requires role clarity. The relationship between related role stress, and chronicity-related role strain requires further investigation.

Role theory literature provides evidence that lack of role clarity between adults affected by CHF and individuals providing role supplementation may help explain why perceived social support had no effect upon chronicity-related role and stress and chronicity-related role strain. Another important area of research requiring further investigation is whether or not perceived social support has a greater effect upon chronic conditions that are exacerbated by negative emotions and emotional distress such as asthma or chronic obstructive pulmonary disease.

The predictive variables in this model explained 35% of the variance in the negative affect health status outcome and less variance for positive affect, physical rating, and ADL rating. Other predictors must be considered that may modify the predictive model. Further development of the chronicity concept may yield other predictors associated with chronicity-related role stress and chronicity-related role strain.

Uncertainty, ambiguity, and instability were proposed as primary dimensions of chronicity. Further research is necessary in order to clarify how these three dimensions of chronicity contribute to role insufficiency, chronicity-related role stress, and chronicity-related role strain. Further model development may require an investigative approach that uses qualitative research to identify the meaning of these predictors and quantitative research to empirically test the theoretical relationship between predictive model variables.

REFERENCES

Abramson, J. H. (1966). The Cornell Medical Index as an epidemiological tool. American Journal of Public Health, 56(2), 287-297.

Akpom, C., Katz, S., & Densen, P. (1973). Methods of classifying disability and severity of illness in ambulatory care patients. Medical Care, 11(2), 125-131.

Archbold, & Perdue (1981). In Archbold & Perdue (Eds.), Chronic Care Nursing. New York, NY: Springer Publishing Co., 1981.

Asher, H. B. (1983). Causal modeling (2nd ed.). Beverly Hills, CA: Sage Publications.

Barrera, M. (1981). Social support in the adjustment of pregnant adolescents: Assessment issues. In B. H. Gottlieb (Ed.), Social networks and social support (pp. 69-96). Beverly Hills, CA: Sage Publications.

Baumann, B. (1961). Diversities in conceptions of health and physical fitness. Journal of Health and Human Behavior, 2(1), 39-46.

Beiser, M. (1974) Components and correlates of mental well-being. Journal of Health and Social Behavior, 15, 320-327.

Bergner, M., Bobbitt, R., Kressel, S., Pollard, W., Gilson, B. & Morris, J. (1976). The sickness impact profile: Conceptual formulation and methodology for the development of a health status measure. International Journal of Health Services, 6(3), 393-415.

Berkman L., & Syme, S. (1979). Social neworks, host resistance, and mortality a nine-year follow-up study of Alameda County residents. American Journal of Epidemiology 109, 186-204.

Berkman, L., & Breslow, L. (1983). Health and ways of living. Oxford: Oxford University Press.

Billings, A. G., & Moos, R. H. (1981). The role of coping responses and social resources in attenuating the stress of life events. Journal of Behavioral Medicine, 4, 139-157.

Blackwell, B. L. (1967). Upper middle class adult expectations about entering the sick role for physical and psychiatric dysfunctions. Journal of Health and Social Behavior, 8, 83-95.

Blalock, H. M. (1984). Conceptualization and measurement in the social sciences. Beverly Hills, Sage Publications.

Blazer. D. G. (1982). Social support and mortality in an elderly community population. American Journal of Epidemiology, 115(5), 684-694.

Blazer, D. (1978). The OARS Durham surveys: Description and application. Multidimensional functional assessment: The OARS methodology (Chapter 9) (2nd Ed.). Durham, NC: Duke University.

Bradburn, N., & Caplovitz, (1965). Reports on happiness: A pilot study related to mental health. Chicago, IL: Aldine.

Bradburn, N. (1969). The structure of psychological well-being. Chicago, IL: Aldine.

Bramwell, L., & Whall, A.L. (1986). Effect of role clarity and empathy on support role performance and anxiety. Nursing Research, 35(5), 282-287.

Braunwald, E., Mock, M., & Watson, J. (Eds.) (1982). Congestive heart failure. New York, NY: Grune and Stratton.

Broadhead, W., Kaplan, B., James, S., Wagner, E., Schoenbach, V., Grimson, R., Heyden, S., Tibblin, G., & Gehlbach, S. (1983). The epidemologic evidence for a relationshib between social support and health. American Journal of Epidemiology, 117(5), 521-537.

Brodman, K., Erdmann, A. J., & Wolff, H. G. (1956). Cornell Medical Index Health Questionnaire (manual). New York, NY: Cornell University Medical College.

Brown, J., & Rawlinson, M. (1975). Relinquishing the sick role following open-heart surgery. Journal of Health and Social Behavior, 16, 12-27.

Brown, G. W. (1972). Life-events and psychiatric illness: Some thoughts on methodology and causality. Journal of Psychosomatic Research, 16, 311-320.

Brown, G. W., & Harris, T. (1978). Social origins of depression (pp. 138-149). New York. NY: The Free Press.

Burke, L. (1983). Education and rehabilitation of the patient with heart failure. In C. R. Michaelson (Ed.), Congestive heart failure, (pp. 360-377). St. Louis, MO: C. V. Mosby.

Campbell, A. (1976). Subjective measurse of well-being. American Psychology, 31, 117-124.

Campbell, D. T. (1963). Social attitudes and other acquired behavioral dispositions. In S. Koch (Ed.), Psychology: A study of a science (pp. 94-172). New York, NY: McGraw-Hill.

Caplan, G. (1974). Support systems and community mental health. New York, NY: Behavioral Publications.

Caplan, R.D., Cobb, S., French, J., R., P. Harrison, R. V., & Pinneau, S. R. (1975). Job demands and worker health: Main effects and occupational differences (DHEW Publication Number (NIOSH) 75-160). Washington, DC: U.S. Government Printing Office.

Cassel, J, (1974). An epidemiological perspective of psychosocial factors in disease etiology. American Journal of Public Health, 64(11), 1040-1043.

Cassel, J. (1976). The contribution of the social environment to host resistance. American Journal of Epidemiology, 104, 107-123.

Chadwick, J. F. (1980). Psychological job stress and coronary heart disease: A current NIOSH project. In R. M. Schwartz (Ed.), New developments in occupational stress. Cincinnati, OH: National Institute for Occupational Safty and Health.

Chappell, N. L. (1985). Social support and the receipt of home care services. The Gerontologist, 25(1), 47-54.

Cherlin, A., & Reeder, L. G. (1975). The dimensions of psychological well-being, a critical review. Sociological Methods and Research, 4, 189-214.

Christopherson, V. (1968). The patient and the family. Rehabilitation Literature, 23(2), 34-41.

Cluff, L. E. (1981). Chronic disease function and the quality of care. Journal of Chronic Disease, 34, 299-304.

Cobb, S., & Rosenbaum, J. (1956). A comparison of specific symptom data obtained by nonmedical interviewers and by physicians. Journal of Chronic Disease, 4, 245-252,

Cobb, S., Warren, J. E., Merchant, W. R., & Thompson, D. J. (1957). An estimate of the prevalence of rhumatoid arthritis. Journal of Chronic Disease, 5, 636-643.

Cobb, S. (1971). The frequency of the rheumatic diseases. Cambridge, MA: Harvard University Press.

Cobb, S. & Rose, R. M. (1973). Psychosomatic disease in air traffic controllers: Hypertension, diabetes, and peptic ulcer. Journal of the American Medical Association, 224, 489-492.

Cobb, S. (1974). Physiologic changes in men whose jobs were abolished. Journal of Psychosomatic Research, 18, 245-258.

Cobb, S. (1976). Social support as a moderator of life stress. Psychosomatic Medicine, 38, 300-314.

Cobb, S. & Erbe, C. (1978). Social support for the cancer patient. Forum on Medicine, 1(8), 24-29.

Cohen, F., & Lazarus, R. S. (1973). Active coping processes, coping dispositions, and recovery from surgery. Psychosomatic Medicine, 35, 375-389.

Cohen, F., & Lazarus, R. S. (1983). Coping and adaptation in health and illness. In D. Mechanic (Ed.), Handbook of health, health care, & the health professions (pp. 608-635). New York, NY: The Free Press.

Cohen, J., & Cohen, P. (1983). Applied multiple regression-correlation analysis for the behavioral sciences (2nd ed.). NJ: Lawrence Erlbaum Associates.

Cohn, R., & Francis, C. (1982). In Braunwald, E., Mock, M., and Watson, J. (Eds.), Congestive heart failure. New York, NY: Grune and Stratton.

Conway, M. E. (1978). In Hardy, M. E. and Conway, M. E. (Eds.), Role theory perspective for health professionals. New York, NY: Appleton-Century-Crofts.

Cook, T. D., & Campbell, D. T. (1979). Quasi-Experimentation: Design and analysis issues for field settings. Boston, MA: Houghton Mifflin.

Costa, P. T., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. Journal of Personality and Social Psychology, 38(4), 668-678.

Crabtree, M. K. (1986). Self-efficacy beliefs and social support as predictors of diabetic self-care. Unpublished doctoral dissertation, University of California, San Francisco.

Criteria Committee of the New York Association (1980). Nomenclature and criteria for diagnosis of diseases of the heart and great vessels (7th ed.). Boston, Little, Brown.

Dean, A., & Lin, N. (1977). The stress-buffering role of social support: Problems and prospects for systematic investigation. Journal of Nervous and Mental Disease, 165, 403-417.

DeAraujo, G., Van Arsdel, P., Holmes, T., & Dudley, D. (1973). Life change, coping ability and chronic intrinsic asthma. Journal of Psychosomatic Research, 17, 359-363.

DiMatteo, M., & Hays. R. (1981). Social support and serious illness. In B. H. Gottlieb (Ed.), Social networks and social support (pp. 117-148). Beverly Hills, CA: Sage Publications.

Dimond, M. (1979). Social support and adaptation to chronic illness: The case of maintenance hemodialysis. Research in Nursing and Health, 2, 101-108.

Dimond, M., & Jones, S. (1983). Social support: A review and theoretical integration. In P. Chin (Ed.), Advances in nursing theory development (pp. 235-249). St. Louis, MO: C. V. Mosby.

Dohrenwend, B., & Dohrenwend, B. P. (1974). Stressful life events: Their nature and effects. New York, NY: Wiley.

Dolfman, M. (1974). Toward operational definitions of health. The Journal of School Health, 44, 206-209.

Donabesian, A. (1966). Quality of care: Problems of measurement. American Journal of Public Health, 59(1), pp. 1833-1841.

Dracup, K., & Meleis A. (1982). Compliance: An interactionist approach. Nursing Research, 31(1), 31-36.

Fabrega, H. (1972). The study of disease in relation to culture. Behavioral Science, 17, 183-203.

Fabrega, H. (1974). Disease and social behavior. Cambridge, MA: M.I.T. Press.

Ferketich, S. L. & Verran, J. A. (1984). Residual analysis for causal model assumptions. Western Journal of Nurisng Research, 6(1), 41-60.

Fillenbaum, G. G. (1978). Validity and reliability of the MFAQ. In Multidimensional functional assessment: The OARS methodology. Durham, NC: The Duke Center for the Study of Aging and Human Development.

Fillenbaum, G. G. (1979). Social context and self-assessments of health among the elderly. Journal of Health and Social Behavior, 20, 45-51.

Fillenbaum, G. G., & Smyer, M. (1981). Development, validity, and reliability of the OARS multidimensional functional assessment questionaire. Journal of Gerontology, 39, 342-349.

Folkman, S. & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. Journal of Health and Social Behavior, 21, 219-239.

French, J. R. P., & Caplan, R. D. (1970). Psychosocial factors in coronary heart disease. Industrial Medicine, 39, 383-397.

French, J. R. P., Rodgers, W., & Cobb, S. (1974). Adjustment as person-environment fit. In G. Coelho, D. Hamburg, & J. Adams (Eds.), Coping and adaptation (pp. 316-333). New York, NY: Basic Books.

Garrity, T. (1973). Vocational adjustment after first myocardial infarction: Comparative assessment of several variables suggested in the literature. Social Science and Medicine, 7, 705-717.

Gearson, E., & Strauss, A. (1975). Chronic disease, quality of life, and health care organization: Some problems for policy formulation: Working paper #5, in Quality of life following kidney transplantation. Unpublished manuscript.

George, L. K. (1979). The happiness syndrome: Methodological and substantive issues in the study of social-psychological well-being in adulthood. The Gerontologist, 19(2), 210-216.

George, L. K., Landerman, R., & Fillenbaum, G. G. (1982). Developing measures of functional status and service utilization: Refining and extending the OARS methodology. Durham, NC: Duke University Center for the Study of Aging and Human Development.

Gerstenblith, B., Fleg, J, & Lakatta, E. (1984). Pathophysiology of the aging heart. In Franz H. Messerli (Ed.), Cardiovascular disease in the elderly (pp. 11-34). Boston, MA: Martinus Nijhoff.

Gilson, B., Gilson, J., Bergner, M., Bobbit, R., Kressel, S., Pollard, W., & Vesselago, M. (1975). The Sickness Impact Profile: Development of an outcome measure of health care. American Journal of Public Health, 65(2), 1304-1310.

Glass, D. C. (1977). Stress, behavior patterns, and coronary disease. American Scientist, 65, 177-187.

Goffman, E. (1961). Asylums: Essays on the social situation of mental patients and other inmates. Garden City, NJ: Doubleday.

Goldberger, A. S. (1964). Econometric theory. New York, NY: John Wiley & Sons.

Goldsmith, S. (1972). The status of health status indicators. Health Services Reports, 87(3), 212-220.

Goldstein, M. J. (1973). Individual differences in response to stress. American Journal of Community Psychology, 1, 113-137.

Goode, W. J. (1960). A theory of role strain. American Sociological Review, 25, 483-496.

Gordon, R. A. (1968). Issues in multiple regression. American Journal of Sociology, 73, 592-616.

Gore, S. (1978). The effect of social support in moderating the health consequences of unemployment. Journal of Health and Social Behavior, 19, 157-165.

Gottlieb, B. H. (1981). Social networks and social support in community mental health. In B. H. Gottlieb (Ed.) Social networks and social support (pp. 11-42). Beverly Hills, CA: Sage Publications.

Gottlieb, B. (1983). Social support strategies: Guidelines for mental health practice. Beverly Hills, CA: Sage Publications.

Hadley, B. J. (1967). The dynamic interactionist concept of role. Journal of Nursing Education, 24, 5-10.

Hammerman, J. (1971). Toward a social-health policy for the chronically ill and the disabled. In Report of a conference on care of chronically ill adults, Chicago, IL: American Hospital Association.

Hardy, M. E., & Conway, M. E. (1978). Role theory perspective for health professionals. New York, NY: Appleton-Century-Crofts.

Himmelfarb, S., & Murrell, S. A. (1983). Reliability and validity of five mental health scales in older persons. Journal of Gerontology, 38(3), 333-339.

Hirsch, B. (1979). Psychological dimensions of social networks: A multimethod analysis. American Journal of Community Psychology, 7(3), 263-277.

Hirsch, B. (1979). Natural support systems and coping with major life changes. Journal of Community Psychology, 7(3), 263-277.

Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. Journal of Psychosomatic Research, 11, 213-218.

Holt, R. R. (1982). Occupational stress. In L. Goldberger & S. Breznitz (Eds.) Handbook of stress (pp. 419-444). New York, NY: The Free Press.

House, J. S., & Wells, J. A. (1978). Occupational stress, social support, and health. In A. McLean, G. Black, & M. Colligan (Eds.), Reducing occupational stress: Proceedings of a conference (DHEW Publication Number (NIOSH) 78-140). Washington, DC: U.S. Goverment Printing Office.

Ilfeld, F. W. (1977). Current social stressors and symptoms of depression. American Journal of Psychiatry, 134, 161-166.

Jette, A. (1980). Health status indicators: Their utility in chronic disease evaluation research. Journal of Chronic Disease, 33, 567-579.

Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D., & Rosenthal, R. A. (1964). Organizational stress: Studies in role conflict and ambiguity. New York, NY: John Wiley & Sons.

Kahn, R. L. (1973). Conflict, ambiguity, and overload: Three elements in job stress. Occupational Mental Health, 3, 2-9.

Kahn, R. L. (1979). Aging and social support. In M. W. Riley (Ed.), Aging from birth to death: Interdisciplinary perspectives (pp. 77-91). Boulder, CO: Westview Press.

Kahn, R. L., & Antonucci, T. (1981). Convoy over life course: Attachment, roles, and social support. In P. B. Baltes & O. C. Brim Jr. (Eds.), Life span development and behavior. New York, NY: Academic Press.

Kane, R. A. & Kane, R. L. (1983). Assessing the elderly. Lexington, MA: D. C. Heath.

Kanner, A. D., Coyne, J. C., Schaefer, & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. Journal of Behavioral Medicine 4(1), 1-39.

Katz, S. (1983). Assessing self-maintenance: Activities of daily living, mobility, and instrumental activities of daily living. Journal of the American Geriatrics Society 31(12), 721-727.

Kassebaum, G. G. & Baumann, B. O. (1965). Dimensions of the sick role in chronic illness. Journal of Health and Human Behavior, 6, 16-27.

Kelman, H., Lowenthal, M., & Muller, J. (1966). Community status of discharged rehabilitation patients: Results of a longitudinal study. Archives of Physical Medicine and Rehabilitation, 47, 670-675.

Kerlinger, F. N., & Pedhazur, E. J. (1973). Multiple regression in behavioral research. New York, NY: Holt, Rinehart, and Winston.

Kiritz, S., & Moos, R. (1974). Physiological effects of social environment. Psychosomatic Medicine, 36(2), 96-114.

Kleinman, A., Eisenberg, L., & Good, B. (1978). Culture, illness, and care. Annals of Internal Medicine, 88, 251-258.

Kramer, B., & Massie, B. (1984). Heart failure and the elderly. In Franz H. Messerli (Ed.), Cardiovascular disease in the elderly (pp. 35-64). Boston, MA: Martinus Nijhoff.

Kuhn, A. (1974). The logic of social systems. San Francisco, CA: Jossey-Bass.

LaBelle, B. (1975). Health care and the aged. Journal of Gerontological Nursing, 1, 18-24.

LaRocco, J., House, J., & French, J. (1980). Social support, occupational stress, and health. Journal of Health and Social Behavior, 21, 202-218.

LaRue, A., Bank, L., Jarvik, L., & Hetland, M. (1979). Health in old age: How do physicians ratings and self-ratings compare? Journal of Gerontology, 34(5), 687-691.

Lawton, M. (1971). The functional assessment of elderly people. Journal of the American Geriatric Society, 19, 465-491.

Lazarus, R., & Averill, J. R. (1973). Emotion and cognition: With special reference to anxiety. In C. D. Spielberger (Ed.), Anxiety: Current trends in theory and research. New York, NY: Academic Press.

Lazarus, R., & Cohen, J. (1978). Environmental stress. In Altman & J. F. Wohlwill (Eds.), Human behavior and the environment: Current theory and research. New York, NY: Plenum.

Lazarus, R., & Folkman, S. (1982, April). Coping and adaptation. Submission draft prepared for W. D. Gentry (Ed.), The handbook of behavioral medicine,

Lazarus, R., & Folkman, S. (1968). Emotions and adapation: Conceptual and empirical relations. In W. J. Arnold (Ed.), Nebraska symposium on motivation. Lincoln, NB: University of Nebraska Press.

Lazarus R., & Launier, (1978). Stress-related transactions between person and environment. In L. Pervin & M. Lewis (Eds.), Perspective in interactional psychology. New York, NY: Plenum.

Lefton, E., & Lefton, M. (1979). Health care and treatment for the chronically ill: Toward a conceptual framework. Journal of Chronic Disease, 32, 339-344.

Lewis-Beck, M. (1980). Applied regression: An introduction. Beverly Hills, CA: Sage Publications.

Lin, K., Tazuma, L., & Masuda, M. (1979). Adaptational problems of Vietnamese refugees. Archives of General Psychiatry, 36, 955-961.

Lin, N., Simeone, R., Ensel, W., & Kuo, W. (1979). Social support, stressfull life events, and illness: A model and an empirical test. Journal of Health and Human Behavior, 20, 108-119.

Lin, N., Dean, A., & Ensel, W. (1981). Social support scales: A methodological note. Schizophrenia Bulletin, 7(1), 73-87.

Lipowski, A. J. (1969). Psychosocial aspects of disease. Annals of Internal Medicine, 71, 1197-1207.

Litman, T. (1969). The family and physical rehabilitation. Journal of Chronic Disease, 19, 211-217.

Lowenthal, M. F. (1964). Social isolation and mental illness in old age. American Sociological Review, 29, 54-63.

Lynch, J. J., Thomas, S. A., Mills, M. E., Malinow, K., & Katcher, A. H. (1974). The effects of human contact on cardiac arrhythmia in coronary care patients. Journal of Nervous and Mental Disease, 158(2), pp. 88-99.

MacKinnon, N. J. (1978). Role strain: An assessment of a measure and its invariance of factor structure across studies. Journal of Applied Psychology, 63(3), 321-328.

Maddox, G., & Douglass, E. (1973). Self assessment of health: A longitudinal study of elderly subjects. Journal of Social Behavior, 14, 85-92.

Mallick, M. (1979). Defining health: The step before the nursing assessment. Journal of Gerontological Nursing, 5(3), 30-33.

Mason, D. T. (1976). Introduction to recent advances in pathogenesis and management of congestive heart failure. In D. T. Mason (Ed.), Congestive heart failure (pp. 1-12). New York, NY: Dun-Donnelley.

Mason, J. W. (1975). A historical view of the stress field. Journal of Human Stress, 1(2), 22-36.

Mayo, F. (1956). Care of the long term patient, Vol. 2. New York, NY: National Health Council.

McDowell, I., & Praught, E. (1982). On the measurement of happiness. American Journal of Epidemiology, 116(6), 649-658.

McGrath, J. E. (1970). Social and psychological factors in stress. New York, NY: Holt, Rinehart, and Winston.

Mead, G. H. (1934). In C. W. Morris (Ed.), Mind, self, and society. Chicago, IL: University of Chicago Press.

Mechanic, D. (1979). The stability of health and illness behavior: Results from a 16 year follow up. American Journal of Public Health, 72(8), 800-806.

Mechanic, D. (1977). Illness behavior, social adaptation, and the management of illness. The Journal of Nervous and Mental Disease, 165(2), 79-87.

Mechanic, D., & Volkart, E. H. (1961). Stress, illness behavior and the sick role. American Sociological Review, 26, 51-58.

Medalie, J. & Goldbourt, V. (1976). Angina pectoris among 10,000 men. American Journal of Medicine, 60, 910-921.

Meleis, A. (1975). Role insufficiency and role supplementation: A conceptual framework. Nursing Research, 24(4), 264-271.

Meltzer, B. N., & Petras, G. (1970). The Chicago and Iowa schools of symbolic interactionism. In T. Shibutani (Ed.), Human nature and collective behavior. Englewood Cliffs, NJ: Prentice-Hall.

Michaelson, C. R. (1983). Pathophysiology of heart failure. In C. R. Michaelson (Ed.), Congestive heart failure (pp. 360-377). St. Louis, MO: C. V. Mosby.

Miller, R. R., & Mason, D. T. (1977). Congestive heart failure and acute pulmonary edema. In E. K. Chung (Ed.), Quick reference to cardiovascular diseases (pp. 282-289). Philadelphia, PA: J. B. Lippincott.

Mitchell, J. C. (1969). Social networks in urban situations. Manchester, England: Manchester University Press.

Monat, A., Averill, J., & Lazarus, R. (1972). Anticipatory stress and coping reactions under various conditions of uncertainty. Journal of Personality and Social Psychology, 24(2), 237-253.

Moos, R. H. (1974). Psychological techniques in the assessment of adaptive behavior. In Coelho, Hamburg, & Adams (Eds.), Coping and adaptation. New York, NY: Basic Books.

Moriwaki, S. Y. (1974). The affect balance scale: A validity study with aged samples. Journal of Sociology, 73, 592-616.

Mossey, J., & Shapiro, E. (1982). Self-related health: A predictor of mortality among the elderly. American Journal of Public Health. 72(8), 800-808.

Mueller, D. P., Edwards, D. W., & Yarvis, R. M. (1977). Stressful life events and psychiatric symptomatology: Change or undesirability? Journal of Health and Social Behavior, 18, 307-317.

Murdaugh, C., & Hinshaw, A. S. (1986). Theoretical model testing to identify personality variables effecting preventive behaviors. Nursing Research, 35(1), 19-23.

National Center for Health Statistics (1978). State estimates of disabling and utilization of medical services: United States (DHEW PublicationNumber (PHS) 78-1241). Washington, DC: U.S. Government Printing Office.

Neugarten, B. (1979). Time, age, and the life cycle. American Journal of Psychiatry, 136(7), 887-893.

New York Heart Association Committee (1928). Criteria for the classification and diagnosis of heart disease (1st ed.). New York, NY: Author.

New York Heart Association Committee (1932). Criteria for the classification and diagnosis of heart disease (2nd ed.). New York, NY: Author.

New York Heart Association Criteria Committee (1964). Diseases of the heart and blood vessels: Nomenclature and criteria for diagnosis (6th ed.). New York, NY: Author.

Nie, N. H., Hull, C. H. Jenkins, J. G., Steinbrenner, K., & Bent, D. H. (1975). Statistical package for the social sciences (2nd ed.). New York, NY: McGraw-Hill.

Norbeck, J. S. (1984). Modification of life event questionnaires for use with female respondents. Research in Nursing and Health, 7, pp. 61-71.

Norbeck, J. (1981). Social support: A model for clinical research and application. Advances in Nursing Science, 43-59.

Norbeck, J., Lindsey, A., & Carrieri, V. (1981). The development of an instrument to measure social support. Nursing Research, 30(5), 1981, 264-269.

Norbeck, J. (1983). Further development of the Norbeck Social Support Questionnaire: Normative data and validity testing. Nursing Research, 32(1), 4-9.

Norbeck, J., & Tilden, J. (1983). Life stress, social support, and emotional disequilibrium in complications of pregnancy: A prospective, multivariate study. Journal of Health and Social Behavior, 24, 30-46.

Nuckolls, K. B., Cassel, J., & Kaplan, B. (1972). Psychosocial assets, life crisis, and the prognosis of pregnancy. American Journal of Epidemiology, 95(5), 431-441.

Nunnally, J. C. (1978). Psychometric theory (2nd ed.). New York, NY: McGraw-Hill.

Opton, E. M., & Lazarus, R. (1967). Personality determinants of psychophysiological response to stress: A theoretical analysis and an experiment. Journal of Personality and Social Psychology, 6, 291-303.

Parsons, T. (1951). The social system. New York, NY: Free Press.

Patrick, D., Bush, J., & Chen, M. (1973). Toward an operational definition of health. Journal of Health and Social Behavior, 14, 281-289.

Pearlin, L. I., & Schooler, C. (1980). The structure of coping. Journal of Health and Social Behavior, 21, 219-239.

Pearlin, L. I., Lieberman, M., Menaghan, E., & Mullan, J. (1981). The stress process. Journal of Health and Social Behavior, 22, 337-356.

Pender, N. (1975). A conceptual model for preventive health behavior. Nursing Outlook, 23(6), 385-390.

Perlin, L. (1980). Life-strains and psychological distress among adults. In N. J. Smelser & E. H. Erikson (Eds.), Themes of love and work in adulthood (pp. 174-192). Cambridge, MA: Harvard University Press.

Perlin, L. (In Press). Social structure and social supports. In S. Cohen & L. Syme (Eds.), Social support and health. New York, NY: Academic Press.

Perlin, L., & Lieberman, M. A. (1979). Social sources of emotional distress among adults. In R. Simmons (Ed.), Research in community and mental health (Vol. 1, pp. 217-248). Greenwich, CT: JAI Press.

Petroni, F. A. (1969). The influence of age, sex, and chronicity in perceived legitimacy to the sick role. Sociology and Social Research, 53, 180-193.

Phillips, D. L. (1965). Self-reliance and the inclination to adopt the sick role. Social Forces, 43, 555-563.

Pinneau, S. R. (1976, September). Effects of social support on occupational stresses and strains. Paper delivered at the American Psychological Association Convention, Washington, D.C.

Polit, D., & Hungler, B. (1978). Nursing research principles and methods. Philadelphia, PA: J.B. Lippincott Co.

Procidano, M., & Heller, K. (1983). Measures of perceived social support from friends and from family: Three validation studies. American Journal of Community Psychology, 11(1), 1-24.

Rahe, R. H., & Lind, E. (1971). Psychosocial factors and sudden cardiac death: A pilot study. Journal of Psychosomatic Research, 15, 19-24.

Reif, L. J. (1975). Cardiacs and normals: The social construction of a disability. Doctoral dissertation, University of California, San Francisco.

Research Triangle Institute (1980). National sample survey of registered nurses II, status of nurses. American Journal of Nursing, 82(3), 448-451.

Rizzuto, C. (1983). Psychosocial problems in congestive heart failure: Health care implications. In C. R. Michaelson (Ed.), Congestive heart failure (pp. 360-377). St. Louis, MO: C. V. Mosby.

Robb, S. S., & Stegman, E. E. (1983). Companion animals and elderly people: A challenge for evaluators of social support. Gerontologist, 23, 277-282.

Robertson, E. K., & Suinn, R. (1968). The determination of rate of progress of stroke patients through empathy measures of patient and family. Journal of Psychosomatic Research, 12, 189-191.

Rock, D. L., Green, K. E., Wise, B. K., & Rock, R. D. (1984). Social support and social network scales: A psychometric review. Research in Nursing and Health, 7(4), 325-332.

Rosow, I. (1967). Social integration of the aged. New York, NY: Free Press.

Rubin, T., Rosenbaum, J., & Cobb, S. (1956). The use of interview data for the detection of associations in field studies. Journal of Chronic Disease, 4, 253-266.

Sarbin, T., & Allen, V. (1968). Role theory. In L. Gardnery & E. Aronson (Eds.), Handbook of social psychology (Vol. I, pp. 488-567). Reading, PA: Addison-Wesley Publishing Co.

Sarason, I. G., Johnson, J. H., & Siegel, J. M. (1978). Assessing the impact of life changes: Development of the life experiences survey. Journal of Consulting and Clinical Psychology, 46, 932-946.

Schaefer, C., Coyne, J., & Lazarus, R. (1981). The health related functions of social support. Journal of Behavioral Medicine, 4, 381-406.

Schaeffer, J. (1971). Progression to chronic disability. In Report of a conference on care of chronically ill adults. Chicago, IL: American Hospital Association.

Schlenger, W. (1976). A new framework for health. Inquiry, 13, 207-214.

Shalit, B. (1977). Structual ambiguity and limits to coping. Journal of Human Stress, 32-45.

Smith, J. (1981). The idea of health: A philosophical inquiry. Advances in Nursing Science & Education, 3(3), 43-50.

Speilberger, C. D. (1972). The State-Trait Anxiety Inventory. In Anxiety: Current Trends in Theory and Research (Vol. I, pp. 35-38). New York, NY: Academic Press.

Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1970). Manual for the state-trait anxiety inventory (form Y): Self- evaluation questionnaire. Palo Alto, CA., Consulting Psychologists Press.

SPSSX Incorporated (1983). SPSSX user's guide. New York, NY: McGraw-Hill.

Stoeckle, J., et al. (1964). The quantity and significance of psychological distress in medical patients. Journal of Chronic Disease, 17, 959-970.

Steinhardt, R. W., Zeman, F. D., & Tuckman, J. (1953). Appraisal of physical and mental health of the elderly. Journal of the American Medical Association, 151(5), 378-382.

Strauss, A., Fagerhaugh, S., Suzek, B., & Wiener, C. (1981). Patients work in the technologized hospital. Nursing Outlook, 29(7), 404-412.

Strauss, A., & Glaser, B. (1975). Chronic illness and the quality of life. St. Louis, MO: C. V. Mosby Co.

Suchman, E. (1965). Stages of illness and medical care. Journal of Health & Human Behavior, 6(3), 114-128.

Syme, S. (1982). Sociocultural factors and disease etiology. In W. Gentry (Ed.), The handbook of behavioral medicine. New York, NY: Guilford Press.

Tessler, R., & Mechanic, D. (1978). Psychological distress and perceived health status. Journal of Health and Social Behavior, 19, 254-262.

Theorell, T., & Rahe, R.H. (1971). Psychosocial factors and myocardial infarction I: An inpatient study in Sweden. Journal of Psychosomatic Research, 15, 25-31.

Thoits, P. (1981). Undesirable life events and psychophysiological distress: A problem of operational confounding. American Sociological Review, 46, 97-109.

Thoits, P., & Gregory, W. (1982). Conceptual, methodological and theoretical problems in studying social support as a buffer against life stress. Journal of Health and Social Behavior, 23, 145-159.

Tolsdorf, C. (1976). Social networks, support, and coping: An exploratory study. Family Process, 15, 407-417.

Turner, J. H. (1982). The Structure of Sociological Theory (3rd ed.). Homewood, IL: Dorsey Press.

Underwood, P. (1982). Psychiatric nursing in institutional settings: A model for practice. Unpublished paper.

Valanis, B., & Yeaworth, R. (1982). Ratings of physical and mental health in the older bereaved. Research in Nursing and Health, 5, 137-146.

Van Der Werf, T. (1980). Cardiovascular pathophysiology. Oxford: Oxford University Press.

Verran, J. A., & Ferketich, S. L. (1984). Residual analysis for statistical assumptions of regression equations. Western Journal of Nursing Research, 6(1), 27-39.

Vinokur, A., & Selzer, M. L. (1975). Desirable versus undesirable life events: Their relationship to stress and mental distress. Journal of Personality and Social Psychology, 33, 329-337.

Walker, K., MacBride, A., & Vachon, M. (1977). Social support networks and the crisis of bereavement. Social Science and Medicine, 11, 35-41.

Wallston, B., Alagna, S., McEvoy, G., DeVellis, B., & DeVellis, R. (1983). Social support and physical health. Health Psychology, 2, 367-391.

Ware, J., Davies, A., & Lohr, K. (1981). Choosing measures of health status for individuals in general populations. American Journal of Public Health, 71(6), 620-625.

Weisman, A. D., & Worden, J. W. (1976). The existential plight in cancer: Significance of the first 100 days. The International Journal of Psychiatry in Medicine, 7, 1-15.

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

Wellman, B. (1981). Applying network analysis to the study of support. In B. H. Gottlieb (Ed.), Social networks and social support (pp. 171-201). Beverly Hills, CA: Sage Publications.

Westbrook, M., & Viney, L. (1982). Psychological reactions to the onset of chronic illness. Social Science and Medicine, 16, 899-905.

Wilcox, B. (1981). Social support in adjusting to marital disruption: A network analysis. In B. H. Gottlieb (Ed.), Social networks and social support (pp. 97-117). Beverly Hills, CA: Sage Publications.

Wortman, C. B. (1984). Social support and the cancer patient. Cancer, 53, May 15 Supplement, 2339-2360.

Wyler, A. R., Masuda, M., & Holmes, T. H. (1971). Magnitude of life events and seriousness of illness. Psychosomatic Medicine, 33, 115-122.

Zar, J. H. (1974). Biostatistical analysis. Englewood Cliffs, NJ: Prentice-Hall.

Zeller, R. A., & Carmines, E. G. (1980). Measurement in the social sciences. New York, NY: Cambridge University Press.

APPENDIX A

Role Theory Definitions

ROLE THEORY DEFINITIONS

ROLE: Organized constellations of behaviors that are normatively defined and expected of an occupant of a given social status

STATUS: A means of identifying categories of people as defined by the attributes they share in common as well as the common expectations of performance for people occupying that position.

ROLE ENACTMENT: What a person actually does in response to role expectations within a social setting.

ROLE CONFLICT: Incompatibility of expectations between the role occupant and the role.

ROLE STRAIN: The subjective counterpart of role stress that includes the worry, anxiety, or guilt resulting from either role conflict or role enactment.

ROLE STRESS: A general term used to include social structural conditions in which role demands and obligations are difficult or impossible to meet.

ROLE AMBIGUITY: The lack of agreement on which norms are relevant for the status occupant.

ROLE OVERLOAD: Occurs when a status occupant is confronted by excessive demands.

ROLE CLARITY: The degree of role clarity for a status occupant involved the difference between the optimal amount of information about role expectations and the amount of information that the individual actually has available.

ROLE EXPECTATIONS: A cognitive concept that includes beliefs, expectancies, and subjective probabilities. It links role behavior and social structure. Role expectations may be informal or formal. They include the rights, privileges, duties, and obligations of any occupant of a social status position.

ROLE SUPPLEMENTATION: A deliberate process of preventive or therapeutic intervention to assist a role occupant's performance and role related behavior. Its goal is to decrease, ameliorate, or prevent difficulties in the cognizance and/or performance of role.

MULTIPLE ROLES: The number of different roles an individual occupies on a daily basis as part of a repertoire possessed by each individual.

APPENDIX B

Contact Letter, Refusal Slip, and Consent Form

#930314-01

I am a community health nurse and a doctoral candidate at the University of California, San Francisco, and I am conducting a study of Visiting Nursing Association (VNA) and Veterans Administration (VA) patients with chronic health problems such as congestive heart failure to find out how social support helps them.

This letter has been sent to ask if you would be willing to take part in this study. Taking part would mean an interview during which you would be asked questions about your health, sources of social support, and recent life events. The interview will be arranged and confirmed by telephone ahead of time. It would take place where you live or at another mutually agreeable location and it would take about 45 minutes to complete.

Every effort will be made to maintain your confidentiality and anonymity as far as possible under the law. This study has been approved by the review boards of the University of California,: San Francisco, the VNA, and the VA. You will not be identified in any work; also, you are free to leave unanswered any items that might appear too personal or otherwise embarrassing. If you agree to an interview and change your mind you are free to withdraw your consent without jeopardizing your future health care.

Although there are no direct service benefits to you for participating, it is hoped that this study will contribute to better home health care for VNA and VA patients with similar chronic health problems.

In return for your time and effort you will be paid $5.00 upon completion of the interview.

If you do not want to participate in this study return the attached note and envelope. If you would be willing to participate in this study then save the enclosed note and I will contact you by telephone in the immediate future. I would be happy to answer any questions that you might have at that time.

Thank You for your time
and consideration;

Geoff Shuster M.S.N.
Doctoral Candidate

Thank you for your time and effort. If you have read the introductory letter to this study and do not want to be in the study then mail this note in the attached, stamped envelope. If you are willing to be in the study or have further questions about it then save this note and I will contact you by telephone.

Thank You;
Geoff Shuster

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
Study Number 930314-01

CONSENT TO ACT AS A RESEARCH SUBJECT

Purpose:

George F. Shuster, a community health nurse and doctoral candidate, School of Nursing, University of California at San Francisco is conducting a study which is designed to learn about the impact of social support upon people with chronic health problems such as congestive heart failure.

Procedures:

If I agree to be in this study, I will:

1) be asked questions about my health status, sources of social support, and recent life events during a visit to my home which will be arranged and confirmed by telephone ahead of time. It will take about one and one half hours to complete the written questionnaires.
2) be protected by a coding system that separates my name from all responses. Every effort will be made to maintain my confidentiality and anonymity as far as possible.
3) be able to leave unanswered any items or questions that appear too personal or are otherwise embarrassing.

Benefits:

Although there are no direct benefits for participating, it is hoped that this study will contribute to better home health care for people with chronic health problems.

Compensation:

Upon completion of the interview I will receive $5.00 compensation for my participation in this study.

I have talked with George F. Shuster R.N., M.S.N. about this study and I am free to contact him at (415) 661-1898 or the Committee on Human Research which is concerned with protection of volunteers in research projects. The Committee on Human Research can be reached at (415) 666-1814 Monday through Friday between 8 and 5.

I will be able to refuse to participate or withdraw from the study at anytime without jeopardy to my present or future health care. I voluntarily agree to be a part of the study

SIGNATURE:_____ DATE:_____

APPENDIX C

Demographic Information Sheet

Subject #_____

DEMOGRAPHIC INFORMATION SHEET

Date_____

__ 1. Age:_____
5

_ 2. Sex:_____
6

_ 3. Marital Status: (please circle one): (1) Single
7 (2) Married (3) Divorced (4) Widowed (5) Other

_ 4. Household Status: Number of adults _____
8 Number of children _____

_ 5. Ethnic background or race:
9 (1) Caucasian (2) Black (3) Hispanic (4) Oriental
(4) Other

_ 6. What is your occupation (if retired- describe the job
0, 11 you held before retirement) _____

_ 7. Highest level of education (circle one):
1 (1) junior high school (2) high school (3) high school
graduate (4) trade or business school (5) community college
(6) college (7) college graduate

___ 8. When were you first told you had any heart problems _____.
2, 13, 14

APPENDIX D

Norbeck Social Support Questionnaire

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	Relationship
1.	MARY T.	FRIEND
2.	BOB	BROTHER
3.	M.T.	MOTHER
4.	SAM	FRIEND
5.	MRS. R.	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.

WHEN YOU HAVE FINISHED YOUR LIST, PLEASE TURN TO PAGE 2.

I.D. Number _____
Date _____ [1-4]

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]

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?	Question 2: How much does this person make you feel respected or admired?
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.
11.	11.
12.	12.
13.	13.
14.	14.
15.	15.
16.	16.
17.	17.
18.	18.
19.	19.
20.	20.
21.	21.
22.	22.
23.	23.
24.	24.

GO ON TO NEXT PAGE

I.D. Number _____ [1-4]
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]

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. _____

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. _____

GO ON TO NEXT PAGE

I.Q. Number _____
Date _____ [1-6]

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]

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

I.D. Number _____
Date _____ [1-4]

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. _____

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. _____

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]

I.D. Number _____
Date _____ [1-6]

PERSONAL NETWORK

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

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

	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]

PLEASE BE SURE YOU HAVE RATED EACH PERSON

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

APPENDIX E

Sarason Life Experiences Survey

LIFE EVENTS QUESTIONNAIRE

5/1

I.D. Number _____

Date _____

Instructions

Listed below are a number of events which may bring about changes in the lives of those who experience them.

Rate each event that occurred in your life during the past year as Good or Bad (circle which one applies).

Show how much the event affected your life by circling the appropriate statement (no effect - some effect - moderate effect - great effect).

If you have not experienced a particular event in the past year, leave it blank.

Please go through the entire list before you begin to get an idea of the type of event you will be asked to rate.

Event	Type of Effect	Effect of Event on Your Life			
A. HEALTH					
1. major personal illness or injury	Good Bad	no effect	some effect	moderate effect	great effect
2. major change in eating habits	Good Bad	no effect	some effect	moderate effect	great effect
3. major change in sleeping habits	Good Bad	no effect	some effect	moderate effect	great effect
4. major change in usual type and/or amount of recreation	Good Bad	no effect	some effect	moderate effect	great effect
5. major dental work	Good Bad	no effect	some effect	moderate effect	great effect
6. (female): pregnancy	Good Bad	no effect	some effect	moderate effect	great effect
7. (female): miscarriage or abortion	Good Bad	no effect	some effect	moderate effect	great effect
8. (female): started menopause	Good Bad	no effect	some effect	moderate effect	great effect
9. major difficulties with birth control pills or devices	Good Bad	no effect	some effect	moderate effect	great effect
B. WORK					
10. difficulty finding a job	Good Bad	no effect	some effect	moderate effect	great effect
11. beginning work outside the home	Good Bad	no effect	some effect	moderate effect	great effect
12. changing to a new type of work	Good Bad	no effect	some effect	moderate effect	great effect
13. changing your work hours or conditions	Good Bad	no effect	some effect	moderate effect	great effect
14. change in your responsibilities at work	Good Bad	no effect	some effect	moderate effect	great effect

Event	Type of Effect	Effect of Event on Your Life			
15. troubles at work with your employer or co-workers	Good Bad	no effect	some effect	moderate effect	great effect
16. major business readjustment	Good Bad	no effect	some effect	moderate effect	great effect
17. being fired or laid off from work	Good Bad	no effect	some effect	moderate effect	great effect
18. retirement from work	Good Bad	no effect	some effect	moderate effect	great effect
19. taking courses by mail or studying at home to help you in your work	Good Bad	no effect	some effect	moderate effect	great effect
C. SCHOOL					
20. beginning or ceasing school, college, or training program	Good Bad	no effect	some effect	moderate effect	great effect
21. change of school, college, or training program	Good Bad	no effect	some effect	moderate effect	great effect
22. change in career goal or academic major	Good Bad	no effect	some effect	moderate effect	great effect
23. problems in school, college, or training program	Good Bad	no effect	some effect	moderate effect	great effect
D. RESIDENCE					
24. difficulty finding housing	Good Bad	no effect	some effect	moderate effect	great effect
25. changing residence within the same town or city	Good Bad	no effect	some effect	moderate effect	great effect
26. moving to a different town, city, state, or country	Good Bad	no effect	some effect	moderate effect	great effect
27. major change in your living conditions (home improvements or a decline in your home or neighborhood)	Good Bad	no effect	some effect	moderate effect	great effect
E. LOVE AND MARRIAGE					
28. began a new, close, personal relationship	Good Bad	no effect	some effect	moderate effect	great effect
29. became engaged	Good Bad	no effect	some effect	moderate effect	great effect
30. girlfriend or boyfriend problems	Good Bad	no effect	some effect	moderate effect	great effect
31. breaking up with a girlfriend or boyfriend or breaking an engagement	Good Bad	no effect	some effect	moderate effect	great effect
32. (male): wife or girlfriend's pregnancy	Good Bad	no effect	some effect	moderate effect	great effect
33. (male): wife or girlfriend having a miscarriage or abortion	Good Bad	no effect	some effect	moderate effect	great effect

Event	Type of Effect		Effect of Event on Your Life			
34. getting married (or beginning to live with someone)	Good	Bad	no effect	some effect	moderate effect	great effect
35. a change in closeness with your spouse or partner	Good	Bad	no effect	some effect	moderate effect	great effect
36. infidelity	Good	Bad	no effect	some effect	moderate effect	great effect
37. trouble with in-laws	Good	Bad	no effect	some effect	moderate effect	great effect
38. separation from spouse or partner due to conflict	Good	Bad	no effect	some effect	moderate effect	great effect
39. separation from spouse or partner due to work, travel, etc.	Good	Bad	no effect	some effect	moderate effect	great effect
40. reconciliation with spouse or partner	Good	Bad	no effect	some effect	moderate effect	great effect
41. divorce	Good	Bad	no effect	some effect	moderate effect	great effect
42. change in your spouse or partner's work outside the home (beginning work, ceasing work, changing jobs, retirement, etc.)	Good	Bad	no effect	some effect	moderate effect	great effect
F. FAMILY AND CLOSE FRIENDS						
43. gain of a new family member (through birth, adoption, relative moving in, etc.)	Good	Bad	no effect	some effect	moderate effect	great effect
44. child or family member leaving home (due to marriage, to attend college, or for some other reason)	Good	Bad	no effect	some effect	moderate effect	great effect
45. major change in the health or behavior of a family member or close friend (illness, accidents, drug or disciplinary problems, etc.)	Good	Bad	no effect	some effect	moderate effect	great effect
46. death of spouse or partner	Good	Bad	no effect	some effect	moderate effect	great effect
47. death of a child	Good	Bad	no effect	some effect	moderate effect	great effect
48. death of a family member or close friend	Good	Bad	no effect	some effect	moderate effect	great effect
49. birth of a grandchild	Good	Bad	no effect	some effect	moderate effect	great effect
50. change in the marital status of your parents	Good	Bad	no effect	some effect	moderate effect	great effect
G. PARENTING						
51. change in child care arrangements	Good	Bad	no effect	some effect	moderate effect	great effect
52. conflicts with spouse or partner	Good	Bad	no	some	moderate	great

Event	Type of Effect		Effect of Event on Your Life			
53. conflicts with child's grandparents (or other important person) about parenting	Good	Bad	no effect	some effect	moderate effect	great effect
54. taking on full responsibility for parenting as a single parent	Good	Bad	no effect	some effect	moderate effect	great effect
55. custody battles with former spouse or partner	Good	Bad	no effect	some effect	moderate effect	great effect
H. PERSONAL AND SOCIAL						
56. major personal achievement	Good	Bad	no effect	some effect	moderate effect	great effect
57. major decision regarding your immediate future	Good	Bad	no effect	some effect	moderate effect	great effect
58. change in your personal habits (your dress, life-style, hobbies, etc.)	Good	Bad	no effect	some effect	moderate effect	great effect
59. change in your religious beliefs	Good	Bad	no effect	some effect	moderate effect	great effect
60. change in your political beliefs	Good	Bad	no effect	some effect	moderate effect	great effect
61. loss or damage of personal property	Good	Bad	no effect	some effect	moderate effect	great effect
62. took a vacation	Good	Bad	no effect	some effect	moderate effect	great effect
63. took a trip other than a vacation	Good	Bad	no effect	some effect	moderate effect	great effect
64. change in family get-togethers	Good	Bad	no effect	some effect	moderate effect	great effect
65. change in your social activities (clubs, movies, visiting)	Good	Bad	no effect	some effect	moderate effect	great effect
66. made new friends	Good	Bad	no effect	some effect	moderate effect	great effect
67. broke up with a friend	Good	Bad	no effect	some effect	moderate effect	great effect
68. acquired or lost a pet	Good	Bad	no effect	some effect	moderate effect	great effect
I. FINANCIAL						
69. major change in finances (increased or decreased income)	Good	Bad	no effect	some effect	moderate effect	great effect
70. took on a moderate purchase, such as a T.V., car, freezer, etc	Good	Bad	no effect	some effect	moderate effect	great effect
71. took on a major purchase or a mortgage loan, such as a home, business, property, etc	Good	Bad	no effect	some effect	moderate effect	great effect
72. experienced a foreclosure on a mortgage or loan	Good	Bad	no effect	some effect	moderate effect	great effect

Event	Type of Effect		Effect of Event on Your Life			
73. credit rating difficulties	Good	Bad	no effect	some effect	moderate effect	great effect
J. CRIME AND LEGAL MATTERS						
74. being robbed	Good	Bad	no effect	some effect	moderate effect	great effect
75. being a victim of a violent act (rape, assault, etc.)	Good	Bad	no effect	some effect	moderate effect	great effect
76. involved in an accident	Good	Bad	no effect	some effect	moderate effect	great effect
77. involved in a law suit	Good	Bad	no effect	some effect	moderate effect	great effect
78. involved in a minor violation of the law (traffic tickets, disturbing the peace, etc.)	Good	Bad	no effect	some effect	moderate effect	great effect
79. legal troubles resulting in your being arrested or held in jail	Good	Bad	no effect	some effect	moderate effect	great effect
K. OTHER						
Other recent experiences which have had an impact on your life. List and rate.						
80. _____	Good	Bad	no effect	some effect	moderate effect	great effect
81. _____	Good	Bad	no effect	some effect	moderate effect	great effect
82. _____	Good	Bad	no effect	some effect	moderate effect	great effect

APPENDIX F

New York Heart Association Cardiac Impact Functional Status Classification Criteria

Functional Classification of Heart Disease
New York Heart Association Classification

15

Class I: Asymptomatic patients with heart disease.

Class II: Patients who experience slight physical activity limitations. Symptoms manifest themselves only after the affected individual engages in ordinary physical activity which results in fatigue, angina, palpitations, or dyspnea.

Class III: Patients who experience marked limitations. They experience symptoms of fatigue, angina, palpitations, or dyspnea with activity levels which are below ordinary activity levels.

Class IV: Patients who experience symptoms of cardiac insufficiency at rest. These symptoms are exacerbated by any physical activity (Criteria Committee of the New

16, 17 Cardiac Fraction

APPENDIX G

Cornell Medical Index

CORNELL MEDICAL INDEX

ID# _____
DATE _____

Directions:
If you can answer YES to the question asked, put a circle around the (Yes)
If you have to answer NO to the question asked, put a circle around the (No)
Answer all questions. If you are not sure, guess.

A

Do you need glasses to read?	Yes	No	001
Do you need glasses to see things at a distance?	Yes	No	002
Has your eyesight often blacked out completely?	Yes	No	003
Do your eyes continually blink or water?	Yes	No	004
Do you often have bad pains in your eyes?	Yes	No	005
Are your eyes often red or inflamed?	Yes	No	006
Are you hard of hearing?	Yes	No	007
Have you ever had a bad running ear?	Yes	No	008
Do you have constant noises in your ears?	Yes	No	009

B

Do you have to clear your throat frequently?	Yes	No	010
Do you often feel a choking lump in your throat?	Yes	No	011
Are you often troubled with bad spells of sneezing?	Yes	No	012
Is your nose continually stuffed up?	Yes	No	013
Do you suffer from a constantly running nose?	Yes	No	014
Have you at times had bad nose bleeds?	Yes	No	015
Do you often catch severe colds?	Yes	No	016
Do you frequently suffer from heavy chest colds?	Yes	No	017
When you catch a cold, do you always have to go to bed?	Yes	No	018
Do frequent colds keep you miserable all winter?	Yes	No	019
Do you get hay fever?	Yes	No	020
Do you suffer from asthma?	Yes	No	021
Are you troubled by constant coughing?	Yes	No	022
Have you ever coughed up blood?	Yes	No	023
Do you sometimes have severe soaking sweats at night?	Yes	No	024
Have you ever had a chronic chest condition?	Yes	No	025
Have you ever had T.B. (Tuberculosis)?	Yes	No	026
Did you ever live with anyone who had T.B.?	Yes	No	027

C

Has a doctor ever said your blood pressure was too *high*?	Yes	No	028
Has a doctor ever said your blood pressure was too *low*?	Yes	No	029
Do you have pains in the heart or chest?	Yes	No	030
Are you often bothered by thumping of the heart?	Yes	No	031
Does your heart often race like mad?	Yes	No	032
Do you often have difficulty in breathing?	Yes	No	033
Do you get out of breath long before anyone else?	Yes	No	034
Do you sometimes get out of breath just sitting still?	Yes	No	035
Are your ankles often badly swollen?	Yes	No	036
Do cold hands or feet trouble you even in hot weather?	Yes	No	037
Do you suffer from frequent cramps in your legs?	Yes	No	038
Has a doctor ever said you had heart trouble?	Yes	No	039
Does heart trouble run in your family?	Yes	No	040

OPEN TO NEXT PAGE

D

Have you lost more than half your teeth?	Yes	No	041
Are you troubled by bleeding gums?	Yes	No	042
Have you often had severe toothaches?	Yes	No	043
Is your tongue usually badly coated?	Yes	No	044
Is your appetite always poor?	Yes	No	045
Do you usually eat sweets or other food between meals?	Yes	No	046
Do you always gulp your food in a hurry?	Yes	No	047
Do you often suffer from an upset stomach?	Yes	No	048
Do you usually feel bloated after eating?	Yes	No	049
Do you usually belch a lot after eating?	Yes	No	050
Are you often sick to your stomach?	Yes	No	051
Do you suffer from indigestion?	Yes	No	052
Do severe pains in the stomach often double you up?	Yes	No	053
Do you suffer from constant stomach trouble?	Yes	No	054
Does stomach trouble run in your family?	Yes	No	055
Has a doctor ever said you had stomach ulcers?	Yes	No	056
Do you suffer from frequent loose bowel movements?	Yes	No	057
Have you ever had severe bloody diarrhea?	Yes	No	058
Were you ever troubled with intestinal worms?	Yes	No	059
Do you constantly suffer from bad constipation?	Yes	No	060
Have you ever had piles (rectal hemorrhoids)?	Yes	No	061
Have you ever had jaundice (yellow eyes and skin)?	Yes	No	062
Have you ever had serious liver or gall bladder trouble?	Yes	No	063

E

Are your joints often painfully swollen?	Yes	No	064
Do your muscles and joints constantly feel stiff?	Yes	No	065
Do you usually have severe pains in the arms or legs?	Yes	No	066
Are you crippled with severe rheumatism (arthritis)?	Yes	No	067
Does rheumatism (arthritis) run in your family?	Yes	No	068
Do weak or painful feet make your life miserable?	Yes	No	069
Do pains in the back make it hard for you to keep up with your work?	Yes	No	070
Are you troubled with a serious bodily disability or deformity?	Yes	No	071

F

Is your skin very sensitive or tender?	Yes	No	072
Do cuts in your skin usually stay open a long time?	Yes	No	073
Does your face often get badly flushed?	Yes	No	074
Do you sweat a great deal even in cold weather?	Yes	No	075
Are you often bothered by severe itching?	Yes	No	076
Does your skin often break out in a rash?	Yes	No	077
Are you often troubled with boils?	Yes	No	078

G

Do you suffer badly from frequent severe headaches?	Yes	No	079
Does pressure or pain in the head often make life miserable?	Yes	No	080
Are headaches common in your family?	Yes	No	081
Do you have hot or cold spells?	Yes	No	082
Do you often have spells of severe dizziness?	Yes	No	083
Do you frequently feel faint?	Yes	No	084
Have you fainted more than twice in your life?	Yes	No	085
Do you have constant numbness or tingling in any part of your body?	Yes	No	086
Was any part of your body ever paralyzed?	Yes	No	087
Were you ever knocked unconscious?	Yes	No	088
Have you at times had a twitching of the face, head or shoulders?	Yes	No	089
Did you ever have a fit or convulsion (epilepsy)?	Yes	No	090
Has anyone in your family ever had fits or convulsions (epilepsy)?	Yes	No	091
Do you bite your nails badly?	Yes	No	092
Are you troubled by stuttering or stammering?	Yes	No	093
Are you a sleep walker?	Yes	No	094
Are you a bed wetter?	Yes	No	095
Were you a bed wetter between the ages of 8 and 14?	Yes	No	096

GO TO NEXT PAGE

Do you often get spells of complete exhaustion or fatigue?.....	Yes	No	100
Does working tire you out completely?.....	Yes	No	101
Do you usually get up tired and exhausted in the morning?.....	Yes	No	102
Does every little effort wear you out?.....	Yes	No	103
Are you constantly too tired and exhausted even to eat?.....	Yes	No	104
Do you suffer from severe nervous exhaustion...	Yes	No	105
Does nervous exhaustion run in your family? ...	Yes	No	106

APPENDIX H

Spielberger Trait Anxiety Inventory

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
1. I feel pleasant	○	○	○	○
2. I feel nervous and restless	○	○	○	○
3. I feel satisfied with myself	○	○	○	○
4. I wish I could be as happy as others seem to be	○	○	○	○
5. I feel like a failure	○	○	○	○
6. I feel rested	○	○	○	○
7. I am "calm, cool, and collected"	○	○	○	○
8. I feel that difficulties are piling up so that I cannot overcome them	○	○	○	○
9. I worry too much over something that really doesn't matter	○	○	○	○
10. I am happy	○	○	○	○
11. I have disturbing thoughts	○	○	○	○
12. I lack self-confidence	○	○	○	○
13. I feel secure	○	○	○	○
14. I make decisions easily	○	○	○	○
15. I feel inadequate	○	○	○	○
16. I am content	○	○	○	○
17. Some unimportant thought runs through my mind and bothers me	○	○	○	○
18. I take disappointments so keenly that I can't put them out of my mind	○	○	○	○
19. I am a steady person	○	○	○	○
20. I get in a state of tension or turmoil as I think over my recent concerns and interests	○	○	○	○

APPENDIX I

Multidimensional Functional Assessment Questionnaire

OARS: HEALTH & ADLS

ID#_____

Date_____

PHYSICAL HEALTH

Let's talk about your health now.

1. About how many times have you seen a doctor during the past six months other than as an inpatient in a hospital? [EXCLUDE PSYCHIATRISTS.]

   _____ Times

2. During the past six months how many days were you so sick that you were unable to carry on your usual activities--such as going to work or working around the house?
   - 0 None
   - 1 A week or less
   - 2 More than a week but less than one month
   - 3 1-3 months
   - 4 4-6 months
   - - Not answered

3. How many days in the past six months were you in a hospital for physical health problems?

   _____ Days

4. How many days in the past six months were you in a nursing home, or rehabilitation center for physical health problems?

   _____ Days

5. Do you feel that you need medical care or treatment beyond what you are receiving at this time?
   - 1 Yes
   - 0 No
   - - Not answered

6. I have a list of common medicines that people take. Would you please tell me if you've taken any of the following in the past month.

[CHECK "YES" OR "NO" FOR EACH MEDICINE.]

1 YES	0 NO	
		Arthritis medication
		Prescription pain killer (other than above)
		High blood pressure medicine
		Pills to make you lose water or salt (water pills)
		Digitalis pills for the heart
		Nitroglycerin tablets for chest pain
		Blood thinner medicine (anticoagulants)
		Drugs to improve circulation
		Insulin injections for diabetes
		Pills for diabetes
		Prescription ulcer medicine
		Seizure medications (like Dilantin)
		Thyroid pills
		Cortisone pills or injections
		Antibiotics
		Tranquilizers or nerve medicine
		Prescription sleeping pills (once a week or more)
		Hormones, male or female (including birth control pills)
		Kcl.

7. What other prescription drugs have you taken in the past month?

[RECORD THE "others". THEN ENTER THEM IN APPROPRIATE CATEGORIES ABOVE IF POSSIBLE.]

[SPECIFY.] _____

_____

_____

3. Do you have any of the following illnesses at the present time?

[CHECK "YES" OR "NO" FOR EACH OF THE FOLLOWING. IF "YES", ASK: "How much does it interfere with your activities, not at all, a little (some), or a great deal?" AND CHECK THE APPROPRIATE BOX.]

[IF "YES", ASK:] How much does it interfere with your activities?

		0	1	2	3	
YES	NO	NOT AT ALL	A LITTLE	A GREAT DEAL		
						Arthritis or rheumatism
						Glaucoma
						Asthma
						Emphysema or chronic bronchitis
						Tuberculosis
						High blood pressure
						Heart trouble
						Circulation trouble in arms or legs
						Diabetes
						Ulcers (of the digestive system)
						Other stomach or intestinal disorders or gall bladder problems
						Liver disease
						Kidney disease
						Other urinary tract disorders (including prostate trouble)
						Cancer or Leukemia
						Anemia
						Effects of stroke
						Parkinson's Disease
						Epilepsy
						Cerebral Palsy
						Multiple Sclerosis
						Muscular Dystrophy
						Effects of Polio
						Thyroid or other glandular disorders
						Skin disorders such as pressure sores, leg ulcers or severe burns
						Speech impediment or impairment

9. Do you have any physical disabilities such as total or partial paralysis, missing or non-functional limbs, or broken bones?
   0 No
   1 Total paralysis
   2 Partial paralysis
   3 Missing or non-functional limbs
   4 Broken bones
   - Not answered

10. How is your eyesight (with glasses or contacts), excellent, good, fair, poor, or are you totally blind?
   1 Excellent
   2 Good
   3 Fair
   4 Poor
   5 Totally blind
   - Not answered

11. How is your hearing, excellent, good, fair, poor, or are you totally deaf?
   1 Excellent
   2 Good
   3 Fair
   4 Poor
   5 Totally deaf
   - Not answered

12. Do you have any other physical problems or illnesses at the present time that seriously affect your health?
   1 Yes
   0 No
   - Not answered

[IF "YES" SPECIFY.] _____

_____

SUPPORTIVE DEVICES AND PROSTHESES

13 Do you use any of the following aids all or most of the time?

[CHECK "YES" OR "NO" FOR EACH AID.]

1 YES	0 NO	
		Cane (including tripod-tip cane)
		Walker
		Wheelchair
		Leg brace
		Back brace
		Artificial limb
		Hearing aid
		Colostomy equipment
		Catheter
		Kidney dialysis machine
		Other [SPECIFY.] _____

14. Do you need any aids (supportive or prosthetic devices, including false teeth) that you currently do not have?

1 Yes
0 No
- Not answered

[IF "YES", ASK a.]

a. What aids do you need? [SPECIFY.]

_____

_____

_____

15. Do you have a problem with your health because of drinking or has your physician advised you to cut down on drinking?

1 Yes
0 No
- Not answered

16. Do you regularly participate in any vigorous sports activity such as hiking, jogging, tennis, biking, or swimming?
  1 Yes
  0 No
  - Not answered

17. How would you rate your overall health at the present time--excellent, good, fair, or poor?
  3 Excellent
  2 Good
  1 Fair
  0 Poor
  - Not answered

18. Is your health now better, about the same, or worse than it was five years ago?
  3 Better
  2 About the same
  0 Worse
  - Not answered

19. How much do your health troubles stand in the way of your doing the things you want to do--not at all, a little (some) or a great deal?
  3 Not at all
  2 A little (some)
  0 A great deal
  - Not answered

ACTIVITIES OF DAILY LIVING

Now I'd like to ask you about some of the activities of daily living, things that we all need to do as a part of our daily lives. I would like to know if you can do these activities without any help at all, or if you need some help to do them, or if you can't do them at all.

[BE SURE TO READ ALL ANSWER CHOICES IF APPLICABLE]

Instrumental ADL

20. Can you use the telephone...
  2 without help, including looking up numbers and dialing
  1 with some help (can answer phone or dial operator in an emergency, but need a special phone or help in getting the number or dialing),
  0 or are you completely unable to use the telephone?
  - Not answered

Physical ADL

27. Can you eat...
    2 without help (able to feed yourself completely),
    1 with some help (need help with cutting, etc.),
    0 or are you completely unable to feed yourself?
    - Not answered

28. Can you dress and undress yourself...
    2 without help (able to pick out clothes, dress and undress yourself),
    1 with some help,
    0 or are you completely unable to dress and undress yourself?
    - Not answered

29. Can you take care of your own appearance, for example combing your hair and (for men) shaving...
    2 without help,
    1 with some help,
    0 or are you completely unable to maintain your appearance yourself?
    - Not answered

30. Can you walk...
    2 without help (except from a cane),
    1 with some help from a person or with the use of a walker, or crutches, etc.,
    0 or are you completely unable to walk?
    - Not answered

31. Can you get in and out of bed...
    2 without any help or aids,
    1 with some help (either from a person or with the aid of some device),
    0 or are you totally dependent on someone else to lift you?
    - Not answered

32. Can you take a bath or shower...
    2 without help,
    1 with some help (need help getting in and out of the tub, or need special attachments on the tub),
    0 or are you completely unable to bathe yourself?
    - Not answered

33. Do you ever have trouble getting to the bathroom on time?
    2 No
    0 Yes
    1 Have a catheter or colostomy
    - Not answered

APPENDIX J

Bradburn Affect Balance Scale

I. D. # _____

Date _____

BRADBURN SCALE

I. Taking all things together, how would you say things are these days -- would you say you are very happy, pretty happy, or not too happy?

_____Very (3) _____Pretty (2) _____Not too (1)

II. Below are some of the ways people feel at different times. Indicate whether you felt like that during the past week by checking the box that applies.

Feeling	If "Yes," how often did you feel that way?			
	No	Once	Several times	Often
A. On top of the world				
B. Very lonely or remote from other people				
C. Angry at something that usually wouldn't bother you				
D. That you couldn't do something because you just couldn't get going				
E. Particularly excited or interested in something				
F. Depressed or very unhappy				
G. Pleased about having accomplished something				
H. Bored				
I. Proud because someone complimented you on something you had done				
J. So restless you couldn't sit long in a chair				
K. That you had more things to do than you could get done				
L. Vaguely uneasy about something without knowing why				
	(1)	(2)	(3)	(4)