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**Coping With Hemodialysis: Cognitive Appraisals, Coping Behaviors, Spiritual Well-Being, Assertiveness, And Family Adaptability And Cohesion As Correlates Of Adjustment**

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COPING WITH HEMODIALYSIS: COGNITIVE APPRAISALS, COPING BEHAVIORS,  
SPIRITUAL WELL-BEING, ASSERTIVENESS, AND FAMILY ADAPTABILITY  
AND COHESION AS CORRELATES OF ADJUSTMENT

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A Dissertation  
Presented to the Faculty of  
Western Conservative Baptist Seminary  
Portland, Oregon

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In Partial Fulfillment  
of the Requirements of the Degree  
Doctor of Philosophy  
(Clinical Psychology)  
Under the Supervision of Dr. Earl D. Wilson

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by  
Clark Daniel Campbell

May 23, 1983

This dissertation, written by Clark D. Campbell, under the direction of the Chairman of the candidate's Guidance Committee and approved by all members of the Committee, has been presented to and accepted by the Faculty of the Western Conservative Baptist Seminary in partial fulfillment of the requirements for the degree of Doctor of Philosophy (Clinical Psychology).

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## DEDICATION

This dissertation is dedicated to three men: my grandfather, Dr. John Houser, for the sense of rootedness he provided; my father, Rev. Roy Campbell, for his patience and encouragement; and my brother, Rev. Mark Campbell, for his concern and companionship. Their belief in me and faith in Jesus Christ have greatly influenced my growth and development as a person.

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C.D.C.

## TABLE OF CONTENTS

	Page
DEDICATION . . . . .	ii
ACKNOWLEDGEMENTS . . . . .	iii
LIST OF TABLES . . . . .	viii
LIST OF FIGURES. . . . .	x
ABSTRACT . . . . .	xi
Chapter	
I. INTRODUCTION . . . . .	1
Research Questions . . . . .	4
Purpose. . . . .	4
Rationale. . . . .	5
Definitions. . . . .	8
Hypotheses . . . . .	11
Limitations of the Study . . . . .	14
Organization of the Report . . . . .	15
II. REVIEW OF THE LITERATURE . . . . .	17
Coping Theories. . . . .	17
Coping with Renal Failure. . . . .	36
Spirituality and Coping with Renal Failure . . . . .	58
Summary. . . . .	62
III. METHOD . . . . .	64

Chapter	Page
Subjects . . . . .	64
Instrumentation. . . . .	65
Measures of Adjustment . . . . .	72
Procedure. . . . .	74
Data Analysis. . . . .	75
Summary. . . . .	76
IV. RESULTS. . . . .	79
Adjustment Measures. . . . .	79
Demographic Data . . . . .	81
Cognitive Appraisals . . . . .	86
Coping Behaviors . . . . .	93
Spiritual Well-being . . . . .	106
Assertiveness. . . . .	106
Family Adaptability and Cohesion . . . . .	111
Summary. . . . .	119
V. DISCUSSION . . . . .	122
Interpretation and Implications of the Results . . . . .	122
Summary. . . . .	150
Recommendations for Further Research . . . . .	157
Conclusion . . . . .	159
APPENDIX A. . . . .	161
APPENDIX B. . . . .	163
APPENDIX C. . . . .	166
APPENDIX D. . . . .	168



	Page
APPENDIX E. . . . .	170
APPENDIX F. . . . .	174
APPENDIX G. . . . .	178
APPENDIX H. . . . .	180
APPENDIX I. . . . .	182
REFERENCE NOTES . . . . .	184
REFERENCES. . . . .	185

## LIST OF TABLES

Table	Page
1. Summary of Statistics Used to Test Hypotheses. . . . .	77
2. Intercorrelations of Adjustment Measures . . . . .	80
3. Intercorrelations of Adjustment Measures Without CWT. . . .	82
4. Frequency of Primary Appraisal Endorsement by Subject Adjustment . . . . .	87
5. Observed Versus Expected Percentage Endorsement of Primary Appraisals . . . . .	89
6. Frequency of Secondary Appraisal Endorsement by Subject Adjustment . . . . .	90
7. Observed Versus Expected Percentage Endorsement of Secondary Appraisals . . . . .	91
8. Frequency of Primary Appraisal Endorsement by Length of Time Using Hemodialysis. . . . .	94
9. Means and Standard Deviations of the Coping Scales . . . . .	96
10. Intercorrelations Between Coping Scales. . . . .	97
11. Correlations Between Coping Scales and Adjustment. . . . .	98
12. Coping Behaviors and Subject Adjustment. . . . .	100
13. Coping Behaviors and Length of Time Using Hemodialysis . . .	102
14. Correlations Between Coping Scales and Length of Time Using Hemodialysis . . . . .	103
15. Means of the Eight Coping Scales for the Total Sample. . . .	105
16. Sequential Multiple Regression Analysis for Adjustment . . .	110
17. F Test for Curvilinear Regression for Family Adaptability and Adjustment . . . . .	113
18. Observed Versus Expected Percentage Scores on Family Adaptability . . . . .	114

Table		Page
19.	F Test for Curvilinear Regression for Family Cohesion and Adjustment . . . . .	117
20.	Observed Versus Expected Percentage Scores on Family Cohesion . . . . .	118

## LIST OF FIGURES

Figure	Page
1. Moos' conceptual model of coping with physical illness (Moos and Tsu, 1977). . . . .	6
2. Integration of Moos' and Lazarus' models. . . . .	9
3. Relationship of dependent variables to the integrated Moos and Lazarus model . . . . .	37

## ABSTRACT

Twenty-eight patients with renal failure who were receiving hemodialysis at a private hemodialysis center volunteered as subjects for this study. A global adjustment score was formulated for each subject by averaging their scores on three instruments: Linkowski Acceptance of Disability Scale, Productive Use of Time, and the Beck Depression Inventory. A Compliance With Treatment questionnaire was originally designed to be part of the global adjustment scores. However, it did not correlate with the other adjustment measures, and therefore was not incorporated into the global adjustment scores. Adjustment scores were then compared or related to demographic variables, cognitive appraisals, coping behaviors, assertiveness, spiritual well-being, and family adaptability and cohesion.

A significant difference was found between well-adjusted and poorly adjusted subjects according to marital status and education. More well-adjusted subjects were married and had more years of education than poorly adjusted subjects.

Although the distributions of well-adjusted and poorly adjusted subjects did not differ according to primary and secondary cognitive appraisals, the distributions of these appraisals for the total sample were different than expected by chance. Generally, the subjects appraised hemodialysis as distressing and something that had to be accepted.

As a total group the subjects did not use more emotion-focused

coping than problem-focused coping. Well-adjusted and poorly adjusted subjects were compared on their utilization of eight coping behaviors, and no differences were found. Short-term and long-term hemodialysis users were also compared on their utilization of eight coping behaviors, and no differences were found. Although religious coping behavior was frequently utilized, it was not used as much as the average of the other coping behaviors assessed.

A positive correlation was found between spiritual well-being and adjustment. Similarly, a positive correlation was found between assertiveness and adjustment. A multiple regression of spiritual well-being and assertiveness on adjustment indicated that spiritual well-being could predict adjustment with a moderate degree of confidence.

It was shown that assertive subjects using hemodialysis longer than six months were better adjusted than assertive subjects using hemodialysis less than six months. Assertive subjects also became better adjusted over time on hemodialysis, whereas non-assertive subjects became less adjusted over time on hemodialysis.

Although a predicted curvilinear relationship between family adaptability and adjustment was not found, the subjects perceived their families as having little capacity to constructively deal with stress but rather as becoming chaotic or rigid in response to stress. Although a predicted curvilinear relationship between family cohesion and adjustment was not found, the subjects perceived their families as being emotionally distant or intensely emotionally bonded but not in between these extremes.

A variety of other non-predicted findings were also reported and discussed in terms of the previous research on the psychological

adjustment of patients to hemodialysis. Predicted and non-predicted findings were discussed in both theoretical and practical terms.

## CHAPTER ONE

### INTRODUCTION

Innovative technology has allowed the field of medicine to expand greatly in the last 50 years. Physicians are now able to employ highly sophisticated diagnostic and therapeutic techniques to alleviate much pain and suffering. Infectious diseases are nearly controlled and acute illnesses are treated very aggressively (Rachman and Phillips, 1980). Chronic disorders, however, have not been controlled by the new technology. While the percentage of deaths from infectious disease has declined greatly in the last 50 years, the percentage of deaths due to chronic disease has risen (Glazier, 1973).

Modern medicine seems to have made tremendous advances in its attempt to control acute illnesses; however, chronic illnesses such as cancer, renal failure, and coronary disease remain predominately uncontrolled. Perhaps one of the reasons why modern medicine is unable to control chronic illnesses or disorders is because it operates on a medical model of health, illness, and treatment. While the medical model may be appropriate for conceptualizing and treating acute disorders, it may be inappropriate for conceptualizing and treating chronic disorders.

Many allied health professionals believe that the educational model of health, illness, and treatment is more appropriate for chronic disorders and they are currently designing treatment and prevention programs based on this model (Masek, Epstein, and Russo, 1981; Trieschmann,



1980). The use of an educational model for the treatment of chronic physical illnesses has also given rise to several relatively new professions such as health psychology, behavioral medicine, and rehabilitation psychology (Million, Green, and Meahger, 1982). In fact, Fox (1982) has recently called for a reorientation of clinical psychology to incorporate these areas.

One of the main thrusts within these disciplines is to help patients learn to cope effectively with their chronic disorders (Stone, 1979). However, while the need for patients to learn to cope more effectively with their disorders is evident, the research on coping has been lacking. Thus, the need for effective coping is great and the potential for psychology to offer more in this area is developing, but so far the research has lagged behind the need.

The research on coping that has been produced has generally been inadequate both theoretically and practically. Theoretically, the research on coping has been inadequate in four ways. First, the early research in particular has a defense mechanism bias (e.g., Haan, 1977; and Vaillant, 1971). This formulation of coping tends to view any coping process as a defense against the disorganization of the ego. Thus, active attempts to problem-solve around issues are subordinated to tension-reduction attempts as a means of preserving the ego (Folkman and Lazarus, 1980). Second, research in the 1960's and 1970's tended to focus on coping personality traits to the exclusion of recognizing that people may cope differently in different situations. An example of this view is the development of the Repression-Sensitization Scale by Byrne (1964). Third, some approaches to coping have merely looked at cognitive styles (e.g., active or passive) in specific situations

and labelled these as coping (e.g., Shanan, De-Nour, and Garty, 1976). These approaches are not based on a general coping theory and therefore also lack a theoretical framework. Fourth, the research on coping skills interventions is also inadequate because of its general rather than specific nature. Some of the writings of the cognitive-behavioral therapists suggest a wholesale or generalized approach to teaching people coping skills, rather than emphasizing an individual, situation-specific approach (e.g., Mahoney, 1977).

Most of the research on coping has also been inadequate from a practical standpoint. Many of the approaches to teaching people coping skills are inadequate because they discourage people from using presumably "maladaptive" coping skills such as denial or passivity. Research has shown that denial can be an effective and life-saving coping skill (Gentry, Foster, and Harvey, 1972).

Coping research on chronic illness is also inadequate practically because the coping strategies suggested cannot be implemented by non-professional practitioners. Nurses and therapists are left in a quandry as to how to help a patient who uses "intellectualization" and "reaction formation" as defense mechanisms. These terms need to be defined in such a way as to give practitioners information about what the patient actually reports thinking or does behaviorally so that the practitioners in turn can be more helpful to the patient.

One chronic illness which the coping literature has addressed is renal failure. However, the literature has been both minimal and inadequate for the above reasons. This is unfortunate because the quality of life for renal failure patients is generally altered greatly as a result of the stresses induced by the illness and treatment

(hemodialysis). Some of the stresses that these patients face are: dependency on hemodialysis two or three times per week for several hours for survival (Shea, Bogdan, Freeman, and Schreiner, 1965); depression (Lefbvre, Norbert, and Cromby, 1972); sexual problems (Levy, 1973); family problems (Short and Wilson, 1969); dietary restrictions (De-Nour and Czaczkes, 1972); painful medical procedures (Tucker, Mulkerne, and Ziller, 1982); fatigue (Tucker, et. al., 1982).

### Research Questions

The following questions remain unanswered in the coping literature concerning how patients with chronic renal failure deal with hemodialysis. Do well-adjusted renal failure patients utilize different coping behaviors than poorly adjusted patients in adapting to hemodialysis? Do well-adjusted and poorly adjusted hemodialysis patients differ in terms of family adaptability and cohesion, spiritual well-being, and assertiveness?

### Purpose

The purpose of this investigation is to answer these questions in a way that will have both theoretical and practical value. Theoretically, the purpose of this project is to investigate some important ways in which well-adjusted hemodialysis patients differ from poorly adjusted hemodialysis patients. If these patients differ in their coping behaviors, and this difference is due in part to the ways in which they appraise their situation, then support will be added to the applicability of Richard Lazarus' cognitive-phenomenological model of coping. Theoretical support will also be given to Rudolf Moos' conceptual model of coping with physical illness if personal background factors such as family adaptability and cohesion, spiritual well-being and assertiveness

affect adjustment to hemodialysis.

Practically, the purpose of this investigation is two-fold. First, it is hoped that the results of this project will yield practical suggestions that help practitioners who deal with hemodialysis patients become better helpers. Second, it is hoped that this investigation will lay the groundwork for another research project which could be designed to intervene with these patients in ways to help them cope better with their illness and treatment. This project cannot be undertaken, however, until more is understood about how well-adjusted and poorly adjusted hemodialysis patients cope with the stresses of their illness and treatment.

### Rationale

The rationale for this investigation is based on Moos' model of coping with physical illness and Lazarus' cognitive-phenomenological coping model. A diagram of the model developed by Moos and Tsu (1977) is presented in Figure 1.

Moos and Tsu (1977) believe that the ultimate outcome of an illness or the way one adjusts to an illness is based on several factors. Background and personal factors, illness-related factors, and physical and social environmental factors all impact on the way a person appraises an illness. The cognitive appraisal or perceived meaning of an illness will lead to the necessary adaptive tasks and coping skills necessary to effectively adjust to the illness. They also believe that all patients have seven adaptive tasks with which to deal. These are: dealing with pain and incapacitation; dealing with the hospital environment and special treatment procedures; developing adequate relationships with professional staff; preserving a reasonable emotional balance; preserving a satisfactory self-image; preserving relationships with family and

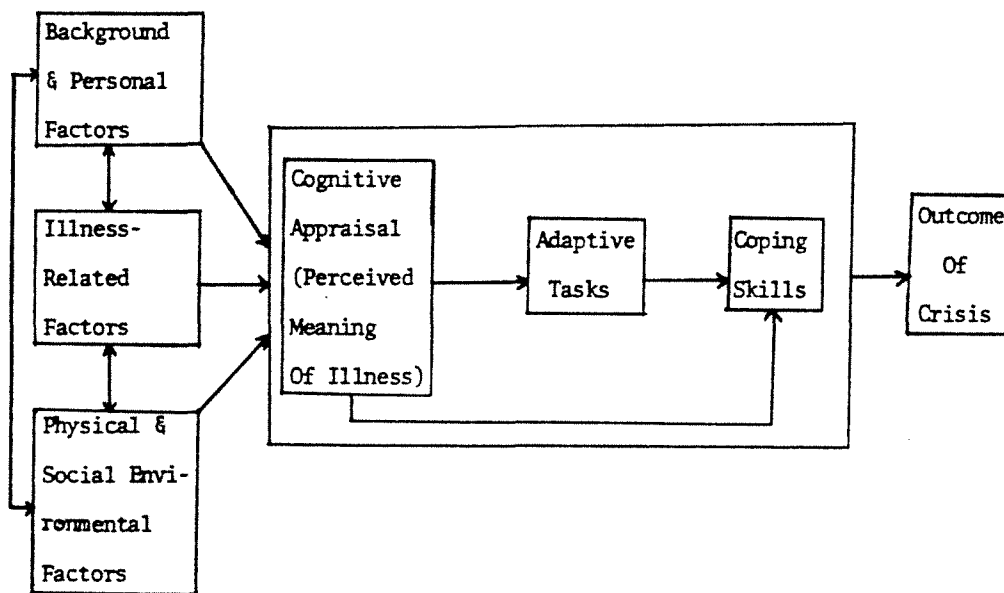


Figure 1. Moos' conceptual model of coping with physical illness  
(Moos and Tsu, 1977).

friends; and preparing for an uncertain future.

As can be ascertained from Moos' model, coping with a physical illness involves many variables. Not all of these variables will be investigated in the present study. Rather, an emphasis will be placed on personal and background factors, cognitive appraisals, and coping skills in this study.

Lazarus and his colleagues (Lazarus, 1966; 1974; Lazarus, Averill, and Opton, 1970; Cohen and Lazarus, 1979; Coyne and Lazarus, 1980; Lazarus and Launier, 1978) propose a Cognitive-Phenomenological model of coping. This model suggests that the person and the environment are transactionally related such that,

the person and the environment are seen in an ongoing relationship of reciprocal action, each affecting and in turn being affected by the other (Folkman and Lazarus, 1980, p. 223).

The cornerstone of this transactional approach between person and environment is the person's cognitive appraisal process. The coping behavior that a person utilizes in the face of a stressful situation depends upon his/her cognitive appraisals of the situation and resources available. When an individual encounters a stressful situation he/she makes a primary appraisal of the situation which answers the question, "What is at stake?" This appraisal can receive an irrelevant (no personal significance), a benign-positive (beneficial or desirable) or a stressful (negative evaluation) response. The individual also makes a secondary appraisal which answers the question, "Do I have the resources available to deal with this situation?" A secondary appraisal is usually shaped by the ambiguity of the situation, the degree of conflict in it, and the degree to which the person feels helpless. Secondary appraisal is similar to what Bandura (1977) calls an efficacy expectation. Finally, a

reappraisal is made which gives the individual feedback on his/her judgments and actions.

The appraisal process is the key to Lazarus' coping model because it directly influences the coping behaviors that people use in stressful situations. People primarily engage in two modes of coping behaviors--problem-focused and emotion-focused. Problem-focused coping is demonstrated when people take direct actions to deal with their stressful situation. Emotion-focused coping is demonstrated when people attempt to deal with the emotions resulting from a stressful situation rather than with the situation directly. People generally utilize both modes of coping in any given situation. Specific coping behaviors tend to be associated with these two modes of coping and indicate what a person does to deal with a particular situation (Coyne, Aldwin, and Lazarus, 1981). These coping behaviors are: problem-focused, wishful thinking, mixed, growth, minimizes threat, seek emotional support, and blames self.

While Lazarus (1974) emphasizes the cognitive appraisal factors, Moos (1976) tends to emphasize the social and environmental factors in the coping process; yet in many respects their models are similar. Lazarus' model actually fits quite nicely into the center of Moos' model and together they form the conceptual rationale of this investigation. A diagram of the integrated Moos and Lazarus models is presented in Figure 2.

### Definitions

Adjustment--Adjustment is determined by a global score which is the mean of percentage scores from four questionnaires completed by each patient or the head nurse.

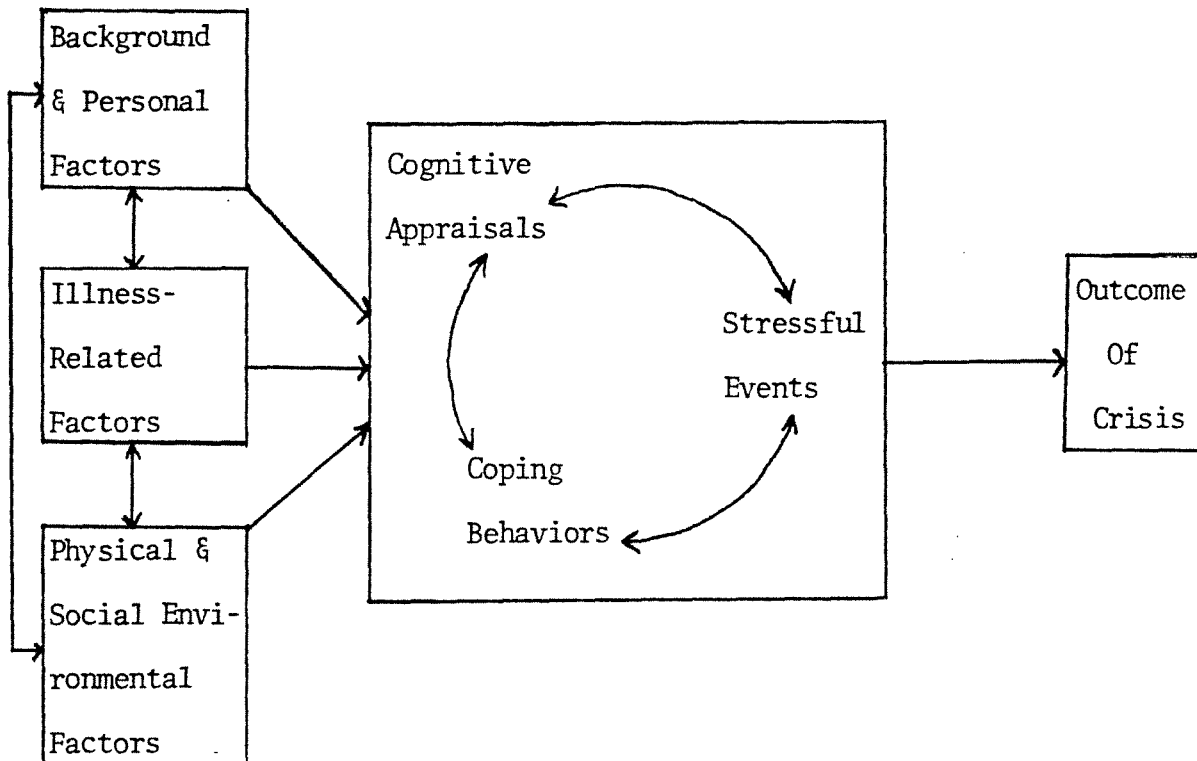


Figure 2. Integration of Moos' and Lazarus' models.



Assertiveness--"Behavior directed toward reaching some desired goal which continues in the direction of that goal in spite of obstacles in the environment or the obstacles of others" (Mauger and Adkinson, 1970, p. 9).

Coping--"Efforts, both action-oriented and intrapsychic, to manage (i.e. master, tolerate, reduce, minimize) environmental and internal demands, and conflicts among them, which tax or exceed a person's resources" (Lazarus and Launier, 1978, p. 311).

Coping behaviors--Coping behaviors are equal to the eight scales of the Ways of Coping Checklist, and are determined by the patients' scores on each of these eight scales.

Family adaptability--"The ability of a marital or family system to change its power structure, role relationships, and relationship rules in response to situational or developmental stress" (Olson, McCubbin, Barnes, Larson, Muxen, and Wilson, 1981, p. 5).

Family cohesion--"The emotional bonding that family members have toward one another" (Olson, et. al., 1982, p. 5).

Hemodialysis--"Removal of chemical substances from the blood by passing it through tubes made of semi-permeable memberanes. The tubes are continually bathed by solutions which selectively remove unwanted material" (Thomas, 1981, p. 643).

Primary appraisal--An evaluation of the significance of an event for one's well-being.

Renal--Of or pertaining to the kidneys.

Secondary appraisal--An evaluation of the coping resources and options available in a given situation.

Spiritual well-being--"Having one vertical dimension (connoting one's perception of relationship to God) and one horizontal dimension connoting one's perception of life meaning or purpose, or satisfaction with one's existence)" (Paloutzian and Ellison, Note 1, p. 1).

### Hypotheses

H<sub>1</sub>: There will be a significant difference between well-adjusted and poorly adjusted subjects in the distributions of the primary appraisals that they endorse.

Rationale for H<sub>1</sub>: According to the Cognitive-Phenomenological Model of Coping, people who adapt well to a stressful situation appraise the situation differently than those who adapt poorly in terms of what is at stake for them in the stressful situation.

H<sub>2</sub>: There will be a significant difference between well-adjusted and poorly adjusted subjects in the distributions of the secondary appraisals that they endorse.

Rationale for H<sub>2</sub>: According to the Cognitive-Phenomenological Model of Coping, people who adapt well to a stressful situation appraise the situation differently than those who adapt poorly in terms of having the resources available to effectively deal with the stressful situation.

H<sub>3</sub> There will be significantly more emotion-focused coping than problem-focused coping utilized by all subjects.

Rationale for H<sub>3</sub>: Folkman and Lazarus (1980) found that people have a tendency to utilize emotion-focused coping in the context of health problems.

H<sub>4</sub>: There will be significant differences between well-adjusted and poorly adjusted subjects in the means of eight coping behaviors that they utilize.

Rationale for H<sub>4</sub>: Cohen and Lazarus (1979) and Moos and Tsu (1977) state that the way an individual copes with the demands of chronic illness can be an important determinant of the course of the illness.

H<sub>5</sub>: There will be significant differences between the means of eight coping behaviors utilized by subjects receiving hemodialysis for zero to six months, seven to twelve months, and one year or longer.

Rationale for H<sub>5</sub>: Reichsman and Levy (1972) found that hemodialysis patients move through three stages of adaptation. The "Honeymoon" stage lasts from one week to six months after the initiation of hemodialysis; a stage of "disenchantment and discouragement" lasts from about six months to twelve months; and finally a stage of "long-term adaptation" begins at about one year after the initiation of hemodialysis. This hypothesis will determine whether coping behaviors are related to stages of adaptation.

H<sub>6</sub>: The mean religious coping behavior score for the entire sample will be greater than the average of the other seven coping behavior means for the entire sample.

Rationale for H<sub>6</sub>: Garvin, Hollandsworth, and Gersch (1982) found

that being prayed for, praying, and being in church were the three most reinforcing activities for hemodialysis patients. This hypothesis will determine whether these patients also utilize religious coping.

H<sub>7</sub>: There will be a positive relationship between spiritual well-being and adjustment.

Rationale for H<sub>7</sub>: Since Garvin, et. al. (1982) found that religious activities are reinforcing for hemodialysis patients, it can be inferred that their desire for religious or spiritual well-being would be high. Paloutzian and Ellison (Note 1) also describe spiritual well-being as an indicator of quality of life, thus it would be related to adjustment.

H<sub>8</sub>: There will be a positive relationship between assertiveness and adjustment.

Rationale for H<sub>8</sub>: If hemodialysis presents some obstacles to patients, then assertiveness, as the definition suggests, should be a helpful quality that allows patients to continue striving for adjustment in spite of their stressful situation.

H<sub>9</sub>: The mean adjustment score of assertive subjects receiving hemodialysis longer than six months will be significantly greater than the mean adjustment score of those assertive subjects receiving hemodialysis less than six months.

Rationale for H<sub>9</sub>: Anderson (1975) suggests that non-assertive patients will adjust better to the initial phase of hemodialysis (zero to six months), and that assertive patients will adjust better to long-term hemodialysis (more than six months). This suggestion, however,

has never been empirically tested, and this hypothesis is an attempt to do so.

H<sub>10</sub>: There will be a curvilinear relationship between family adaptability and adjustment.

Rationale for H<sub>10</sub>: Sprenkle and Olson (1978) demonstrated that family adaptability was related to marital functioning in a curvilinear fashion: A moderate amount of family adaptability was positively correlated with good marital functioning, and extreme amounts of family adaptability were negatively correlated with good marital functioning. This hypothesis is an attempt to relate moderate family adaptability to healthy adjustment, and extreme amounts of family adaptability to poor adjustment.

H<sub>11</sub>: There will be a curvilinear relationship between family cohesion and adjustment.

Rationale for H<sub>11</sub>: Russell (1979) demonstrated that family cohesion was related to family functioning in a curvilinear fashion: A moderate amount of family cohesion was positively correlated with good family functioning, and extreme amounts of family cohesion were negatively correlated with good family functioning. This hypothesis is an attempt to relate moderate family cohesion to healthy adjustment, and extreme amounts of family cohesion to poor adjustment.

#### Limitations of the Study

This study, which is primarily an investigation into some of the psychological processes believed to be involved in adjusting to hemo-

hemodialysis, has several limitations. These are:

1. The moderate size of the sample raises some concerns about the ability of this study to make meaningful statements about the larger population of hemodialysis patients.
2. All of the patients in this study come from a privately operated hemodialysis center. It is likely that this center does not take indigent patients in need of hemodialysis, nor does it operate like a hospital-based hemodialysis center which is more likely to take acute or seriously ill patients. Therefore, the results of this study are not generalizable to all hemodialysis patients, but does have relevance to most hemodialysis patients.
3. Since this investigation emphasizes breadth rather than depth, it is not likely that definitive statements can be made about the psychological functioning of these patients. Rather, broad and general statements can be made which will hopefully encourage further research in these areas.
4. The design of this study is correlational rather than experimental, and thus only inferences can be made about the causes of the findings.

#### Organization of the Report

This report will have five chapters. The first and present chapter is an introduction and presentation of the hypotheses to be tested. Chapter Two is a presentation of the research literature relevant to coping theories and hemodialysis. Chapter Three presents a description of the sample to be studied. It also offers information on the tests and instruments used in the investigation, the procedure followed, and the research designs used to statistically analyze the data. Chapter Four is a presentation of the statistical analyses and results of the

investigation. Chapter Five presents a discussion of the results and offers suggestions for further research.

## CHAPTER TWO

### REVIEW OF THE LITERATURE

In this chapter a broad overview of the available research literature relevant to coping with hemodialysis will be presented. Due to the comprehensive nature of this study, a thorough review of the literature is given. This review, however, is not an attempt to review every book and article available on the subject, since a review of that magnitude would be mammoth. The review of research literature is presented in three sections in this chapter: coping theories, coping with renal failure, and spirituality and coping.

The first section will be a presentation of various psychological coping theories and their strengths and weaknesses. Coping theory as applied to physical illness will also be addressed in the first section of this chapter. The second section of this chapter will present a review of the literature on the psychological complications of hemodialysis and the psychological factors involved in adjusting to hemodialysis. The third section of this chapter will be a presentation of some biblical data and its relevance to coping processes.

#### Coping Theories

Coping has, by definition always been related to the psychological concept of stress. Since coping implies a referent it is practically meaningless to speak of it apart from one. Thus, one must ask "coping with what?...under what circumstances?" to understand the stressful



context of coping. Coping and stress, however, are relatively new terms to the psychological literature. They have developed out of more traditional psychological concepts such as defense and threat. Most psychological theorists, whether they favor the term defense or coping, agree that threat is the phenomenon that arouses these mechanisms. Lazarus (1966, p. 83) states that threat is the key intervening variable in the analysis of psychological stress. Thus, threat is the psychological phenomenon that influences coping or defensive behavior in stressful contexts.

#### Four Theories of Coping

As stated above, the concepts of coping, defense, stress, and threat have been used in different ways in different theories of coping. The early psychological formulations of coping are found in the psychodynamic theories of the early 1900's. These theories emphasized the concepts of threat and defense. Threat was viewed almost entirely as an internal rather than an environmental phenomena, and defense mechanisms were viewed as internal protective emotional strategies rather than behavioral coping strategies.

Anna Freud (1946), Menninger (1954), and Haan (1969) represent variations of this view. They each classify coping endeavors as defensive functioning of the ego. Freud gives a description and analysis of various defense mechanisms. Menninger arranges coping endeavors on a continuum from least to most pathological. Haan offers a tripartite model of coping, and in a more recent book (Haan, 1977), evaluates ego processes according to their adherence to objective reality as indicating ego-failure, defense, or coping. These formulations are inadequate because they fail to account for adaptive coping behaviors to environmental demands, and instead

emphasize pathological defensive responses to internal threats possibly triggered by external demands.

Folkman and Lazarus (1980) aptly point out three deficits in these formulations. First, coping process is confused with adaptational outcome, so that the definition and description of a coping process hinges on the adaptational outcome it yields. Second, there is a great amount of subjectivity in evaluating the defense mechanisms that a person uses. Folkman and Lazarus (1980) write, "Adequate interrater reliability in assigning ego processes is difficult to attain" (p. 220). Third, these formulations emphasize tension-reduction as the goal of defensive functioning to the exclusion of active problem-solving behaviors.

A second psychological formulation of coping came from investigators who were interested in finding normative rules that explained the way people coped with environmental and internal demands. Most of this research has dealt with severely stressful events such as death (Kubler-Ross, 1969), bereavement (Parkes, 1972), and natural disasters (Lucas, 1969). These researchers investigated normative responses to stressful events and sometimes developed stages of coping responses. This is different than the psychodynamic theories which mainly emphasized pathological rather than normative responses. This formulation of coping has pointed out that coping often changes with time, and therefore is not always a consistent response to a threatening situation.

A variation of this position was developed by the trait theorists, who were interested in coping dispositions. For example, Byrne (1964) developed the repression-sensitization coping scale. This scale measures a person's tendency to repress or become threatened in the face of a stressful situation. Other dispositional approaches to coping have been

researched also.

There are three general inadequacies with this formulation of coping. First, any theory which emphasizes stages generally deemphasizes individual differences. Perhaps this is because these are two different levels of analysis. Stages of coping seem to be analyzed at a nomothetic level and individual differences at an idiographic level. The stage theories of coping do not account for individual differences assessed at the idiographic level. Second, threat measures, such as the repression-sensitization scale, are generally inadequate predictors of actual coping behavior (Magnusson and Endler, 1977 in Billings and Moos, 1980). Third, this formulation of coping, like the psychodynamic formulations, tends to ignore the impact of the situation of the individual. This formulation, rather, stresses the dispositions of the individual.

A third psychological approach to the investigation of coping has come from the behaviorists. To the author's knowledge there has not been a formal attempt to formulate a strictly behavioral coping theory. However, elements of a behavioral approach to coping can be inferred from the many volumes written on behavior theory and therapy. Behaviorists seem to view coping behavior as a response (either adaptive or non-adaptive) to a stressful stimulus. Whereas the psychodynamic theorists emphasized the internal demands (threats) and the intrapsychic processes that dealt with them (defenses), the behaviorists have emphasized the environmental demands (stressors) and the action-oriented processes (coping behaviors) that dealt with them.

Behaviorists choose not to explore mental events, but rather interpret all psychological phenomena in behavioral terms. For example, rape victims frequently have difficulty adjusting to routine activities after the

traumatic event. Whereas, psychodynamic therapists would view these adjustment problems as probably stemming from repression, behaviorists would simply view these women as engaging in avoidant behavior (Becker and Able, 1981). The coping behavior of an individual depends upon the particular threat variables within the environment and the coping history of the individual.

A behavioral approach to coping seems to have two inadequacies. First, a behavioral formulation of coping is inadequate because it emphasizes the coping situation to the exclusion of the personal and dispositional variables of the individual. Second, individual differences in similar coping situations point out the inadequacies of an S-R (stimulus-response) approach to coping. Lazarus (1981) writes, "The traditional linear S-R perspective could not be made to work well enough to produce usable rules whereby stress and performance were linked, especially in natural settings" (P. 178). This led Lazarus to view individual differences as the mediators of reactions to stressful events.

The fourth and most recent approach to the investigation of coping has come from the cognitive/behavioral theorists. In this formulation coping is viewed as a mediating variable between a stressful event and an outcome or response, and not as the response itself as the behaviorists believe. Whereas the behavioral formulation of coping excluded the mental processes of the individual, the cognitive/behavioral approach incorporates them. Lazarus (1966; 1981) and Lazarus, Averill, and Opton (1974) have demonstrated the necessity of viewing coping as a complex phenomena that mediates a stressful event and an adaptational outcome. The result of this research has been to regard people as active agents in the coping process. A person's coping behaviors shape his/her adaptational response

as well as the perceived magnitude of the stressful stimulus.

Many cognitive/behavioral theorists (e.g. Meichenbaum, 1971; Goldfried, 1971; and Mahoney, 1977) have applied this view of coping to various treatment programs. They tend to advocate the application of problem-solving or coping skills training approaches to a broad range of psychological disorders. Their emphasis has been to help people behave and think differently in stressful situations, with the assumption that this will cause a more adaptational response (e.g. improved feelings).

The cognitive/behavioral approach to coping is superior to the psychodynamic, trait or stage, and behavioral approaches to coping in that it incorporates both dispositional and situational determinants of coping. Internal and environmental threats and resources are also accounted for in the cognitive/behavioral approach. The chief inadequacy of this formulation is that it lacks a unified research and theoretical framework for the investigation of coping processes. Like the behavioral approach, the cognitive/behavioral approach to coping is fragmented on a theoretical level.

### The Cognitive-Phenomenological Coping Theory

Lazarus and his colleagues (1966; 1974; 1981) present a cognitive-phenomenological model of coping which clearly has been shaped by the same research that has shaped cognitive/behavioral theories. What Lazarus adds to the research literature is a theoretical framework and a unified approach to research on coping processes.

Lazarus and Launier (1978) have formulated an operational definition of coping. They write:

Coping consists of effort, both action-oriented and intrapsychic, to manage (i.e. master, tolerate, reduce, minimize)

environmental and internal demands, and conflicts among them, which tax or exceed a person's resources (p. 311).

This definition is comprehensive and contributes to the current research literature in three ways. First, inherent in the definition is the notion of threats (i.e. demands) which are subjective. The level of threat varies from individual to individual depending upon their perception and resources. Second, threat to the individual can be either internal or environmental; not just environmental as the behaviorists would have it. Third, coping can be both intrapsychic or action-oriented according to this definition. Thus, active problem-solving is an acceptable mode of coping in this formulation.

Lazarus' cognitive-phenomenological model of coping developed out of his research on stress. After reviewing several articles and books on stress and coping, he developed his coping model in a book entitled Psychological Stress and the Coping Process (1966). He aptly points out the variety of ways in which the term stress is used and the confusion that results. Many stress theorists confuse the issue when they write of stress as either an internal phenomena (e.g. Selye, 1974) or as an external phenomena (e.g. Grinker, and Spiegel, 1945). Lazarus (1966) views stress as a transactional phenomena that occurs within the person-environment relationship.

Besides clarifying some of the issues surrounding stress, Lazarus (1966) also clarifies some of the issues surrounding coping. For example, coping has long been considered defensive functioning in many psychological theories. Lazarus points out that viewing coping as defensive portrays a value judgment on the part of the evaluator regarding what he/she may see as adaptive or non-adaptive. An objective evaluation of coping processes must not include this kind of bias.

Coping processes mediate the person-environment relationship in a transactional manner. Coyne and Lazarus (1980) argue for a transactional view of stress, which is based on earlier research by Dewey and Bentley (1949).

(Dewey and Bentley, 1949, p. 108) propose three levels of organization of inquiry through which the development of knowledge and the history of science progress: self-action, where things are viewed as acting under their own power; interaction, where thing is balanced against thing is causal interaction; and transaction, where systems of description and naming are employed to deal with aspects and phases of action, without final attribution to 'elements' or other presumptively detachable or independent 'entities' (Coyne and Lazarus, 1980, p. 145).

Coyne and Lazarus (1980) continue and describe instinct theory as operating at the self-action level of inquiry. They also see current structural models of stress at an interactional level because they generally attempt to identify environmental stressors or dispositional properties of persons.

The transactional approach to stress views the person-environment relationship as constantly changing. Therefore, when researchers assess coping processes they are simply taking a "slice" of the subject's relationship with the environment. As stated in the first chapter, the cornerstone of the transactional approach to coping is the individual's cognitive appraisal processes. Coyne and Holroyd (1982) write,

Stress is thus neither an environmental stimulus, a characteristic of the person, nor a response, but a relationship between demands and the power to deal with them without unreasonable or destructive costs. Ongoing commerce between person and environment are viewed in terms of their reciprocal action, with each affecting and in turn being affected by the other. Two processes mediate the person's contribution to this relationship: appraisal and coping (p. 108).

The coping behavior that individuals utilize in the face of a stressful situation depends upon their cognitive appraisals of the situation and

their coping resources available.

Lazarus (1966) proposes two cognitive appraisals which an individual makes in a potentially threatening situation: primary and secondary. When an individual encounters a threatening situation he/she makes a primary appraisal of the situation which answers the question, "What is at stake?" Basically, this is an evaluation of potential threat or harm in a situation. A primary appraisal can receive a response of irrelevant (no personal significance), benign-positive (beneficial or desirable), or stressful (a negative evaluation). The way in which an individual responds or copes with a threatening situation is determined partially by the primary appraisal process that occurs in the situation.

There are certain variables both within the individual and the stimulus that contribute to an individual's primary appraisal of the potentially threatening situation. Lazarus (1966) presents three personality factors that contribute to an individual's primary appraisal. These are: motivational characteristics, belief systems concerning transactions with the environment, intellectual resources, education and sophistication. Motivational characteristics affect an individual's primary appraisal to the extent to which they affect the individual's goals. Thus, one will be more motivated in a situation in which one believes that his/her goals may be thwarted. Hemodialysis patients whose occupational, educational, and relationship goals are sometimes strongly affected by the increased possibility of death, may be motivated differently depending on their goals in these areas.

Belief systems about an individual's transactions with the environment also affect the primary appraisal an individual makes in a situation. For example, beliefs about one's occupation, education, relationships,



quality of life, and death may affect the way a hemodialysis patient appraises many of the difficulties involved in the treatment process. Religious beliefs and spiritual well-being may also strongly affect an individual's primary appraisal of threat when faced with renal failure.

Intellectual resources, education, and sophistication also affect the primary appraisal an individual makes in a situation. Lazarus (1966) suggests that an individual's lack of intellectual resources should increase the prospects of the individual making an incorrect appraisal of the situation. For example, it is possible for an individual to assess no threat at a time of apparent increased threat simply because he/she does not have sophisticated intellectual resources. It is also conceivable that having less sophistication and intellectual resources may actually be beneficial to the individual's adaptation to certain phases of threatening situations (e.g. life-threatening surgery).

Just as Lazarus (1966) suggested three personality factors affecting primary appraisal, he also suggested three stimulus factors that affect primary appraisals. These are: the balance of power between the harm-producing stimulus and the counterharm resources, the imminence of the anticipated confrontation with harm, and the ambiguity of the stimulus cues. The balance of power between the harm-producing stimulus and the counterharm resources affects primary appraisal to the extent to which one or the other is favored. If the harm-producing stimulus is favored over the counterharm resources, then threat is increased. Likewise, if the counterharm resources are favored over the harm-producing stimulus, then threat is decreased. This factor should vary with hemodialysis patients according to the resources available to them and the severity of their illness.

The imminence of the anticipated confrontation with harm affects primary appraisals according to the temporal nearness of the confrontation. If the confrontation with harm is near, then threat increases; if temporally distant, then threat decreases. In some respects this factor should be fairly consistent for hemodialysis patients since they all live with the increased possibility of death. Some patients, however, with severe renal failure may be more threatened because of the greatly increased possibility of death.

The ambiguity of the stimulus cues increases threat if threat is already appraised. Lazarus (1966) writes, "Ambiguity intensifies threat because it limits the individual's sense of control over the danger, thus increasing his sense of helplessness" (p. 119). Most medical disorders, such as renal failure, seem to elicit a sense of harm and therefore threat. Like other medical disorders, renal failure can also produce a high degree of ambiguity (e.g. ambiguity about the diagnosis, prognosis, functional limitations, and medical terms). Therefore, the degree of threat for hemodialysis patients should be increased because of the heightened ambiguity.

None of the six personality or stimulus factors listed above will be directly assessed in the present research. Rather, one general assessment of primary appraisal will be made regarding hemodialysis patients' confrontation with the difficulties of their illness and treatment (i.e. hemodialysis). H<sub>1</sub> states that there will be a significant difference between well-adjusted and poorly adjusted patients in the distributions of the primary appraisals that they endorse. It is the author's assumption that many of the six factors that affect primary appraisals also affect adjustment to hemodialysis. For example, it is

conceivable that adjustment will be affected by such factors as motivational characteristics, belief systems, intellectual resources, and counterharm resources. Thus, well-adjusted and poorly adjusted patients should differ in their primary appraisals, and this difference should be theoretically attributable to some of the six factors that affect primary appraisals.

The other cognitive appraisal that an individual makes in a potentially threatening situation is called a secondary appraisal. While primary appraisal is concerned about impending harm and what is at stake for the individual in the situation, secondary appraisal is concerned with the outcome or consequences of coping actions. Thus, secondary appraisal answers the question, "Do I have the resources available to deal with this situation?" As with primary appraisals, there are both personality and stimulus factors that affect an individual's secondary appraisal.

Lazarus (1966) presents three personality factors that can affect the secondary appraisal process. These are: pattern of motivation, defensive dispositions, and general beliefs about the environment and one's resources. An individual's motives can affect secondary appraisal because they determine which types of behavior may pose additional threats. A person's motives, then, rule out certain coping responses because of the additional burden they may cause. Thus, motives could strongly affect a hemodialysis patient's utilization of aggression or passivity as opposed to assertiveness in particular situations.

Defensive dispositions affect secondary appraisal processes by predisposing the individual to particular types of coping responses. Numerous traits have been correlated to particular defending behaviors

such as a tendency to avoid versus coping, or utilize repression versus sensitization. These traits appear to have correlational value, but poor predictive value. Like the pattern of motivation, defensive dispositions tend to rule out certain coping responses that the individual can make.

General beliefs about the environment and one's resources for coping also affect the secondary appraisal process in the same manner as motives and defensive dispositions. An individual's moral beliefs, religious beliefs, and beliefs about what may be effective or ineffective can all effect the types of coping responses he/she makes.

Lazarus (1966) also suggests a fourth factor that affects coping behavior directly rather than via secondary appraisal. He lists ego resources such as ego strength and impulse control as factors that can limit certain coping responses from the realm of possibility in a particular situation. He writes,

Since it (ego resources) concerns a capacity to select impulses or actions for behavioral expression, ego control should affect coping directly rather than via the process of secondary appraisal (p. 223).

In addition to personality factors that affect secondary appraisal, there are also stimulus factors that affect these processes. Lazarus (1966) presents two general stimulus factors that can affect secondary appraisal processes. The first is the degree of threat present in the stimulus factor. He writes, "As the degree of threat increases, coping will become more primitive" (p. 208). By more primitive, Lazarus implies coping that has a greater toll on the organization of the ego. At this point he appears to adopt Menninger's (1954) notion of defenses that fall on a continuum from least to most primitive. There is considerable difficulty in measuring degree of threat and "primitive coping". However, threats such as death, physical, and social losses, which are common among

hemodialysis patients, would be considered severe threats by most authorities. Thus, it could be expected that these patients would engage in more primitive coping behaviors such as loss of control, denial, and delusions.

The second stimulus factor that can affect secondary appraisal consists of the characteristics in the stimulus configuration. Specifically, this includes the location of the agent of harm, the viability of alternative available actions to prevent the harm, and situational constraints. Lazarus (1966, pp. 208-209) states that an agent of harm must be located before direct actions can be taken to deal with it. Regarding the prevention of harm he states that people will choose the coping action that they believe has the best chance of overcoming the danger. Situational constraints tend to inhibit or encourage the expression of coping actions without directly influencing the coping actions. These characteristics of the stimulus configuration could effectively render a hemodialysis patient helpless if he/she was unable to locate the danger (identify the renal disorder), choose effective coping actions, or express the coping actions.

As with the factors influencing primary appraisal processes, the factors influencing secondary appraisal processes will not be assessed directly in the present research. Again, one general assessment of secondary appraisal will be made regarding renal failure patients' confrontation with their illness and the treatment (i.e. hemodialysis).

H<sub>2</sub> states that there will be a significant difference between well-adjusted and poorly adjusted patients in the distributions of the secondary appraisals that they endorse. It is the author's assumption that many of the factors that affect secondary appraisals also affect adjustment to hemodialysis.

For example, it is conceivable that a patient's motives, defensive dispositions, beliefs about his/her resources, ego resources, and situational constraints also affect adjustment to hemodialysis. Thus, well-adjusted and poorly adjusted patients should differ in their secondary appraisals, and this difference should be theoretically attributable to some of the six factors that affect secondary appraisals.

The importance of the cognitive appraisal process has been demonstrated empirically in two recent studies. Folkman and Lazarus (1980) analyzed the coping processes of 100 middle-aged community residents. Over a one-year period they gathered information on a monthly basis regarding how these people coped with the stressful events of daily living. The results indicated that the way an individual cognitively appraised a situation affected the way he/she coped with it. Using a similar sample Coyne, Aldwin, and Lazarus (1981) studied the ways depressed and non-depressed individuals coped with stressful events. They found that the cognitive appraisals of stressful events for these individuals were different and significantly affected the ways they coped with stress.

Both of the above studies demonstrate that cognitive appraisals significantly affect coping behaviors. This information bears directly on H<sub>1</sub>, H<sub>2</sub>, and H<sub>4</sub> of the present study. H<sub>1</sub> and H<sub>2</sub> have already been discussed above, but further evidence for them is given here. Coyne et. al. (1981) found that depressed and non-depressed people appraised stressful situations differently, and so it should be with hemodialysis patients since adjustment is negatively correlated with depression in these patients. Most likely well-adjusted and poorly adjusted patients will cope differently with hemodialysis, which should be reflected by differences in their

cognitive appraisals.

H<sub>4</sub> states that there will be significant differences between well-adjusted and poorly adjusted hemodialysis patients in the means of eight coping behaviors they utilize. The two research studies described above indicated that cognitive appraisals affect coping behaviors. If these two patient groups appraise their disorders differently, then there should also be a difference in their coping behaviors. It is also probable that adjustment to hemodialysis is related to the utilization of certain coping behaviors. Thus, these two patient groups should differ in their coping behaviors. The value of this hypothesis is that it will determine what these patients actually do in the face of chronic and severe stress related to their illness. Unlike previous coping research the evaluator will not have to make inferences about the patient's defensive or unconscious motivations.

According to the cognitive-phenomenological theory of coping, coping efforts can be divided into two broad groups: problem-focused and emotion-focused. Problem-focused coping functions when people take direct action on the environment to change the stressful situation in some way. Emotion-focused coping functions when people attempt to deal with their emotions which result from a stressful situation, rather than with the stressful situation itself. Folkman and Lazarus (1980) found that both of these modes of coping were utilized in 98% of the coping episodes they measured. Thus, these two modes are not mutually exclusive. They also found that people tend to be variable rather than consistent in the use of these modes. Although people vary in the use of these modes, certain environmental contexts tend to require either one coping mode or the other. For example, they found that work contexts favored problem-focused coping,

and health contexts favored emotion-focused coping.

This information relates to H<sub>3</sub>, which states that there will be significantly more emotion-focused coping than problem-focused coping utilized by all hemodialysis patients. Evidently people tend to see themselves more as helpless victims when they have a physical disorder, and thus they tend not to utilize active forms of coping. Therefore, they should utilize an emotional, intrapsychic, or palliative mode of coping with their illness and treatment.

Besides primary and secondary appraisals, individuals also make reappraisals when faced with a stressful situation. Lazarus (1966) and Lazarus and Launier (1978) describe reappraisal as a feedback process which highlights the transactional nature of the theory. After an appraisal and response have been made to a threatening situation, a reappraisal of it is made. The reappraisal could include new information about the environment, threat stimulus, and the result of the individual's initial response. An individual will hopefully make a reappraisal that promotes a more adequate adaptation to the environment. However, an individual may make a defensive reappraisal that is self-deceptive. This could lead to denial, reaction-formation, or intellectualization.

A deficit in Lazarus' cognitive-phenomenological theory of coping exists in his failure to address religious coping efforts. Undoubtedly many people utilize such coping efforts as praying, asking others to pray for them, and reading the Bible when faced with a potentially threatening situation. Lazarus has developed an instrument that assesses coping efforts, which is called The Ways of Coping (Folkman and Lazarus, 1980). It classifies an individual's coping in a stressful situation as either problem-focused or emotion-focused. In addition, it classifies coping



efforts into seven categories: wishful thinking, mixed, growth, minimize threat, problem-focused, seek emotional support, and blames self. No categories are available for religious coping efforts, and religious topics are not even mentioned in the test items themselves. It appears that religious coping efforts could be classified as problem-focused or emotion-focused if one desired. For example, praying could be classified as emotion-focused, and reading the Bible and asking others to pray could be classified as problem-focused. The fact that religious coping efforts are not addressed in this theory is a serious deficit and will be discussed again later in this chapter.

#### Coping Theory Applied to Physical Illness

Physical illness is a tremendously stressful phenomenon for most people. Physical illness presents a threat to an individual's biological integrity, self-image, emotional functioning, and physical and/or mental functioning. Yet people tend to deal differently with these threats. The way some people cope with these threats allows them to function quite well, while the way others cope causes them to function poorly. History is replete with examples of people coping with extraordinary physical circumstances, and less popularly history records examples of people failing to cope adequately with minor difficulties.

In a very broad and general manner, physical illnesses can be divided into two phases: acute and chronic. The acute phase is often the initial phase and involves a time-limited crisis of some type that is frequently life-threatening. The chronic phase is often less crisis oriented and is not necessarily time-limited. Moos (1982) has presented a conceptual framework for acute physical illness that is based on crisis theory (see Figure One). His major contribution to the research

literature has been his emphasis on the impact of the physical and social environment on the outcome of a health crisis.

Since the chronic phase of physical illness is not necessarily time-limited, the adaptive tasks become more important for a patient to deal with in this phase. The way patients deal with the adaptive tasks of the acute phase of an illness will probably only affect their quality of life for a short time, while the way patients deal with the adaptive tasks of the chronic phase of an illness will probably affect their quality of life for a long time, possibly a lifetime. Cohen and Lazarus (1980, p. 229) synthesize material by Hamburg, Hamburg, and deGoza (1953), Mages and Mendelsohn (1980), Moos and Tsu (1977), and Visotsky, Hamburg, Goss, and Lebovitz (1961) and present six threats (adaptive tasks) that a patient faces. These are:

1. Threats to life and fears of dying itself.
2. Threats to bodily integrity and comfort (from the illness, the diagnostic procedures, or the medical treatment itself).
3. Threats to one's self-concept and future plans.
4. Threats to one's emotional equilibrium, that is, the necessity to deal with feelings of anxiety, anger, and other emotions that come about as a result of other stresses described.
5. Threats to the fulfillment of customary social roles and activities.
6. Threats involving the need to adjust to a new physical or social environment.

These threats are stresses that patients deal with who have chronic illnesses. As will be seen in the next section of this chapter, patients with renal failure confront each of these stressful situations.

Moos' (1977, 1982) conceptual model of coping with physical illness, Lazarus' cognitive-phenomenological coping theory, and the six stressful illness situations can be integrated. Figure 3 illustrates this integrated model and also includes the dependent measures of the present study. Many other variables could be included in this model, but only those relevant to this study are included here. The integration of Moos' and Lazarus' theoretical models forms a comprehensive conceptual model for the present research.

### Coping With Renal Failure

As little as 25 years ago renal failure was generally considered an acute disorder that resulted in death in a relatively short time. With the advent of hemodialysis in 1960, renal failure patients were able to live longer and renal failure itself began to be viewed as a chronic illness. The traditional medical approach to illnesses, such as renal failure, was to view the patient as the passive recipient of both illness and treatment. More recent approaches to physical illnesses from psychological or educational models have viewed chronic illness as a series of stressful events impacting a patient (Trieschman, 1980; Stone, Cohen, and Adler, 1979; Million, Green, and Meahger, 1982). This perspective views patients as active agents in the treatment process who can have a great affect on their adjustment to the disorder. Recent research has supported this view (Imboden, 1972; Cohen, 1975; Rahe and Arthur, 1978). Thus, the coping behaviors, both action-oriented and intrapsychic, that renal failure patients utilize greatly affects their quality of life.

### Renal Failure as a Chronic Illness

Before further discussing factors involved in coping with renal failure,

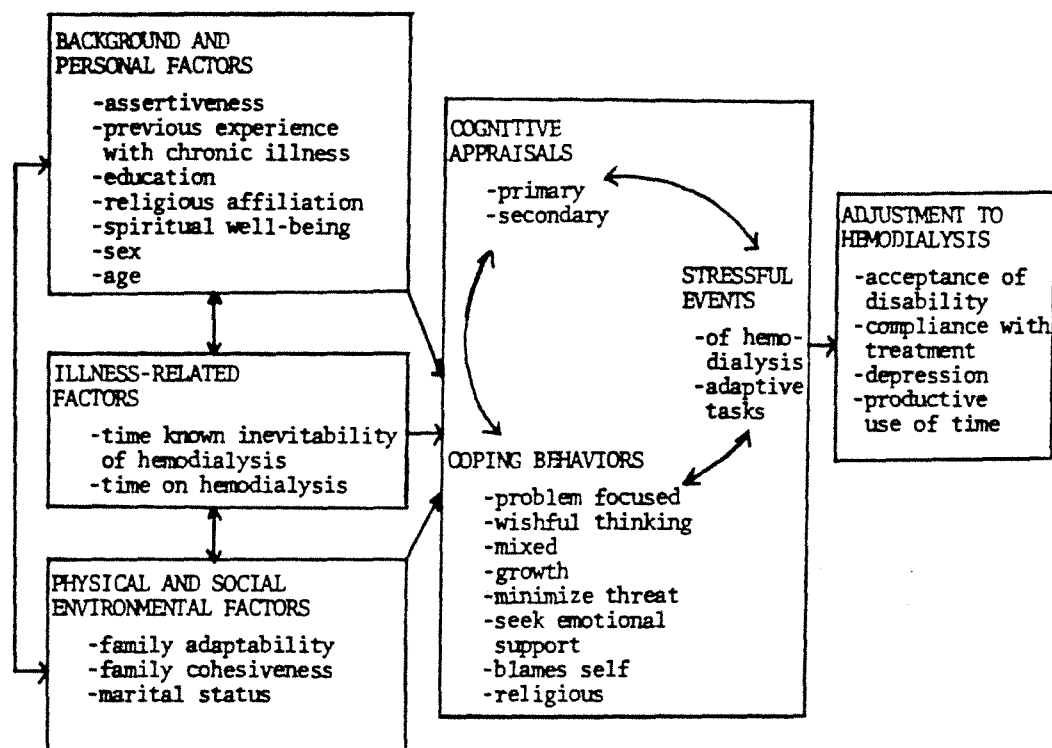


Figure 3. Relationship of dependent variables to the integrated Moos and Lazarus model.

a brief discussion of renal failure and its causes will be presented. The renal system is comprised of the kidneys, their drainage channels, and the urinary tract. The proper functioning of this system extracts soluble metabolites from the blood and removes them from the body. This system also regulates the water content of the body and maintains electrolyte equilibrium of the body fluids. Uremia, which is an increase of urea in the blood, results when this system fails. A laboratory test of blood urea nitrogen (BUN) can identify uremia and indicate the general functioning level of the kidneys.

Chronic renal failure can be caused by a variety of disorders such as glomerulonephritis, pyelonephritis, developmental anomalies, and vascular disorders. Symptoms of renal failure include lethargy, headache, drowsiness, vomiting, restlessness, confusion, and foul breath. Unless these symptoms are recognized, the underlying disorder diagnosed, and treatment begun, these patients will die within a matter of days.

There are three treatment methods available for patients with renal failure: kidney transplant, peritoneal dialysis, and hemodialysis. Kidney transplant is usually difficult since donor kidneys that match numerous physical characteristics of the recipient are rare and the rejection rate of transplanted kidneys is high. Peritoneal dialysis is effective, but because of complications in some patients is often used only if hemodialysis is impossible. However, a recent innovation called chronic ambulatory peritoneal dialysis (CAPD) is now the treatment of choice for some patients. Hemodialysis has been the most frequently used treatment for these patients since its development by Scribner, Caner, Buri, and Quinton (1960).

Hemodialysis is a medical treatment that replaces the functioning of

the kidneys. It is a process that cleanses the patient's blood by removing it from the body, filtering it several times, and returning it to the body. It must be performed two to three times per week for four to eight hours per session. The filtering process occurs constantly within the body of a person with healthy kidneys; however, it occurs in a rapid and metabolically traumatic fashion in a person on hemodialysis. The renal failure patient's life is marked by a constant artificial biochemical flux. There is a continuous build up of waste products and metabolites to high levels in the blood for two to three days, and then within a matter of hours these levels drop dramatically during hemodialysis.

The stressful events that renal failure patients face as a result of the underlying disorder and the treatment are horrendous, and have both biological and psychological consequences. The necessity for these patients to utilize coping behaviors that will help them make adaptational responses to these stressful events is evident. The process of hemodialysis is one of the major stressful events that these patients face, and the magnitude of it is captured in the following quote:

Although hemodialysis gives a patient an opportunity to enjoy a much better life than that of a state of marked and continuous uremia, he nevertheless remains far from being healthy. He is intermittently azotemic and chronically anemic with a shunt or a fistula placing potentially additional stress upon his heart, with metabolic derangement and dysequilibrium syndrome as a consequence of hemodialysis. He may have other difficulties and complications of the procedure itself, as well as his underlying illness. No hemodialysis patient can resume the degree of activity he had before his illness (Levy, 1979, p. 47).

Thus, hemodialysis itself poses many difficulties for the patient.

As can be ascertained from the above discussion, hemodialysis offers help to renal failure patients and at the same time presents other problems and difficulties. The best that patients can hope for is adjustment to

the treatment procedures and an incorporation of it into their lifestyles, not a total resolution of physical problems. This does not mean that a patient cannot have a satisfying life, but rather that a patient will have to adjust to new and different stresses and expectations.

When using terms such as adjustment and adaptation in relationship to chronic illnesses, one must be cautious. In the past the tendency has been to view people who were disabled in some way as having only one thing in life with which to deal--their disability. Thus, patients were considered adjusted when they accepted their disability and the limitations it imposed or when they were able to resume working again, no matter what the job was. This conceptualization of adjustment leaves much to be desired. Adjustment must be viewed in a more global manner. Patients with a chronic disorder do not simply have to adjust to their disability, but rather have to learn to deal with all of the problems presented to them by the disorder. Shonty (1982) addresses this issue well and states:

A person with a chronic illness or disability has satisfactorily come to terms with his or her physical condition to the extent that the problem of contending with it ceases to be the dominant element in that person's total psychological structure (or 'life space') (p. 171).

Therefore, the well-adjusted patient is not one who simply accepts his/her disability or works full-time at a job, but one who manifests all of the signs of psychological adjustment that a person without a disability exhibits.

The psychological adjustment of renal failure patients has not been adequately addressed. Since hemodialysis became a lifesaving treatment for patients suffering from renal failure in 1960, the research on this topic has grown. The early psychological literature in the 1960's focused on assessing patients in terms of who was mentally healthy enough to

undergo chronic hemodialysis. At that time there were few hemodialysis machines and many patients needing to use them; thus it was important to screen patients in an attempt to determine who could best adjust to it. Abram (1975) states that early criteria for acceptance of hemodialysis treatment required that the patient be emotionally mature, or have "social worth (i.e. that one individual because of his role in society was more acceptable for dialysis than another)" (p. 205). These criteria proved restrictive and naive.

By the early 1970's there was an adequate number of machines and the federal government had begun paying for patients' use of them. As this occurred the psychological literature began to focus more on psychological variables involved in adapting to hemodialysis, and its long-term affects on patients. It became quite clear that renal failure and hemodialysis had both a significant and complex impact upon patients. Thus, initial psychological investigations of renal failure patients focused on determining who would survive hemodialysis adequately, while more recent psychological investigations have focused on the quality of life of these patients once they have survived initial hemodialysis treatment.

With any new medical invention the first psychological question is "What does it take to survive?", while the next psychological question is "How can survival be increased and improved?" Finally, as survival rates improve a question of great concern to psychologists is "How can the quality of life improve?" Research on renal failure patients' coping with hemodialysis and the other stresses of their illness is just now moving toward this third question. From numerous indicators the quality of life for these patients is much less than optimal. One of the purposes of the present research is to determine some factors that may be associated



with the quality of life for these patients.

### General Psychological Complications of Hemodialysis

It appears that the patients' needs for psychological integrity and safety are primary factors affecting the way they cope with renal failure and hemodialysis. However, these needs are rarely addressed in the psychological literature on coping with renal failure. According to Maslow (1971) an individual is motivated by needs which are arranged in a hierarchy as follows: physiological, safety, love, esteem, self-actualization, and self-transcendence. Renal failure patients constantly face threats to their physiological and safety needs, and these needs are bound to influence much of their behavior.

Czaczkas and De-Nour (1978) describe many of the potential complications of hemodialysis which can affect a patient's physiological and safety needs. Various complications can affect the cardiovascular system such as congestive heart failure, hypertension, and anemia. They state that uremic pericarditis occurs in approximately 50% of the patients with terminal renal failure (p. 48). Potential complications of the gastrointestinal system include vomiting, colitis, liver disease, and hepatitis. Potential complications of the nervous system include disequilibrium syndrome, and peripheral neuropathy. Metabolic disturbances can cause changes in the metabolism of carbohydrates, lipids, and proteins. Metabolic disturbances can also cause bone disease. All of these threats or potential threats to patients' physiological integrity and need for safety undoubtedly affect the way they deal with renal failure. Most likely these unmet basic needs will arouse more "primitive" coping behaviors such as denial, delusions, and loss of control.

Anderson (1975) reviewed the literature on the psychological aspects of hemodialysis and found that the major adaptational problem was in the area of emotional dependency. Being connected to a hemodialysis machine for survival raises dependency issues for most patients, and causes severe regression in some. Levy (1979) writes,

Only very few other forms of medical treatment and none in such widespread use place the patient in so abject a situation of dependency on equipment, procedure, and personnel (p. 48).

Hemodialysis always engenders dependency, and the key intervening variable between this dependency and the patients' adjustment appears to be the patients' dependency needs. Czaczkes and De-Nour (1978) write:

For some patients the dependency of dialysis is very stressful, for others it is a minor stress, for some no stress at all. It is usually agreed that the main factor deciding whether the dependency is stressful or not is the patient's level of dependency needs and his acceptance of these needs (p. 131).

Thus, hemodialysis raises many dependency issues for patients, to which some adapt well and others do not.

Most reports on the psychological adjustment of hemodialysis patients indicate that patients who are more independent adjust better (Freyberger, 1973, in Levy, 1979). However, De-Nour and Czaczkes (1974) report that dependent patients adjust better to hemodialysis because of the dependency it engenders, while independent patients adjust better to rehabilitation. Nevertheless, dependency appears to be an important psychological variable in patients' adjustment to hemodialysis.

Sexual problems are another frequently reported difficulty for hemodialysis patients. Though various researchers obtain different statistics on sexual problems for these patients, all agree that sexual problems are frequent. Impotence appears to be a significant difficulty

for male patients. Foster, Cohn, and McKegney (1973) found that about 60% of the men in their study were impotent, and Abram, Hester, Sheridan, and Epstein (1975) reported that 80% of the men in their study were impotent. Levy (1973) mailed questionnaires to hemodialysis patients and reported his findings on 429 subjects. He found that 59% of the men reported being totally or partially impotent. He also found that several men were no longer attempting intercourse and therefore estimated that 70% of the men were having significant sexual difficulties. Female patients also have sexual difficulties. Although research on women in this area is sparse, Larsen (1973) found that 65% of the women in his study did not have intercourse at all. Others reported somewhat lower figures.

Many researchers have reported a paradox in that libido decreases for both male and female patients after hemodialysis is begun even though the patients report feeling better. Czaczkes and De-Nour (1978) write, "It is very interesting to note that on dialysis, though the general physical condition and hormonal level usually improves, sexual function deteriorates in both men and women" (p. 97). They also suggest four possible explanations for this paradox (pp. 97-98). One, organic factors could cause a deterioration of sexual functioning. Two, chronically ill patients have a tendency to glorify past experiences, and therefore present current experience as inadequate. Three, changes in marital relations as a result of the stress of hemodialysis could cause deteriorated sexual functioning. Four, poor sexual functioning could be the result of the psychological complications of hemodialysis such as depression. Regardless of the cause, deteriorated sexual functioning appears to be a significant psychological complication of hemodialysis.

Emotional disturbances are also frequently observed in hemodialysis patients. Various reports of psychosis as a result of hemodialysis have presented in the psychological literature. Some of these psychotic episodes have been functional and others have resulted from organic causes. Levy (1979) reviewed the medical literature on the incidence of psychosis as a result of hemodialysis and concluded that it was an uncommon complication. He also stated that in his 14 years of experience with hemodialysis patients he had not observed a single case of psychosis that could be directly attributed to the stress of the procedure. However, Czaczkes and De-Nour (1978) reported that "non-severe psychotic symptoms are quite frequent in the course of dialysis" (p. 110). They found that 18% of their patients had psychotic symptoms usually of a paranoid or depressed nature.

Depression is the most common psychiatric complication of hemodialysis (Lefebvre, Nobert, and Crombez, 1972). The frequency of depression is high (60% to 90%). Depression has been determined via self-report, family report, interview data, and psychological tests. Daly (1970) found that over 70% of the patients in his study were depressed according to their scores on the Beck Depression Inventory. Reichsman and Levy (1972) found that patients become less depressed when hemodialysis is begun and then more depressed as it continues. This finding may account for some of the variability in the frequency of depression reported for these patients in the literature.

Suicide is another psychological complication of hemodialysis, often associated with depression. Abram, Moore, and Westervelt (1971) reported data on 3,478 living or dead hemodialysis patients. Their data showed that 20 patients had committed suicide, 17 had attempted it

unsuccessfully, and 22 died because of voluntary withdrawal from hemodialysis programs. From this they concluded that the suicide rate of hemodialysis patients is 100 times that of the general population. However, Scribner (1974) suggests that this suicide rate may be comparable to the suicide rate of other chronically ill patients. The incidence of suicidal thoughts is greater than the incidence of suicide in this patient population. Czaczkes and De-Nour (1978) report three studies which show that the frequency of suicidal thoughts among hemodialysis patients is between 35% and 46%. They write,

This rate of suicidal ideation is indicative of the quality of life of dialysis patients and is easily understood if one remembers the very high frequency of depression in these patients" (p. 116).

Thus, emotional disturbances, sometimes resulting in suicide, are frequent among hemodialysis patients.

There are several other stressful situations that result from hemodialysis, which can affect a patient's psychological state. One such situation is having to endure painful medical procedures. Tucker, et. al. (1982) obtained self-report data from 25 hemodialysis patients regarding their concerns. The most frequently reported concern was needle stick anxiety. Another common concern regarded the patients' dietary restrictions. Many patients reported concern over having to follow a strict diet.

Two other stressful situations that hemodialysis patients are confronted with are changes in occupational functioning and social activities. De-Nour, Shanan, and Garty (1977-78) reviewed hemodialysis patients' vocational functioning and reported that various studies indicate 17% to 72% of the patients able to work full-time were idle. Many patients are unable to work, at least in the same capacity as before

hemodialysis treatment. De-Nour, et. al. (1977-78) report that only 29% to 51% of the patients actually achieve vocational rehabilitation. Changes also occur in the social activities in which these patients engage. Freidman, Goodwin, and Chaundhry (1970a) found that hemodialysis patients spend 31% of their time in a five-day week on hemodialysis. This investment of time is bound to affect a patient's activities. Czaczkes and De-Nour (1978) reported that hemodialysis patients' activities generally decline from pre-dialysis levels. They also reported that these patients are usually passive, and that the number of social activities that patients engage in is positively related to vocational rehabilitation.

#### Psychological Factors Influencing Adjustment to Hemodialysis

The foregoing discussion is a presentation of only the major psychological threats faced by hemodialysis patients. The research literature lists several other stressful situations that these patients also face. As can be ascertained from this discussion, hemodialysis patients have much with which to cope. Yet the quality of life for these patients varies drastically. Those who adjust well appear to have a higher quality of life in that they suffer the negative effects of the above threats less frequently, while others who adjust poorly appear to have a lower quality of life. According to Lazarus (1966) coping efforts, which are determined by cognitive appraisals, mediate the impact of these threats on a patient's adjustment. Thus, well-adjusted patients are hypothesized to cope differently than poorly adjusted patients (H<sub>4</sub>).

The research on coping with renal failure reported thus far in the literature has dealt with coping traits or styles. For example, coping style is referred to in two reports (De-Nour, Shanan, and Garty, 1977-78;

and Shanan, De-Nour, and Garty, 1976). In these studies coping style is defined as:

1. Availability of free cathetic energy for directing attention to sources of potential difficulty, i.e., for identifying complexity;
2. articulation of the perceptual field, i.e. coping with complexity of conflict;
3. facilitation of dealing, i.e. coping with complexity or conflict;
4. degree of balance maintained between the demands of reality and the demands--developmental and integrative--of the self (p. 149 and p. 20 respectively).

The researchers used this definition to refer to four different coping styles. De-Nour, et. al. (1977-78) used a sample of 47 hemodialysis patients and found that males had different coping styles than females according to their definition. Shanan et. al. (1976) used a sample of 59 hemodialysis patients and found that the stress of dealing with hemodialysis significantly reduced the readiness of patients to cope actively. These patients were compared with matched controls and were found to cope more passively than the controls.

This research on coping with hemodialysis is deficient for two reasons. First, the definition of coping style is ambiguous. It is difficult, if not impossible, for this to be used accurately as an operational definition. The definition also appears to be based on some preconceived notions of coping by the use of such terms as "free cathetic energy". Second, the results of the research indicate little about what these patients actually do to cope. It is shown that there are sex differences and a tendency to become less active and more passive in coping behaviors. But what does this mean that the patients actually do? Furthermore, why are they more passive; because they minimize threat or because they view themselves as helpless?

Other research on coping with hemodialysis tends to examine characteristics of patients and correlate them with the adjustment level of the patients. Demographic variables have been found to affect adjustment. For example, De-Nour, et. al. (1977-78) found that male and female patients showed different patterns of adjustment. They also found that the patients' level of education affected their levels of adjustment in a positive direction, with education having a more profound affect on men than on women. Numan and Braklind (1978) found that married hemodialysis patients adjusted more successfully than those who were unmarried. Intelligence has also been shown to be positively related to vocational rehabilitation (De-Nour, et. al., 1977-78; Sand, Livingston, and Wright, 1966).

A variety of personality variables have been found to affect the adjustment of hemodialysis patients. Using psychological tests Fishman and Schneider (1972) reported that anxiety, depression, many physical complaints, and hostility were correlated with poor adjustment. Hagberg (1974) found that isolation and withdrawal correlated with poor adjustment, while a tendency to use repressive defenses in a flexible manner correlated with positive adjustment. Malmquist, Kopfstein, Frank, Picklesimer, Clements, Ginn, and Cromwell (1972) psychiatrically evaluated 13 patients before the start of hemodialysis, then determined adjustment levels at three and twelve months. They found that,

Closeness to mother as an adult, no focal dependence as a child, lack of overt irritability and reported anxiety, and adaptability to previous life changes were significantly related to positive adjustment during hemodialysis (p. 23).

In another study Malmquist (1973) found that adjustment was determined by variables that existed before the onset of kidney disease. Three



such variables were predictive of positive adjustment: the patients' way of dealing with traumatic situations, their attitude toward changes in their lives, and their expectations of fast rehabilitation.

Other personality variables associated with adjustment have been reported by a variety of researchers. Greenburg, Weltz, Spitz, and Bizozero (1975) found that "stability in the patient as well as professed willingness to cooperate" (p. 183) was important for the positive adjustment of patients. Levy (1979) reported a study by Sviland (Note 2) in which she found that a degree of denial was necessary for a positive adjustment to hemodialysis. Devine, Binik, Gorman, Dattel, McCloskey, Oscar, and Briggs (1982) found that weak self-efficacy and outcome expectations were associated with depression, lower self-esteem, and feelings of helplessness in renal failure patients. Poll and De-Nour (1980) reported that in their sample of 40 hemodialysis patients, those that had an internal locus of control were better adjusted than those with an external locus of control. Finally, Freeman, Calsyn, Sherrard, and Paige (1980) were able to formulate scoring rules for the Minnesota Multiphasic Personality Inventory (MMPI) which predicted vocational rehabilitation. They found that renal dialysis patients with scale scores less than  $T = 70$  on all scales except mania demonstrated good vocational rehabilitation when compared with patients who had elevations on these scales.

Relationship variables have also been found to be associated with adjustment to hemodialysis. Foster, Cohn, McKegney (1973) reported that an affiliation with the Roman Catholic faith, the continued presence of one or both parents, and indifference to fellow hemodialysis patients were correlated with positive adjustment to hemodialysis. Hagberg and

Malmquist (1974) found that maintaining regular social contacts was associated with positive adjustment. Similarly, Greenberg, et. al. (1975) and Evans (1978) indicated that the existence of a functional social support system was related to positive adjustment.

This research on adjustment to hemodialysis is of value because it indicates many patient characteristics that are predictive of positive outcome, and therefore could be utilized by practitioners for various purposes. However, the research is deficient for two reasons. First, just as in the criticism of the articles on coping styles, these studies say little about what patients actually do to cope or deal with hemodialysis. Many personality characteristics have been correlated with adjustment, but the broad characteristics described really do not indicate the processes that underlie them. A closer examination of these processes to determine what actually occurs with a patient should yield more useful information. Second, just as Lazarus (1966) criticized general coping literature, this body of literature appears to confuse coping processes with adaptational outcomes (adjustment). Thus, coping is often used as a synonym for adjustment so that a patient who is thought of as well-adjusted is also a good copier. However, little is really known about the coping process of renal failure patients, and at this time the efficacy of their coping efforts can only be inferred from their adjustment. Still little is known about what these patients actually do to deal with their circumstances.

#### Stages of Adaptation to Chronic Hemodialysis

Two independent groups of researchers have studied the adaptational process of renal failure patients to hemodialysis. Abram (1969) studied

patients who were extremely uremic at the time of acceptance into the hemodialysis program. He found that adaptation occurred in four stages. The first stage is the Uremic Syndrome in which the patient is characterized by fatigue, apathy, depression, and poor concentration. The second stage is The Shift to Physiological Equilibrium, which has three substages: apathy, euphoria, and anxiety. The third stage is Convalescence, which occurs at about the third or fourth week after hemodialysis is begun. This stage arouses many issues for the patient such as depression and dependency. The fourth stage is The Struggle for Normalcy, which occurs at about the third month after the initiation of hemodialysis. In this stage the patient deals with the quality of life that he/she faces with dependency on a machine.

Reichsman and Levy (1972) made a four-year study of 25 hemodialysis patients and reported three stages of adaptation. The first stage is described as The Honeymoon. It usually begins one to three weeks after the initiation of hemodialysis and lasts up to six months. Patients in this stage are characterized by both physical and emotional improvement as their uremic state declines. The second stage is Disenchantment and Discouragement, which lasts for about three to twelve months. Patients express feelings of sadness and helplessness which are usually associated with the resumption of a more active role at work or in society. The third stage is Long-term Adaptation, in which patients begin to accept their own limitations and the shortcomings of hemodialysis.

Although the time frame of the stages of adaptation are different between these two research reports, the process that they describe is remarkably similar. Both research groups indicate that hemodialysis patients move from a low to high emotional state after the initiation

of hemodialysis, then to another low emotional state, and finally to a mixed emotional state.

Since hemodialysis patients experience varying emotional states in the adaptational process, it is likely that they are also using different coping strategies in different stages of adaptation. H<sub>5</sub> states that there will be significant differences between the means of eight coping behaviors utilized by patients receiving hemodialysis for zero to six months, seven to twelve months, and one year or longer. If it is found that patients cope differently at different times after the initiation of hemodialysis, then support will be given to the findings that hemodialysis patients move through various stages of adaptation.

#### Family Functioning

Hemodialysis presents many stressful situations to the families of patients as well as to the patients themselves. Friedman, Goodwin, and Chaundhry (1970b) found that the decline in family income and socioeconomic status was stressful for families, particularly if the breadwinner was the patient. These families also find themselves in the position of attempting to provide on-going emotional support to the patient, and live with constant fear of medical complications and the patient's death. They can seldom travel far from the hemodialysis center on vacations because of the frequent need for hemodialysis. Hailstone (1971) writes,

(the patient's) stresses will be reflected in the family of the patient and a great deal of compensation is required on behalf of the other members to accommodate the now chronically ill member who may originally have been the main financial and emotional support (p. 554).

Thus, the stress of hemodialysis goes beyond the patient and affects all family members.

Families appear to face threats that are similar to those faced by the patients themselves, and often react to them in similar ways. Wright (1975) lists three factors that families of hemodialysis patients face: the tremendous level of uncertainty, the low degree of predictability, and the ever-present shadow of death. Landsman (1979) writes about the families of hemodialysis patients:

At first there is disbelief, then shock and a 'How can this happen?' That initial response is followed by the same type of denial experienced by the patient. Family members comfort themselves with the illusion that the problem is temporary, it will go away, and life will surely revert to normal again (p. 81).

Short and Wilson (1969) report that families tend to engage in excessive denial and guilt feelings, just as the patients do. Czaczkes and De-Nour (1978) found that spouses of hemodialysis patients had increased feelings of hostility and aggression, and had many psychiatric disturbances. They related the variability in spouses' emotional reactions to their dependency needs, since hemodialysis raises dependency issues for spouses as well. Those with higher dependency needs were thought to have more emotional disturbance.

It appears that hemodialysis patients have a better chance of adjusting if they have family support. Friedman, et. al. (1970b) found that married patients responded to the stress of hemodialysis much better than unmarried patients. Malmquist, et. al. (1972) found that closeness to mother as an adult was also related to positive adjustment to chronic hemodialysis. Foster, et. al. (1973) reported that 79% of the survivors of hemodialysis had established and maintained families, while only 42% of the non-survivors had done so. Similarly, 50% of the survivors' natural parents were deceased, while 86% of the non-survivors' parents were deceased.

So far it has been shown that hemodialysis patients respond favorably to family involvement, that the families face numerous stresses and changes, and that families tend to respond to these changes in the same ways that the patients do. However, some families can respond more easily to these changes than others. Czaczkes and De-Nour (1978) summarized several studies and reported that family stability significantly influenced adjustment to hemodialysis. They also write, "The ability to express one's own personal identity and the acceptance of such identity by the family, is associated with adjustment to chronic dialysis" (p. 163). This indicates that the way a hemodialysis patient's family functions can greatly affect the patient's adjustment to hemodialysis. Evans (1978) writes,

There is a clear association between the nature of family relationships before the onset of end-stage renal disease and the coping behavior and eventual adaptation of the family to the requirements of the hemodialysis treatment regimen" (p. 343).

H<sub>10</sub> states that there will be a curvilinear relationship between family adaptability and adjustment to hemodialysis. It is predicted that moderate amounts of family adaptability (e.g. flexible or structured) will be positively correlated with adjustment, while extreme amounts of family adaptability (e.g. chaotic or rigid) will be negatively correlated with adjustment. Since families of hemodialysis patients have many changes to accomodate to, it is felt that a healthy amount of adaptability within the family structure will facilitate adjustment of the patient to hemodialysis.

H<sub>11</sub> states that there will be a curvilinear relationship between family cohesion and adjustment to hemodialysis. It is predicted that moderate amounts of family cohesion (e.g. separated or connected) will

be positively correlated with adjustment, while extreme amounts of family cohesion (e.g. disengaged or enmeshed) will be negatively correlated with adjustment. As stated above, it is felt that a healthy amount of cohesion within the family structure will facilitate a patient's adjustment to hemodialysis.

### Assertiveness

Three psychological factors appear to be related to assertiveness. These are anger, depression, and dependency. Anger is a prominent and frequent emotion for hemodialysis patients. Halper (1971) discusses many of the anger-provoking situations that these patients face, such as financial insecurity, occupational limitations, medical complications, painful medical procedures, potential loss of family, and future uncertainty. However, it is difficult for these patients to express their anger in constructive ways because the very thing that causes their anger is at the same time saving their lives. Their lives are dependent upon hemodialysis machines, the staff that operates them, and the society that pays for it.

Some patients also feel angry because of what they perceive as unfair expectations by family and staff that they resume a somewhat normal life (Ford, and Castelnovo-Tedesco, 1977). Czaczkes and De-Nour (1978) report that the way patients deal with their aggression is an important determinant of their emotional functioning. They write:

It seems, therefore, that the patient's level of aggression, the increase in aggression caused by life on dialysis, and the patient's methods for handling aggression are the determining factors as far as the major psychiatric complications are concerned (p. 160).

Hemodialysis patients face many anger-provoking situations and the way that they deal with their anger is vital to their adjustment.

It is usually felt that people who deal with their anger assertively are less likely to become depressed. Mauger and Adkinson (1980) reported a strong negative correlation (-.47) between assertiveness as measured on the Interpersonal Behavior Survey and depression as measured on the MMPI. As discussed above, hemodialysis is naturally an anger-provoking situation, and if this anger is not handled assertively it can lead to depression. Previously in this chapter it was pointed out that the frequency of depression among hemodialysis patients is between 60% and 90%. It is possible, then, that the level of a patient's assertiveness is an important determinant of the level of depression experienced.

Hemodialysis also causes intense feelings of dependency, which are negatively related to assertiveness. Mauger and Adkinson (1980) reported a strong negative intercorrelation (-.50) between assertiveness and dependency scales of the Interpersonal Behavior Survey. Czaczkes and De-Nour (1978) state that the degree to which dependency becomes an issue for patients is determined by the strength of their dependency needs. In a fascinating article, Alexander (1976) related the intense dependency that hemodialysis patients experience to double-bind theory. Her position is that it is the structure of the patient-staff relationship that lends itself to the development of dependency and depression in the patient.

Anger, depression, and dependency are psychological factors associated with assertive behavior, and a hemodialysis patient's ability to be assertive can greatly affect these factors. Similarly, a patient's level of assertiveness can also affect his/her global adjustment to hemodialysis. H<sub>8</sub> states that there will be a positive relationship between assertiveness and adjustment. It is thought that from the above discussion assertive patients are less likely to experience the



deleterious effects of anger, depression, and dependency by dealing with these emotions effectively. Therefore, assertive hemodialysis patients should have more favorable adjustment scores.

Anderson (1975) suggested that assertive patients would adjust poorly to the initial phases of a hemodialysis regimen because of the dependency involved with it, but would adjust well to later phases when the goal was rehabilitation. Likewise, he suggested that sub-assertive patients would adjust well to the initial phase of a hemodialysis regimen, and poorly to rehabilitation procedures. However, he did not present empirical evidence to support these suggestions. De-Nour and Czaczkes (1974) studied 52 hemodialysis patients, some of whom they described as independent and others as dependent. They found that the group described as independent (often associated with assertiveness) reported that hemodialysis was very stressful, whereas the dependent group had difficulty adjusting to rehabilitation.

H<sub>9</sub> states that the mean adjustment score of assertive patients receiving hemodialysis longer than six months will be significantly greater than the mean adjustment score of those assertive patients receiving hemodialysis less than six months. This hypothesis will be an empirical test of what Anderson (1975), and De-Nour and Czaczkes (1974) have suggested about the relationship of assertiveness to the phases of hemodialysis.

#### Spirituality and Coping With Renal Failure

As stated earlier in this chapter there is a dearth of research on the relationship between spirituality and coping. It seems that the only time spirituality and religiosity are mentioned in the research literature is in regard to psychopathology. Thus, the constructive use

of one's spiritual beliefs are rarely investigated, and there appears to be a bias against it by psychological researchers. This is in spite of the fact that 92% to 96% of Americans believe in God, and 53% indicate that religion is "very important" in their lives (Gallup and Poling, 1980). Gallup and Poling (1980) also give evidence that the majority of Americans believe in basic Christian tenets.

For many of these Americans, Christianity is not just a cognitive endorsement of a set of beliefs, but a lifestyle. Their beliefs and values not only affect the way they think and feel, but the way they behave and relate to others also. Sixty-five percent of Americans in a recent poll indicated that religious beliefs affected their daily thinking or acting a "great deal" or "some" (Gallup and Poling, 1980). The Bible, to which many Christians adhere, has many passages relevant to coping. Most of these passages bring Christians comfort in times of distress. Romans 8:38, 39 states,

For I am convinced that neither death, nor life, nor angels nor principalities, nor things present, nor things to come, nor powers, nor height, nor depth, nor any other created thing, shall be able to separate us from the love of God, which is in Christ Jesus our Lord.

Other passages which Christians utilize in coping are Psalms 23; John 14:16, Matthew 11:28-30, Romans 8:35-39, and James 5:13-16. When confronting a stressful situation many Christians use religious coping strategies such as praying, reading the Bible, and asking others to pray for them. This is probably especially true in situations involving health problems, where people have a tendency to increase coping efforts.

It is suspected that many hemodialysis patients utilize religious coping strategies. Foster, Cohn, and McKegney (1973) reported that affiliation with the Roman Catholic Church was significantly related to

survival on chronic hemodialysis. However, they did not suggest that these patients might utilize religious coping strategies.

In a recent study, Garvin, Hollandsworth, and Gersch (1982) used a structured interview with hemodialysis patients to identify reinforcing activities. Two categories emerged as the most reinforcing activities for all patients regardless of age or sex. One category of reinforcers involved social-interactive activities such as talking and having friends. This finding is supported by data described earlier which emphasized the need for social support among these patients. Another category of reinforcers that these patients identified involved religious activities such as going to church, being prayed for, and praying. This finding has not been reported elsewhere because religious variables have not been adequately investigated.

The evidence from the Garvin, et. al. (1982) study showing that hemodialysis patients find religious activities highly reinforcing suggests that this patient population uses religious coping strategies. The religious coping strategies of this population has not been assessed, nor have they been adequately assessed in any population. This is partly due to a lack of instrumentation. For example, the Ways of Coping (Folkman and Lazarus, 1980) is one of the most recent coping instruments available, and is described by the authors as being "broad" (p. 224). However, it does not even mention any religious coping strategies. In order to utilize the Ways of Coping in the present study, the author will create an eighth scale and add it to the checklist. This scale will consist of six religious coping items.

H<sub>6</sub> states that the mean religious coping behavior score for the entire sample will be greater than the average of the other seven coping

behavior means for the entire sample. It is predicted that religious coping strategies will be utilized by hemodialysis patients at least as much as the other coping strategies measured. If this is true, then inferences can be made about the importance of religious coping strategies which could affect current coping theories.

It can be inferred from the Garvin, et. al. (1982) study that the desire for spiritual well-being among hemodialysis patients is high since they find religious activities highly reinforcing. However, little is actually known about the spiritual well-being of this population.

Paloutzian and Ellison (Note 1) have studied spiritual well-being and found it to be an indicator of quality of life. They report that spiritual well-being is positively correlated with social skill, self-esteem, and intrinsic religious commitment. On the other hand, it is negatively correlated with loneliness. They conceptualize spiritual well-being as a two-dimensional construct. A vertical dimension refers to one's sense of well-being in relationship to God. A horizontal dimension refers to a sense of purpose in life and life satisfaction, without reference to anything specifically religious. Thus, spiritual well-being is derived from both religious and existential concepts.

Spiritual well-being as an indicator of quality of life has both empirical support (Paloutzian, and Ellison, Note 1; Ellison and Paloutzian, Note 3), and biblical-historical support. The Bible gives numerous personal accounts of individuals struggling with their relationships with God and finding increased quality of life upon resolution of the struggle. For example, David states:

Create in me a clean heart, O God,  
And renew a steadfast spirit within me.  
Do not cast me away from Thy presence,  
And do not take Thy Holy Spirit from me.

Restore in me the joy of Thy salvation,  
And sustain me with a willing spirit  
(Psalm 51:10-12).

Likewise, there are many passages which indicate that God is interested in the quality of life of individuals. John 14:27 states:

Peace I leave with you; My peace I give to you;  
not as the world gives, do I give to you. Let  
not your heart be troubled, nor let it be fearful.

The biblical account of Job's suffering from physical, psychological, and social losses also attests to the importance of spirituality in the coping process. This account shows that one's spiritual resources can be a great help in times of suffering, but they can also be used to promote more suffering. Job was patient in his suffering and tried to understand it, which helped him cope with great losses. Job's friends, however, encouraged him to forget his spiritual beliefs, and their counsel actually caused him more grief. Job's desire to maintain a satisfactory relationship with God helped him to endure tremendous suffering, and ultimately led to an increased quality of life for him. Thus, both biblical and empirical data give support to the concept of spiritual well-being as an indicator of quality of life.

H<sub>7</sub> states that there will be a positive relationship between spiritual well-being and adjustment to hemodialysis. Logically it seems predictable that spiritual well-being and adjustment are positively correlated since both spiritual well-being and adjustment are measures of quality of life. This hypothesis will be an empirical test of this prediction.

### Summary

In this chapter the research literature relevant to coping with hemodialysis has been presented. The first section showed that the traditional conceptualizations of coping have been inadequate for

theoretical and practical reasons. The most credible conceptualization of coping comes from a cognitive/behavioral viewpoint. Richard Lazarus' extensive research on coping processes gives a more sound theoretical foundation to the cognitive/behavioral strategies.

The second section of this chapter offered a presentation of the research specifically related to hemodialysis patients and the psychological adjustment of these patients. It was shown that little is known about what these patients actually do to cope with their stressful situations. Likewise, little is known about the interpersonal and family aspects of their lives.

The third section of this chapter offered a presentation of some biblical data relevant to coping with hemodialysis. It was shown that very little research has been done in this area, and that hemodialysis patients find religious activities reinforcing.

## CHAPTER THREE

### METHOD

This chapter is an account of all of the information related to data collection for this research project. Information is presented regarding the subjects used and the facility from which they were receiving hemodialysis. Information about the instruments used and their psychometric properties is also presented. Finally, an account of the procedure, research designs, and statistical tests recommended is offered at the end of the chapter.

#### Subjects

Twenty-eight hemodialysis patients were used as subjects in this investigation. All of these patients were receiving hemodialysis at the Oregon Kidney Center. The Oregon Kidney Center is a private clinic that is operated by two local nephrologists. Approximately 40 patients are seen regularly for out-patient hemodialysis at this facility. The standard hemodialysis regimen offered at the Center involves each patient being dialyzed three days per week for four hours per visit, for a total hemodialysis time of 12 hours per week. The Center also offers home hemodialysis and CAPD training programs.

Participation in this research project was strictly voluntary, and open to all patients receiving hemodialysis at the Oregon Kidney Center. All of the patients were initially considered as potential participants in the research. However, after discussing the physical conditions of

the patients with the nurses, some were excluded without being asked to participate. Reasons for exclusion included blindness, inability to communicate, and obvious dementia. Other patients refused to participate as subjects without giving a reason for their decision. A total of eight patients either refused to participate or were excluded from participating in the research. Four other patients agreed to participate as subjects, but did not complete the tests and questionnaires, so their results were not included in the data analyses. Two of the patients refused because of inhibiting physical limitations during the data collection. Two other patients refused to finish because they felt that the questions were either too taxing or too threatening.

Demographic data was collected regarding each subject's age, sex, marital status, education, occupation, history of chronic illness, length of time using hemodialysis to compensate for renal failure, amount of time on hemodialysis per week, amount of time known that hemodialysis was eventually inevitable, and religious affiliation. (See Appendix A for the demographic data sheet).

### Instrumentation

#### Family Adaptability and Cohesion Scales (FACES II)

The FACES II test was used to assess each subject's perception of his/her family adaptability and cohesion. FACES II consists of 30 items, to which the subjects are asked to respond regarding their current or past marital or family situation. In this study subjects were asked to respond to the items according to their current marriage or family situation unless they did not have one, in which case they were asked to respond according to their past situation or family of origin.



There are five possible responses to each item ranging from "almost never" to "almost always". (See Appendix B). Family cohesion is defined in these scales as: "The emotional bonding that family members have toward one another" (Olson, et. al., 1982, p. 5). In other words, family cohesion is a measure of the extent to which family members are separated from or connected to each other. Family adaptability is defined in these scales as: "The ability of a marital or family system to change its power structure, role relationships, and relationship rules in response to situational or developmental stress" (Olson, et. al., 1982, p. 5). In other words, family adaptability is a measure of the extent to which the family system is flexible and able to change.

The FACES II test is based on the Circumplex Model of Marital and Family Systems (Olson, Sprenkle, and Russell, 1979; Olson, Russell and Sprenkle, 1980). This model proposes that the most functional families are families that maintain a balance in the dimensions of adaptability and cohesion. There are four levels of family adaptability ranging from extremely low adaptability (rigid) to extremely high adaptability (chaotic). There are also four levels of family cohesion ranging from extremely low cohesion (disengaged) to extremely high cohesion (enmeshed). Moderate levels on each of these dimensions are associated with healthy family functioning, whereas extreme levels on these dimensions are associated with problematic functioning in couples and families.

Construct validity has been demonstrated via factor analysis (Olson, et. al., 1982). Two factors emerged with cohesion items loading on factor one, and adaptability items loading primarily on factor two. Reliability data was reported on 2,412 respondents to the FACES II. Cronbach alpha for internal consistency for the total sample was .87 for

cohesion, .78 for adaptability, and .90 for the total scale. A Pearson correlation for test-retest reliability was .83 for cohesion, .80 for adaptability, and .84 for the total scale.

### Spiritual Well-Being Scale

This scale was used to assess each subject's perception of his/her personal spiritual well-being. The Spiritual Well-Being Scale has 20 items, 10 referring to religious well-being and 10 referring to existential well-being. There are a total of six responses available for each item ranging from "strongly agree" to "strongly disagree". (See Appendix C). Spiritual well-being, as used in this scale, is best defined as

having one vertical dimension (connoting one's perception of relationship to God) and one horizontal dimension (connoting one's perception of life meaning or purpose, or satisfaction with one's existence)" (Paloutzian and Ellison, Note 1, p. 1).

Thus, the two dimension could be referred to as religious well-being and existential well-being, which together form spiritual well-being.

The Spiritual Well-Being Scale has proven to be a measure of an individual's quality of life. Ellison and Economos (Note 4) found strong positive correlations between spiritual well-being and self-esteem, as well as between spiritual well-being and doctrinal and devotional beliefs and behaviors which emphasize God's acceptance and affirmation of the individual. Paloutzian and Ellison (Note 1) reported that the Spiritual Well-Being Scale correlated negatively with the UCLA Loneliness Scale, and positively with the Purpose in Life Test, intrinsic religious orientation, self-esteem, and social skills. Campise, Ellison, and Kinsman (Note 5) found positive correlations between spiritual well-being and perceived quality of parent-child relationships and family

togetherness. These relationships between spiritual well-being and other psychological constructs demonstrate the efficacy of the Spiritual Well-Being Scale as an indicator of quality of life or life satisfaction.

Besides construct validity, which was obtained through the above correlations, the Spiritual Well-Being Scale was also factor analyzed. Paloutzian and Ellison (Note 1) found that there were three factors in the scale; one religious factor, and two existential factors. The religious and existential factors were distinct, and did not load particularly high on each other. Reliability data demonstrated a test-retest reliability coefficient of .934 for the total scale. Internal consistency was also demonstrated by a coefficient alpha of .89 on the total scale.

#### Interpersonal Behavior Survey (IBS)

Each subject completed the IBS. This instrument assesses a person's assertive and aggressive behaviors, and is a general indicator of the way a person deals with interpersonal conflict. The IBS has 272 items and a true/false response format. In this scale assertiveness is defined as "Behavior directed toward reaching some desired goal which continues in the direction of that goal in spite of obstacles in the environment or the obstacles of others" (Mauger and Adkinson, 1980, p. 9). The assertive person's attitude toward people is positive, and if an individual attempts to block the assertive person's goals he/she continues to try to attain the goals without attacking or offending the individual.

The IBS has 21 different scales which measure test validity, aggressiveness, assertiveness, and relationship variables. Only one scale, the General Assertiveness Rational (SGR) Scale, was used in the present

study. Mauger and Adkinson (1980, p. 4) state that this scale is a general measure of assertiveness, which covers a broad range of assertive behaviors.

The norm group for the IBS consisted of 400 female and 400 male community residents. Reliability data on the IBS indicates that "The modal test-retest reliability value over both a two-day and a ten-week period is greater than .90" (Mauger and Adkinson, 1980, p. 12). Internal consistency for the SGR scale, calculated by coefficient alpha, has been shown to be .90 and .88 on two different samples. Test-retest reliability for the SGR scale has been shown to be .96 for a two-day interval and .93 for a ten-week interval. Factor analysis showed that assertiveness and aggressiveness are two distinct response classes. It also showed that social desirability has little relationship to assertiveness on the IBS. The IBS has been correlated with several well-known personality inventories such as the MMPI and the Edwards Personal Preference Schedule. These correlations demonstrated the convergent and discriminant validity of the IBS.

### Cognitive Appraisals

A question assessing a person's primary appraisal of a stressful situation has been developed by the author. This question asks,

In general is this situation one:

- a) that is irrelevant to you?
- b) that is beneficial or desirable to you?
- c) that is distressing or undesirable to you?
- d) that poses a challenge to you?

A secondary appraisal question was developed by Folkman and Lazarus

(1980). It asks,

In general, is this situation one:

- a) that you could change or do something about?
- b) that must be accepted or gotten used to?
- c) that you needed to know more about before you could act?
- d) in which you had to hold yourself back from doing what you wanted to do? (p. 226).

A person may make only one response to each appraisal question.

Each subject was asked to respond to these appraisal questions regarding the way he/she views hemodialysis and the consequences of renal failure. Some of these consequences include fatigue/lack of energy, painful medical procedures, being dependent on a machine for survival, sexual difficulties, changes in working capabilities, changes in personal schedule, and dietary restrictions. Each subject was reminded of these potential consequences and asked to respond to the appraisal questions in regard to them. (See Appendix D for the appraisal questions and directions).

### Ways of Coping

This instrument is a 68-item checklist describing a broad range of behavioral and cognitive coping strategies that an individual might use in a specific stressful situation. The checklist items are answered "yes" or "no" with a specific stressful situation in mind. In this study the specific stressful situation is hemodialysis which involves many of the difficulties discussed above. Thus, each patient completed the Ways of Coping immediately after completing the cognitive appraisal questions.

The Ways of Coping yields two broad scales: The problem-focused scale and the emotion-focused scale. Coyne, Aldwin, and Lazarus (1981) define problem-focused coping as "efforts to deal with the sources of

stress, whether by changing one's own problem-maintaining behavior or by changing environmental conditions" (p. 440). They define emotion-focused coping as "efforts aimed at reducing emotional distress" (p. 440). Reliability data indicate that the internal consistency alpha coefficient is .80 for the problem-focused scale, and .81 for the emotion-focused scale. The scales are correlated at approximately .45 (Folkman and Lazarus, 1980).

Factor analysis of the rationally-derived scales yielded seven factors with eigenvalues greater than 2.0. The mean coefficient alpha was .84. These factors are: problem-focused, wishful thinking, mixed, growth, minimize threat, seek emotional support, and blames self. These seven factors serve as the subscales of the instrument. The scales, number of items, coefficient alphas, and examples are presented below (Coyne, et. al., 1981).

Scale 1: Problem-focused (15 items,  $\alpha = .89$ ). This scale includes items such as "Made a plan of action and followed it".

Scale 2: Wishful Thinking (19 items,  $\alpha = .91$ ). This scale includes items like "Wished you could change the situation".

Scale 3: Mixed (12 items,  $\alpha = .83$ ). This scale includes avoidant strategies such as "Refused to believe it had happened"; and "Avoided being with people".

Scale 4: Growth (7 items,  $\alpha = .90$ ). This includes positive items such as "Found new faith in life"; and "Changed or grew as a person".

Scale 5: Minimize Threat (8 items,  $\alpha = .83$ ). This includes strategies such as making light of the situation or joking about it.

Scale 6: Seek Emotional Support (3 items,  $\alpha = .79$ ). Items on this scale indicate talking to other people and accepting sympathy from them.

Scale 7: Blames Self (3 items,  $\alpha = .77$ ). Items on this scale indicate self-blame or criticism.

None of the items addresses religious coping strategies, and thus the author has added six religious coping items to the end of the instrument. These items are:

1. Prayed about the situation.
2. Asked someone to pray with you about the situation.
3. Asked someone to pray for you about the situation.
4. Searched the Scripture for spiritual insight or comfort.
5. Reflected on spiritual thoughts such as "God is in control of my life in this situation."

6. Talked with a priest, minister, or rabbi about the situation.

These items were rationally derived from what the author felt were common coping strategies among Christians. They form the eighth scale, which is called "Religious Coping". (See Appendix E for the Ways of Coping including the Religious Coping scale).

#### Measures of Adjustment

Adjustment was assessed with four instruments in this study. Each instrument yielded a single score, which served as 25% of the global score of adjustment for each subject. This was achieved by converting each score to a percentage score, and then averaging the four percentage scores to obtain a global adjustment score for each subject. The four adjustment instruments are described below.

#### Linkowski Acceptance of Disability Scale (AD Scale)

Each subject was administered this scale which was developed by Linkowski (1971) and is a 50-item, six-point Likert Scale construction.

(See Appendix F). The scale was developed on the premise that disability acceptance involves changes in: (a) enlargement of scope of values, (b) subordination of physique, (c) containment of disability effects, and (d) transformation from comparative values to asset values (Butler and Thomas, 1980).

The total scale yielded an internal consistency reliability coefficient of .93 (Linkowski, 1971). Factor analysis indicated that only one factor (the principal factor) accounted for the majority of the common variance in the scale. Linkowski (1971) also reported a high correlation (.81) between the AD Scale and the Attitudes Toward Disabled Persons Scale. Linkowski and Dunn (1974) have reported high correlations between the AD Scale and self-esteem (.52) and satisfaction with social relationships (.34). This data gives evidence for the validity of the scale.

#### Beck Depression Inventory (BDI)

This instrument was used to assess each subject's level of depression. The BDI consists of 21 items, each of which has four possible responses ranging from the least symptomatic of depression to most symptomatic of depression. The BDI has been extensively used in research on depression because of its brevity. Reliability data are reported by Reynolds and Gould (1981), who found the internal consistency coefficient to be .85. They also demonstrated the validity of the BDI by finding significant correlations between it and the Zung Self-Rating Depression Scale (.57), and the UCLA Loneliness Scale (.42). (See Appendix G).

#### Productive Use of Time Questionnaire (PUT)

This instrument was developed by the author to assess each subject's use of time doing productive activities. It was felt that well-adjusted



hemodialysis patients would most likely use their time productively, whereas poorly adjusted patients would not. Six areas are assessed in terms of the quantity of time spent in each activity area during each week. The six areas are: time spent working apart from home, time spent working at home, time spent with hobbies, time spent with friends and social activities, time spent in church and social service organizations, and time spent on leisure-time activities. (See Appendix H).

#### Compliance With Treatment Questionnaire (CWT)

This instrument was developed by the author to assess the head nurse's perception of each subject's compliance with treatment. Czaczkes and De-Nour (1978) divide treatment compliance into three categories as follows:

1. General compliance, e.g. taking medications, undergoing routine tests, etc.
2. Compliance with the diet.
3. Compliance with dialysis, e.g. continuation of dialysis (p. 99).

Each of these three areas is assessed in this instrument with one question per compliance area. The head nurse may respond to each question with a range of responses from "completely resistant" to "excellent compliance". (See Appendix I).

#### Procedure

Permission to study the hemodialysis patients was obtained from each patient and the patient's physician. An initial interview with each patient was conducted. It lasted approximately 10 minutes and was designed to obtain his/her permission to participate in the study, and to give

him/her some information regarding the content of the study. A folder containing all of the questionnaires and tests listed above was provided for each subject. These folders were kept at the nurses' station at the Oregon Kidney Center.

The subjects were asked to work on the questionnaires and tests each time they came for hemodialysis during a two-week period. A maximum of three hours was required for each subject to complete all of the tasks. The Compliance With Treatment Questionnaire for each subject was completed by the head nurse at the Center at the end of the study. When all of the subjects had completed the tests and questionnaires the results were tabulated and made available to them. If a subject requested to know the exact nature of his/her results, the results were provided via an interview.

### Data Analysis

The research designs of this study most clearly fit into two categories: correlational and quasi-experimental. Complete control of all variables was not possible due to the limitations of the patients who served as subjects, and the limitations created by the dearth of previous research on this population. It is believed that more descriptive, correlational and observational research is needed in this area before adequate experimental data can be generated.

Scores on the four measures of adjustment were summarized into one global adjustment score for each subject using the method described above. The percentage of unendorsed responses rather than endorsed responses on the BDI were used as its contribution to the global adjustment score. This was done because it is assumed that depression is negatively correlated with adjustment for these patients. Subjects were then divided

into two equal groups according to a median split of the global adjustment scores. This yielded 14 subjects in the well-adjusted group, and 14 subjects in the poorly adjusted group. Chi Square analysis or Fisher's Exact Test was performed to check for differences in the two groups regarding age, sex, marital status, education, previous or current experience with other chronic illnesses, length of time using hemodialysis, length of time known that hemodialysis was inevitable, and religious affiliation.

Since the cognitive appraisal questionnaire does not meet the criteria for an interval-level scale, non-parametric statistics were used for hypotheses utilizing this measure. A Chi Square analysis or Fisher's Exact Test was used to test for distribution of response differences on hypotheses one and two. t tests were used to test for differences in group means on hypotheses three through five. The median was used as the measure of central tendency for hypothesis six. Pearson Product-Moment Correlations were used on hypotheses seven and eight. For hypothesis nine a median split on the assertiveness dimension yielded two groups--one group high in assertiveness and one low in assertiveness. A t test was then performed to reveal whether or not there was a difference between adjustment means of assertive subjects according to the amount of time the subjects received hemodialysis. An F Test Of Curvilinear Regression was used to test hypotheses 10 and 11. See Table 1 for a summary of the statistics used to test the hypotheses.

### Summary

In this chapter a presentation has been given of all of the information relevant to the data collection of the research. The selection of the subjects was discussed as well as the facility from which they receive

Table 1

## Summary of Statistics Used to Test Hypotheses

Hypothesis	Dependent Instrument	Statistical Test
1	Cognitive Appraisal Questionnaire	Chi Square or Fisher's Exact Test
2	Cognitive Appraisal Questionnaire	Chi Square or Fisher's Exact Test
3	Ways of Coping Checklist	<u>t</u> test
4	Ways of Coping Checklist	<u>t</u> test
5	Ways of Coping Checklist Time on Dialysis	<u>t</u> test
6	Ways of Coping Checklist	<u>t</u> test
7	Spiritual Well-being Scale	Pearson Product-Moment Correlation
8	Interpersonal Behavior Survey	Pearson Product-Moment Correlation
9	Interpersonal Behavior Survey Time on Dialysis	<u>t</u> test
10	Family Adaptability and Cohesion Scale	F Test Of Curvilinear Regression
11	Family Adaptability and Cohesion Scale	F Test Of Curvilinear Regression

Note. Adjustment scores were used with most of the hypotheses. The adjustment scores were obtained by the method discussed in the text.

hemodialysis. The instruments used to collect the data and their psychometric properties were also reviewed. Finally, the research designs, procedure, and statistical tests were discussed. The results of these tests are analyzed and presented in the next chapter.

## CHAPTER FOUR

### RESULTS

This chapter presents the statistical methods used to test the hypotheses of this research study and the results obtained. A discussion of the adjustment measures is offered first, followed by an analysis of the demographic data of the sample. Next, the results of the statistical testing of the hypotheses are presented in the order in which they were listed in Chapter One. This is followed by a discussion of additional statistical tests and unplanned comparisons.

A probability of .05 was used as the acceptable significance level for all of the statistical tests reported in this chapter.

#### Adjustment Measures

The raw data from the tests and questionnaires described in Chapter Three were computerized for statistical analyses. The adjustment measures were of primary interest in the initial analysis since they were used to test nearly all of the hypotheses. As described in Chapter Three, the four measures of adjustment were averaged to form one global score of adjustment (GA) for each subject. However, the decision to average these four measures was based on the assumption that they were correlated with each other either positively or negatively.

The initial analysis of the four adjustment measures yielded the intercorrelations presented in Table 2. As can be seen, there were four correlations among these instruments that were not significant,

Table 2  
Intercorrelations of Adjustment Measures

Instruments	Correlation <sup>a</sup>	<u>t</u> Statistic <sup>b</sup>	Significance Level
AD Scale and BDI	-.465	-2.68	< .01
AD Scale and PUT	.493	2.89	< .005
AD Scale and CWT	.162	.837	n.s.
AD Scale and GA	.842	7.96	< .0005
BDI and PUT	-.249	-1.31	n.s.
BDI and CWT	-.098	-.502	n.s.
BDI and GA	-.651	-4.37	< .0005
PUT and CWT	.026	.133	n.s.
PUT and GA	.642	4.27	< .0005
CWT and GA	.496	2.91	< .005

Note. AD Scale = Acceptance of Disability Scale; BDI = Beck Depression Inventory; PUT = Productive Use of Time; CWT = Compliance With Treatment; GA = Global Adjustment

<sup>a</sup>Pearson Product-Moment Correlations

<sup>b</sup>On-tailed test with 26 d.f.

and three of these involved the Compliance With Treatment (CWT) questionnaire. CWT was not significantly correlated with any of the other measures. This finding suggested that this instrument was not contributing to the global adjustment score for each subject, but rather was confusing the issue.

On the basis of this finding the CWT scores were dropped from the global adjustment scores. Thus, the adjustment score for each subject used to test the hypotheses is based on three measures rather than the four measures originally planned. The intercorrelations of the three measures and the global adjustment scores are presented in Table 3. The intercorrelations of the three adjustment measures remained the same, but their correlations with the global adjustment score increased.

#### Demographic Data

Twenty-eight predominately caucasian subjects volunteered for this research project. Data regarding their sex, marital status, education, experience with other chronic illness, religious affiliation, and the time known that hemodialysis was inevitable are presented in this section. The sample was divided into two equal groups of 14 each according to a median split on their global adjustment scores. These two groups, called well-adjusted or poorly adjusted depending on whether they were above or below the median, were then compared on several designated demographic variables.

#### Sex

Fifteen males and thirteen females volunteered for the research project. The well-adjusted group included seven males and seven females. The poorly adjusted group included eight males and six females. A Chi



Table 3  
Intercorrelations of Adjustment Measures  
Without CWT

Instruments	Correlation <sup>a</sup>	<u>t</u> Statistic <sup>b</sup>	Significance Level
AD Scale and BDI	-.465	-2.68	< .01
AD Scale and PUT	.493	2.89	< .005
AD Scale and GA	.881	9.49	< .0005
BDI and PUT	-.249	-1.31	n.s.
BDI and GA	-.713	-5.19	< .0005
PUT and GA	.725	5.37	< .0005

<sup>a</sup>Pearson Product-Moment Correlation

<sup>b</sup>One-tailed test with 26 d.f.

Square Two-Way Test For Association with Yates Correction was used to test for frequency differences between well-adjusted and poorly adjusted groups according to the sex of the subjects. This yielded a non-significant result ( $\chi^2 = 0$ , d.f. = 1, p = n.s.). Thus, the sex of the subjects does not appear to be a significant factor in global adjustment.

### Age

Age for the 28 subjects ranged from 24 to 76. The mean age for the subjects was 56.29, and the median age was 62. The mean age for the well-adjusted subjects was 53.5. The mean age for the poorly adjusted subjects was 59.07. A t Test For Independent Samples was performed between the mean ages of well-adjusted and poorly adjusted subjects. The result was not significant (t = .907, d.f. = 26, p = n.s.). Thus, the age of the subjects does not appear to be a significant factor in global adjustment.

### Marital Status

Of the 28 subjects, five were single, 16 were married, two were divorced, and five were widowed. Of the well-adjusted subjects, two were single, ten were married, one was divorced, and one was widowed. Of the poorly adjusted subjects, three were single, six were married, one was divorced, and four were widowed. Fisher's Exact Test was used to test for frequency differences between well-adjusted and poorly adjusted subjects according to marital status. The result was significant (p = .019).

Since it appeared that more well-adjusted subjects were married than poorly adjusted subjects, and more poorly adjusted subjects were widowed than well-adjusted subjects, the cells were collapsed into

attached (i.e. married) and unattached (i.e. single, divorced, widowed). Of the well-adjusted subjects, ten fell into the attached cell, and four fell into the unattached cell. Of the poorly adjusted subjects, six fell into the attached cell and eight fell into the unattached cell. A Chi Square Two-Way Test For Association with Yates Correction was used to test for frequency differences between well-adjusted and poorly adjusted groups according to the "attachment" status of the subjects. This yielded a non-significant result ( $\chi^2 = 1.31$ , d.f. = 1, p = n.s.). Thus, although there was a significant difference between the distributions of well-adjusted and poorly adjusted subjects according to marital status, this difference was not due simply to the fact that more well-adjusted subjects were married and more poorly adjusted subjects were single, divorced, or widowed.

### Education

Of the 28 subjects, nine had less than high school educations, 12 were high school graduates, six were college graduates, and one had completed an advanced degree. Of the well-adjusted subjects three had less than high school educations, seven were high school graduates, four were college graduates, and zero had completed an advanced degree. Of the poorly adjusted subjects, six had less than high school educations, five were high school graduates, two were college graduates, and one had completed an advanced degree. Fisher's Exact Test was used to test for frequency differences between well-adjusted and poorly adjusted subjects according to education. The result was significant (p = .025). Thus, the level of education appears to be a significant factor in global adjustment.

### Other Chronic Illness

Of the 28 subjects, 11 had other chronic illnesses, and 17 did not. Of the well-adjusted subjects eight had other chronic illnesses, and six did not. Of the poorly-adjusted subjects three had other chronic illnesses, and 11 did not. A Chi Square Two-Way Test For Association with Yates Correction was used to test for frequency differences between well-adjusted and poorly adjusted subjects according to experience with other chronic illnesses. This yielded a non-significant result ( $\chi^2 = 2.39$ , d.f. = 1, p = n.s.), which suggests that experience with other chronic illness does not appear to be a significant factor in global adjustment.

### Religious Affiliation

Of the 28 subjects, 23 were Protestant, one was Catholic, one was Jewish, and three endorsed "other". Of the well-adjusted subjects, 12 were Protestant, zero were Catholic, zero were Jewish, and two endorsed "other". Of the poorly adjusted subjects, 11 were Protestant, one was Catholic, one was Jewish, and one endorsed "other". Fisher's Exact Test was used to test for frequency differences between well-adjusted and poorly adjusted subjects according to religious affiliation. The result was not significant (p = .101). Thus, religious affiliation does not appear to be a significant factor in global adjustment.

### Time Known That Hemodialysis Was Inevitable

Of the 28 subjects, eight knew less than one week, zero knew at least one week but less than one month, five knew one month or more but less than one year, and 15 knew more than one year that hemodialysis was inevitable. Of the well-adjusted subjects, three knew less than one week, zero knew at least one week but less than one month, two knew

more than one month but less than one year, and nine knew more than one year the hemodialysis was inevitable. Of the poorly adjusted subjects, five knew less than one week, zero knew at least one week but less than one month, three knew more than one month but less than one year, and six new more than one year that hemodialysis was inevitable. Fisher's Exact Test was used to test for frequency differences between well-adjusted and poorly adjusted subjects according to the amount of time that each subject knew that hemodialysis was inevitable. The result was not significant ( $p = .069$ ). Thus, the amount of time known that hemodialysis was inevitable does not appear to be a significant factor in global adjustment.

### Cognitive Appraisals

This section covers  $H_1$  and  $H_2$ , and other analyses regarding cognitive appraisals which were conducted. Primary and secondary cognitive appraisals were defined in Chapter Two.

#### Primary Appraisal

$H_1$  stated that there would be a significant difference between well-adjusted and poorly adjusted subjects in the distribution of the primary appraisals that they endorse. Table 4 presents the frequencies with which well-adjusted and poorly adjusted subjects endorsed various primary appraisals. A Fisher's Exact Test was performed to test for differences between these frequencies. The result was not significant ( $p = .153$ ). Thus, there was no difference between well-adjusted and poorly adjusted subjects in the distributions of the primary appraisals that they endorsed, and  $H_1$  was not supported.

A One-Way Chi Square Test was performed to determine if the

Table 4

Frequency of Primary Appraisal Endorsement  
by Subject Adjustment

---

<u>Adjustment</u>	<u>Primary Appraisal</u>			
	A <sup>a</sup>	B <sup>b</sup>	C <sup>c</sup>	D <sup>d</sup>
Well-adjusted	0	1	8	5
Poorly adjusted	0	1	9	4

---

<sup>a</sup>that is irrelevant to you?

<sup>b</sup>that is beneficial or desirable to you?

<sup>c</sup>that is distressing or undesirable to you?

<sup>d</sup>that poses a challenge to you?

primary appraisals that the subjects endorsed differed from what could be expected by chance. Table 5 presents the percentages of the primary appraisals endorsed by the total sample of 28 subjects, and the percentages expected by chance. The result was significant ( $\chi^2 = 90.81$ , d.f. = 3,  $p < .001$ ).

These findings indicate that there was not a difference between the frequencies with which well-adjusted and poorly adjusted subjects endorsed primary appraisals. However, as a total group they showed a significant preference for certain types of primary appraisals, and endorsed them in the following order of frequency: distressing or undesirable (60.7%), a challenge (32.1%), beneficial or desirable (7.1%), irrelevant (0%).

### Secondary Appraisal

H<sub>2</sub> stated that there would be a significant difference between well-adjusted and poorly adjusted subjects in the distributions of the secondary appraisals that they endorse. Table 6 presents the frequencies with which well-adjusted and poorly adjusted subjects endorsed various secondary appraisals. A Fisher's Exact Test was performed to test for differences between these frequencies. The result approached the desired significance level of .05, but was not significant ( $p = .057$ ). Thus, there was not a significant difference between well-adjusted and poorly adjusted subjects in the distributions of the secondary appraisals that they endorsed, and H<sub>2</sub> was not supported.

A One Way Chi-Square Test was performed to determine if the secondary appraisals that the subjects endorsed differed from what could be expected by chance. Table 7 presents the percentages of the secondary appraisals endorsed by the total sample of 28 subjects, and the percentages expected

Table 5

Observed Versus Expected Percentage Endorsement  
of Primary Appraisals

---

	<u>Primary Appraisal</u>			
	A <sup>a</sup>	B <sup>b</sup>	C <sup>c</sup>	D <sup>d</sup>
Observed (%)	0	7.1	60.7	32.1
Expected (%)	25	25	25	25

---

<sup>a</sup>that is irrelevant to you?

<sup>b</sup>that is beneficial or desirable to you?

<sup>c</sup>that is distressing or undesirable to you?

<sup>d</sup>that poses a challenge to you?



Table 6

Frequency of Secondary Appraisal Endorsement  
by Subject Adjustment

---

<u>Adjustment</u>	<u>Secondary Appraisal</u>			
	A <sup>a</sup>	B <sup>b</sup>	C <sup>c</sup>	D <sup>d</sup>
Well-adjusted	1	13	0	0
Poorly adjusted	1	10	2	1

---

<sup>a</sup>that you could change or do something about?

<sup>b</sup>that must be accepted or gotten used to?

<sup>c</sup>that you needed to know more about before you could act?

<sup>d</sup>in which you had to hold yourself back from doing what you wanted to do?

Table 7

Observed Versus Expected Percentage Endorsement  
of Secondary Appraisals

---

	Secondary Appraisal			
	A <sup>a</sup>	B <sup>b</sup>	C <sup>c</sup>	D <sup>d</sup>
Observed (%)	7.1	82.1	7.1	3.6
Expected (%)	25	25	25	25

---

<sup>a</sup>that you could change or do something about?

<sup>b</sup>that must be accepted or gotten used to?

<sup>c</sup>that you needed to know more about before you could act?

<sup>d</sup>in which you had to hold yourself back from doing what you wanted to do?

by chance. The result was significant ( $\chi^2 = 174.37$ , d.f. = 3, p < .001).

These findings indicate that there was not a difference between the frequencies with which well-adjusted and poorly adjusted subjects endorsed secondary appraisals. However, as a total group they showed a significant preference for certain types of secondary appraisals, and endorsed them in the following order of frequency: must be accepted or gotten used to (82.1%), needed to know more about before you could act (7.1%), could change or do something about (7.1%), had to hold yourself back from doing what you wanted to do (3.6%).

#### Length of Time Using Hemodialysis

Comparisons were made between secondary appraisals and length of time using hemodialysis, and primary appraisals and length of time using hemodialysis. The distribution of secondary appraisals was small, and there did not appear to be a relationship between the distribution and the length of time using hemodialysis.

A Chi-Square Two-Way Test For Association with Yates Correction was performed to test for frequency differences between the primary appraisals endorsed and the length of time using hemodialysis. A median split was performed on the subjects' length of time using hemodialysis. This yielded 13 subjects who had been on hemodialysis for a short time (less than the median of 29.8 months), and 15 subjects who had been on hemodialysis for a long time (more than the median of 29.8 months).<sup>1</sup>

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<sup>1</sup>A median split on the length of time using hemodialysis dimension did not yield 14 subjects in each group as anticipated. This was because three identical scores shared the median value. The standard procedure of dividing these scores and adding them to the lower limit was used to determine the actual median (c.f. Schmidt, M. J. Understanding And Using Statistics. Lexington: D.C. Heath and Company, 1979). Thus, 13 subjects were below the actual median, and 15 subjects were above the actual median.

Table 8 presents the frequencies with which primary appraisals were endorsed according to length of time using hemodialysis. Those subjects who had been on hemodialysis for a short time tended to endorse "distressing or undesirable". However, the Chi Square analysis, performed only on primary appraisals C and D for these subjects, was not significant ( $\chi^2 = 1.26$ , d.f. = 1, p = n.s.). Thus, there was no difference between the secondary appraisals of short-term and long-term hemodialysis users.

### Coping Behaviors

This section covers H<sub>3</sub>, H<sub>4</sub>, H<sub>5</sub>, H<sub>6</sub>, and analyses regarding coping behaviors which were conducted.

#### Problem-focused and Emotion-focused Coping

H<sub>3</sub> States that there will be significantly more emotion-focused coping than problem-focused coping utilized by all subjects. The mean emotion-focused coping score for the total sample was 57.79. The mean problem-focused coping score for the total sample was 55.57. A One-tailed t Test For Correlated Samples was performed to test whether the subjects used emotion-focused coping to a significantly greater degree than problem-focused coping. The result was not significant (t = .741, d.f. = 27, p = n.s.); thus, H<sub>3</sub> was not supported. This indicates that there was no difference in the usage of problem-focused and emotion-focused coping by the subjects.

#### Coping Scales

In addition to measuring the broad problem-focused and emotion-focused coping strategies used in the hypothesis above, the Ways of Coping instrument was also used to measure eight specific coping behaviors that the subjects used. The eight coping behaviors were determined by the

Table 8

Frequency of Primary Appraisal Endorsement by  
Length of Time Using Hemodialysis

<u>Length of Time Using Hemodialysis</u>	<u>Primary Appraisal</u>			
	A <sup>a</sup>	B <sup>b</sup>	C <sup>c</sup>	D <sup>d</sup>
Short-term Use	0	1	6	6
Long-term Use	0	1	11	3

<sup>a</sup>that is irrelevant to you?

<sup>b</sup>that is beneficial to you?

<sup>c</sup>that is distressing or undesirable to you?

<sup>d</sup>that poses a challenge to you?

eight coping scales of the Ways of Coping instrument. The means and standard deviations of the coping scales for the total sample are presented in Table 9. As can be seen, many of the standard deviations are quite high.

A correlational matrix on the coping scales for the total sample of 28 subjects was obtained. The Pearson Product-Moment Correlations were converted into t statistics and tested for significance using two-tailed tests. The intercorrelations of the coping scales are presented in Table 10. The last two entries are the broad Problem-focused and Emotion-focused coping scales. Since the broad coping scales are made up of items on the first seven specific coping scales, it was expected that there would be high correlations between the specific and the broad coping scales. There were also some significant correlations between the specific coping scales, which suggests that they are not totally independent scales.

H<sub>4</sub> states that there will be significant differences between well-adjusted and poorly adjusted subjects in the means of eight coping behaviors that they utilize. Before this hypothesis was formally tested, correlations between the coping scales and the adjustment scores were obtained. These correlations are presented in Table 11, along with the corresponding t statistics and two-tailed probability levels. Only the Wishful Thinking and Blames Self coping scales reached the .05 significance level. This indicates that both Wishful Thinking and Blames Self coping scales have significant negative correlations with adjustment for these hemodialysis subjects. Therefore, a high degree of wishful thinking and self-blame are related to low adjustment scores.

To test H<sub>4</sub> formally the means of the well-adjusted and poorly adjusted subjects were compared on each scale. Two-tailed t Tests

Table 9  
Means and Standard Deviations  
of the Coping Scales

Coping Scales <sup>a</sup>	Mean	Standard Deviation
Problem-focused	52.82	19.19
Wishful thinking	62.5	18.71
Mixed	35.82	16.08
Growth	67.79	23.48
Minimizes Threat	63.64	19.28
Seek Emotional Support	71.5	33.02
Blames Self	20.25	32.59
Religious Coping	57.75	33.79
Problem-focused Coping Scale	55.57	18.87
Emotion-focused Coping Scale	57.79	14.01

<sup>a</sup>from the Ways of Coping instrument.

Table 10

## Intercorrelations Between Coping Scales

	PF	WT	MI	GR	MT	ES	BS	RC	PC	EC
Problem-Focused (PF)	1									
Wishful-Thinking (WT)	.456*	1								
Mixed (MI)	.727***	.548**	1							
Growth (GR)	.472*	.450*	.337	1						
Minimizes Threat (MT)	-.024	.358	.123	.205	1					
Seek Emotional Support (ES)	.318	.259	.245	.260	-.313	1				
Blames Self (BS)	.464*	.471*	.406*	.137	.017	.317	1			
Religious Coping (RC)	.203	.246	.388*	.332	-.083	.359	.145	1		
Problem-focused Coping Scale (PC)	.881***	.589***	.809***	.561***	.001	.489**	.401*	.320	1	
Emotion-focused Coping Scale (EC)	.558***	.895***	.635***	.593***	.562***	.183	.473*	.317	.589***	1

Note. These are Pearson Product-Moment Correlations on the scales of the Ways of Coping instrument.

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .002$



Table 11

## Correlations Between Coping Scales and Adjustment

Coping Scales <sup>a</sup>	Correlation Coefficient <sup>b</sup>	<u>t</u> Statistic	Probability Level <sup>c</sup>
Problem-focused	-.268	-1.42	n.s.
Wishful Thinking	-.460	-2.64	< .05
Mixed	-.238	-1.25	n.s.
Growth	.116	.596	n.s.
Minimizes Threat	-.124	- .637	n.s.
Seek Emotional Support	-.013	- .066	n.s.
Blames Self	-.374	-2.06	< .05
Religious Coping	.095	.487	n.s.
Problem-focused Coping Scale	-.323	-1.74	n.s.
Emotion-focused Coping Scale	-.290	-1.55	n.s.

<sup>a</sup>from the Ways of Coping instrument

<sup>b</sup>Pearson Product-Moment Correlations

<sup>c</sup>two-tailed test; d.f. = 26

For Independent Samples were performed to test whether there were significant differences between well-adjusted and poorly adjusted subjects according to their means on the eight specific coping scales, and the two broad coping scales. The means,  $t$  statistics, and probability levels appear in Table 12. None of the  $t$  statistics reached significance at the .05 level. Although there were two significant correlations between the coping scales and adjustment, none of the  $t$  statistics reached significance when the subjects were divided into well-adjusted and poorly adjusted groups and compared. Thus,  $H_4$  was not supported, which indicates that well-adjusted and poorly adjusted subjects do not use different coping behaviors to deal with hemodialysis.

#### Length of Time Using Hemodialysis and Coping Behaviors

$H_5$  states that there will be significant differences between the means of eight coping behaviors utilized by subjects receiving hemodialysis for zero to six months, seven to twelve months, and one year or longer. There were six subjects who had been using hemodialysis less than six months, one who had been using hemodialysis between seven and twelve months, and 21 subjects who had received hemodialysis for longer than one year. Because of the disproportionate sizes of the groups and because there was only one subject in one of the groups, the data were analyzed differently than the hypothesis would indicate. A median split was made on the length of time using hemodialysis scores, which yielded two groups--one with 13 subjects below the median of 29.8 months, and a second with 15 subjects above the median of 29.8 months using hemodialysis (see Footnote 1). It was rationalized that this would still test for differences in coping behavior scores of subjects according to the length

Table 12  
Coping Behaviors and Subject Adjustment

Coping Behavior	Mean Well-Adjusted	Mean Poorly Adjusted	<u>t</u> Statistic <sup>b</sup>	Probability Level
Problem-focused	48.00	57.64	-1.32	n.s.
Wishful Thinking	55.93	69.07	-1.91	n.s.
Mixed	31.57	40.04	-1.39	n.s.
Growth	68.38	67.21	.124	n.s.
Minimizes Threat	62.86	64.43	- .207	n.s.
Seek Emotional Support	64.36	78.64	-1.13	n.s.
Blames Self	11.93	28.57	-1.35	n.s.
Religious Coping	55.93	59.57	- .275	n.s.
Problem-focused Coping Scale	49.43	61.71	-1.75	n.s.
Emotion-focused Coping Scale	54.21	61.36	-1.35	n.s.

<sup>a</sup>from the Ways of Coping instrument

<sup>b</sup>Two-tailed t Test for Independent Samples; d.f. = 26

of time using hemodialysis, and would also give more equal group sizes.

To test the essence of the hypothesis with more equal group sizes, the two groups were compared on each of the scales of the Ways of Coping instrument. Two-tailed t Tests For Independent Samples were performed to test whether there were significant differences between short-term and long-term hemodialysis users according to their means on the eight specific coping scales and the two broad coping scales. The mean coping behavior scores for short-term and long-term hemodialysis users, t statistics, and probability levels are presented in Table 13. None of the t statistics reached significance at the .05 level for a two-tailed test.

To determine whether there were significant correlations between the coping scales and the length of time using hemodialysis, correlation coefficients were converted to t statistics. The correlations, t statistics, and probability levels are given in Table 14. Only one scale, Problem-focused, reached significance at the .05 level for two-tailed probability. This indicates that Problem-focused coping is significantly negatively correlated with the length of time using hemodialysis for these hemodialysis subjects. Although there was a significant correlation between this one coping scale and the length of time using hemodialysis, none of the t tests on Table 12 were significant. Thus, H<sub>5</sub> was not supported, which indicates that long-term hemodialysis users do not use different coping strategies than short-term hemodialysis users.

#### Religious Coping

H<sub>6</sub> states that the mean religious coping behavior score for the entire sample will be greater than the average of the other seven coping

Table 13

## Coping Behaviors and Length of Time Using Hemodialysis

Coping Behavior	Mean Short-Term Use	Mean Long-Term Use	<u>t</u> Statistic <sup>b</sup>	Probability Level
Problem-focused	58.92	47.53	1.58	n.s.
Wishful thinking	68.77	57.07	1.67	n.s.
Mixed	38.00	33.93	.649	n.s.
Growth	71.38	64.67	.734	n.s.
Minimizes Threat	62.69	64.46	-.234	n.s.
Seek Emotional Support	82.15	62.27	1.61	n.s.
Blames Self	20.54	20.00	.042	n.s.
Religious Coping	62.77	53.40	.712	n.s.
Problem-focused Coping Scale	61.62	50.33	1.59	n.s.
Emotion-focused Coping Scale	61.38	54.67	1.25	n.s.

<sup>a</sup> from the Ways of Coping instrument

<sup>b</sup> Two-tailed t Test For Independent Samples; d.f. = 26

Table 14  
Correlations Between Coping Scales and Length  
of Time Using Hemodialysis

Coping Scales <sup>a</sup>	Correlation Coefficient <sup>b</sup>	t Statistic	Probability Level
Problem-focused	-.418	-2.35	< .05
Wishful Thinking	-.220	-1.15	n.s.
Mixed	-.078	-.373	n.s.
Growth	-.199	-1.04	n.s.
Minimizes Threat	.044	.225	n.s.
Seek Emotional Support	-.083	- .425	n.s.
Blames Self	-.142	- .731	n.s.
Religious Coping	.060	.306	n.s.
Problem-focused Coping Scale	-.354	-1.93	n.s.
Emotion-focused Coping Scale	-.166	- .858	n.s.

<sup>a</sup>from the Ways of Coping instrument

<sup>b</sup>Pearson Product-Moment Correlation

<sup>c</sup>two-tailed test; d.f. = 26

behavior means for the entire sample. The mean religious coping score for the entire sample was 57.75. The range of the means of the seven coping scales was 20.25 to 71.50. The mean of the means for the seven coping scales was 53.47, and the median was 62.50. The means are listed in Table 15. If the mean is used as the measure of central tendency, then the hypothesis can be supported. However, since the distribution of the means of the coping scales appeared to be skewed, the median was used as the measure of central tendency. Thus,  $H_6$  was not supported since the mean of 57.75 for the religious coping scale was less than the median of 62.50 for the other seven coping scales, excluding the religious coping scale. The purpose of this hypothesis was to determine whether these patients used religious coping behaviors. It was felt that if they used religious coping as much as they used other coping behaviors (determined by the average of coping behaviors), then the importance of religious coping behaviors could be established. Therefore, a test of statistical significance was unnecessary.

#### Other Significant Correlations Including Coping Behaviors

Three other correlations involving coping behaviors were found to be significant, which will not be addressed elsewhere in this chapter. The first significant correlation was found between self-blame and depression, as measured by the Beck Depression Inventory ( $r = .511$ ,  $t = 3.03$ ,  $p < .01$ ). The second significant correlation revealed a negative relationship between wishful thinking and acceptance of disability ( $r = -.532$ ,  $t = -3.20$ ,  $p < .01$ ). The third significant correlation revealed a negative relationship between problem-focused coping and acceptance of disability ( $r = -.4$ ,  $t = -2.26$ ,  $p < .05$ ). Thus, there is a positive relationship between self-blame and depression, and negative relationships

Table 15

Means of the Eight Coping Scales for the Total Sample

Coping Scales <sup>a</sup>	Means	Mean of the Means	Median of the Means
Problem-focused	52.82	53.47	62.50
Wishful Thinking	62.50		
Mixed	35.82		
Growth	67.79		
Minimizes Threat	63.64		
Seek Emotional Support	71.50		
Blames Self	20.25		
Religious Coping	57.75		

<sup>a</sup>from the Ways of Coping instrument



between wishful thinking and acceptance of disability, and problem-focused coping and acceptance of disability. Other significant correlations involving coping behaviors will be presented elsewhere in this chapter, since they fit most appropriately under other headings.

### Spiritual Well-being

In this section,  $H_7$  will be discussed. Correlations between spiritual well-being and other instruments will also be reviewed.

$H_7$  states that there will be a positive relationship between spiritual well-being and adjustment. A Pearson Product-Moment Correlation was performed between spiritual well-being and adjustment. The result was significant ( $r = .515$ ,  $t = 3.07$ ,  $p < .005$ ); thus  $H_7$  was supported. This indicates that subjects who had higher spiritual well-being scores were better adjusted.

Spiritual well-being was also significantly correlated with other instruments for the hemodialysis subjects. A significant negative correlation was found between spiritual well-being and depression, as measured by the Beck Depression Inventory ( $r = -.388$ ,  $t = -2.15$ ,  $p < .05$ ). Significant positive correlations were found between spiritual well-being and: acceptance of disability ( $r = .493$ ,  $t = 2.89$ ,  $p < .01$ ); assertiveness ( $r = .476$ ,  $t = 2.76$ ,  $p < .05$ ); and religious coping ( $r = .398$ ,  $t = 2.21$ ,  $p < .05$ ). This indicates that subjects who scored high on spiritual well-being tended to be less depressed, accepted their disability more, were more assertive, and used religious coping strategies more to deal with the stresses of hemodialysis, than did subjects who scored low on spiritual well-being.

### Assertiveness

In this section  $H_8$  and  $H_9$  will be discussed. Correlations between assertiveness and other instruments will also be reviewed.

### Adjustment

$H_8$  states that there will be a positive relationship between assertiveness and adjustment. A Pearson Product-Moment Correlation was performed between assertiveness and adjustment. The result was significant ( $r = .353$ ,  $z = 1.92$ ,  $p < .05$ ); thus,  $H_8$  was supported. This indicates that assertive subjects tend to be better adjusted.

### Length of Time Using Hemodialysis

$H_9$  states that the mean adjustment score of assertive subjects receiving hemodialysis longer than six months will be significantly greater than the mean adjustment score of those assertive subjects receiving hemodialysis less than six months. To test this hypothesis the assertiveness scores of the subjects were split at the median. Those subjects above the median on assertiveness were called "assertive", and those subjects below the median were called "non-assertive". Of the 14 assertive subjects, ten had been using hemodialysis longer than six months and four subjects had been using hemodialysis less than six months. A  $t$  Test For Independent Samples was performed to test whether the mean adjustment score for those assertive subjects receiving hemodialysis longer than six months was significantly greater than the mean adjustment score for those assertive subjects receiving hemodialysis less than six months. The result was significant ( $t = 1.90$ ,  $d.f. = 12$ ,  $p < .05$ ); thus  $H_9$  was supported. This indicates that assertive subjects who have been using hemodialysis longer than six months are better adjusted than assertive subjects who have been using hemodialysis less

than six months.

Of the non-assertive subjects, 12 had been using hemodialysis longer than six months and two had been using hemodialysis less than six months. A t Test For Independent Samples was performed to test whether the mean adjustment score for those non-assertive subjects receiving hemodialysis longer than six months was significantly different than the mean adjustment score for those non-assertive subjects receiving hemodialysis less than six months. The result was not significant (t = .482, d.f. = 12, p = n.s.), which indicates that there is no difference between the adjustment scores of non-assertive subjects receiving hemodialysis longer than six months and non-assertive subjects receiving hemodialysis less than six months. Since there were only two subjects in one of the groups, this finding must be interpreted with caution. Larger group sizes are necessary before accurate interpretations can be made.

Additional analyses were performed to further explore the relationships between assertiveness, adjustment, and length of time using hemodialysis. A correlation was performed between adjustment and length of time using hemodialysis for assertive subjects. The positive correlation was significant (r = .463, t = 1.81, p < .05). Likewise, a correlation was performed between adjustment and length of time using hemodialysis for non-assertive subjects. The negative correlation was also significant (r = -.663, t = -3.07, p < .005). A correlation between assertiveness and length of time using hemodialysis for the total sample was not significant (r = -.125, t = -.642, p = n.s.). A correlation between adjustment and length of time using hemodialysis for the total sample was also not significant (r = .259, t = 1.37, p = n.s.).

The above findings indicate that assertive subjects receiving

hemodialysis longer than six months are significantly better adjusted than assertive subjects receiving hemodialysis less than six months. Assertive subjects also tend to become better adjusted over time on hemodialysis, whereas non-assertive subjects tend to become less adjusted over time on hemodialysis. Therefore, assertiveness appears to be a significant factor in adjustment to hemodialysis.

#### Correlations Between Assertiveness and Other Instruments

Assertiveness was also found to be significantly correlated with other instruments for this sample. A Pearson Product-Moment Correlation was significant between assertiveness and spiritual well-being when converted to a two-tailed  $t$  test ( $r = .476$ ,  $t = 2.76$ ,  $p < .05$ ). A Pearson Product-Moment Correlation was also negatively significant between assertiveness and "minimizes threat" coping behavior when converted to a two-tailed  $t$  test ( $r = -.543$ ,  $t = -3.20$ ,  $p < .01$ ). Thus, a positive correlation exists between assertiveness and spiritual well-being, and a negative correlation exists between assertiveness and "minimizes threat".

#### Assertiveness, Spiritual Well-being, and Adjustment

As reported above, significant positive correlations were found between assertiveness, spiritual well-being, and adjustment for these hemodialysis subjects. To determine if assertiveness and spiritual well-being could predict adjustment to hemodialysis, a multiple regression analysis was performed. The results of this analysis are presented in Table 16. Spiritual well-being was entered into the sequential multiple regression first because it had a greater correlation with adjustment than did assertiveness. The results of this analysis

Table 16  
Sequential Multiple Regression Analysis  
for Adjustment

Variable	Proportion of Variance	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Spiritual Well-being	.26	629.19	1	629.19	9.19*
Assertiveness	.02	36.08	1	36.08	.53
Error	.72	1710.84	-	-	-
Total	1.00	2376.11	-	-	-

\*p < .01

indicate that 28% of the variance of adjustment can be accounted for by spiritual well-being and assertiveness. Spiritual well-being accounted for 26% of the variance itself, and was a highly significant factor ( $F = 9.19$ ,  $d.f. = 1$ ,  $p = .006$ ). Assertiveness only accounted for 2% of the variance of adjustment since it was positively correlated with spiritual well-being; therefore, assertiveness was not a significant factor ( $F = .53$ ,  $d.f. = 1$ ,  $p = .481$ ). Thus, spiritual well-being can be used with a moderate degree of confidence to predict adjustment to hemodialysis.

### Family Adaptability and Cohesion

In this section  $H_{10}$  and  $H_{11}$  will be discussed. Correlations between family adaptability and cohesion, and other instruments will also be reviewed.

#### Family Adaptability

$H_{10}$  states that there will be a curvilinear relationship between family adaptability and adjustment. Before formally testing this hypothesis a test was performed to determine if there was a linear relationship between family adaptability and adjustment. The result of the Pearson Product-Moment Correlation when converted to a two-tailed  $t$  test was not significant ( $r = .261$ ,  $t = 1.38$ ,  $p = n.s.$ ). Next, a scatter plot was made to determine if a curvilinear relationship seemed to exist between the two variables according to sight. A curvilinear relationship did not appear to exist.

To test  $H_{10}$  formally the subjects were placed into four groups of family adaptability according to their scores on the Family Adaptability and Cohesion Scale (FACES II). These groups were those suggested by

Olson, et. al. (1982), and were labelled Chaotic, Flexible, Structured, and Rigid depending upon family adaptability scores. An F Test of Curvilinear Regression was then performed on the adjustment scores of the subjects in these four groups. The result was not significant ( $F = .292$ ,  $d.f. = 2, 24$ ,  $p = n.s.$ ). The results of this F test are also presented in Table 17. On the basis of the non-significant results,  $H_{10}$  was not supported. This indicates that a curvilinear relationship does not exist between family adaptability and adjustment.

Of the 28 subjects, eight scored in the Chaotic range, four in the Flexible range, ten in the Structured range, and six in the Rigid range of family adaptability. A Chi Square Goodness-Of-Fit Test was performed to determine if the observed frequency distribution was significantly different than the expected frequency distribution according to the research of Olson, et. al. (1982). Table 18 presents the percentage of the observed and expected family adaptability scores. The result of the Chi Square Goodness-Of-Fit Test was significant ( $\chi^2 = 22.63$ ,  $d.f. = 3$ ,  $p < .01$ ), indicating that the subjects perceived their families as less flexible, and more rigid and chaotic than expected.

Well-adjusted and poorly adjusted subjects were also compared on the family adaptability scale. Of the well-adjusted subjects, six scored in the Chaotic range, one in the Flexible range, five in the Structured range, and two in the Rigid range. Of the poorly adjusted subjects, two scored in the Chaotic range, three in the Flexible range, five in the Structured range, and four in the Rigid range. Fisher's Exact Test was used to test for frequency differences between well-adjusted and poorly adjusted subjects according to family adaptability scores. The result was significant ( $p = .011$ ), indicating that well-adjusted hemodialysis

Table 17

F Test for Curvilinear Regression for Family  
Adaptability and Adjustment

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Between Groups	250.87	8	--	--
Linear Regression	199.21	1	199.21	2.25
Deviations from Linear Regression	51.66	2	25.83	.292
Error	2125.23	24	88.55	--
Totals	2376.10	27	--	--



Table 18

Observed Versus Expected Percentage Scores on  
Family Adaptability

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<u>Family Adaptability</u>				
	Chaotic	Flexible	Structured	Rigid
Observed (%)	28.6	14.3	35.7	21.4
Expected (%)	16.1	33.1	35.3	15.5

---

subjects perceived their families as more chaotic, less flexible, and less rigid than poorly adjusted subjects.

The above statistical tests indicate that the hemodialysis subjects used in this study differed significantly in their family adaptability scores compared to what would be expected in the general population. Well-adjusted and poorly adjusted subjects also differed significantly from each other in the distributions of their family adaptability scores.

Correlations between family adaptability and other measures used in this study were also performed, and three were significant. There was a positive relationship between family adaptability and productive use of time ( $r = .405$ ,  $t = 2.29$ ,  $p < .05$ ). There was also a positive relationship between family adaptability and growth coping behavior ( $r = .457$ ,  $t = 2.62$ ,  $p < .05$ ). In addition, there was a strong positive correlation between family adaptability and family cohesion, the two scales of the FACES II instrument ( $r = .757$ ,  $t = 5.91$ ,  $p < .001$ ). Thus, the two scales were not totally independent of each other in their use on this sample.

### Family Cohesion

$H_{11}$  states that there will be a curvilinear relationship between family cohesion and adjustment. Before formally testing this hypothesis a test was performed to determine if there was a linear relationship between family cohesion and adjustment. The result of the Pearson Product-Moment Correlation when converted to a two-tailed  $t$  test was not significant ( $r = .347$ ,  $t = 1.89$ ,  $p = \text{n.s.}$ ). Next, a scatter plot was made to determine if a curvilinear relationship seemed to exist between the two variables according to sight. A curvilinear relationship did not appear to exist.

To test  $H_{11}$  formally the subjects were placed into four groups of family cohesion according to their scores on the FACES II. These groups were those suggested by Olson, et. al. (1982), and were labelled Disengaged, Separated, Connected, and Enmeshed depending upon family cohesion scores. An  $F$  Test Of Curvilinear Regression was then performed on the adjustment scores of the subjects in these four groups. The result was significant for linear regression ( $F = 13.20$ ,  $d.f. = 2, 24$ ,  $p = .01$ ), but not significant for curvilinear regression ( $F = 1.19$ ,  $d.f. = 2, 24$ ,  $p = n.s.$ ). The results of this  $F$  test are also presented in Table 19. On the basis of the non-significant curvilinear regression,  $H_{11}$  was not supported. This indicates that a curvilinear relationship does not exist between family cohesion and adjustment.

Of the 28 subjects, seven scored in the Disengaged range, seven in the Separated range, six in the Connected range, and eight in the Enmeshed range of family cohesion. A Chi Square Goodness-Of-Fit Test was performed to determine if the observed frequency distribution was significantly different than the expected frequency distribution according to the research of Olson, et. al. (1982). Table 20 presents the percentage of the observed and expected family cohesion scores. The results of the Chi Square Goodness-Of-Fit Test was significant ( $\chi^2 = 11.34$ ,  $d.f. = 3$ ,  $p < .01$ ), indicating that the subjects perceived their families as more disengaged and enmeshed, and less connected than expected.

Well-adjusted and poorly adjusted subjects were also compared on the family cohesion scale. Of the well-adjusted subjects, zero scored in the Disengaged range, five in the Separated range, four in the Connected range, and five in the Enmeshed range. Of the poorly adjusted subjects, seven scored in the Disengaged range, two in the Separated

Table 19

F Test for Curvilinear Regression for Family  
Cohesion and Adjustment

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Between Groups	670.68	3	--	--
Linear Regression	501.69	1	501.69	13.20*
Deviations from Linear Regression	168.99	2	84.49	1.19
Error	1705.42	24	71.06	--
Totals	2376.10	27	--	--

\*  
p < .01

Table 20

Observed Versus Expected Percentage Scores on  
Family Cohesion

---

<u>Family Cohesion</u>				
	Disengaged	Separated	Connected	Enmeshed
Observed (%)	25	25	21.4	28.6
Expected (%)	15.4	30.5	39.9	14.2

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range, two in the Connected range, and three in the Enmeshed range. Fisher's Exact Test was used to test for frequency differences between well-adjusted and poorly adjusted subjects according to family cohesion scores. The result was significant ( $p = .0004$ ), indicating that well-adjusted hemodialysis subjects perceived their families as more separated, connected, and enmeshed, and less disengaged than poorly adjusted subjects.

The above statistical tests indicate that the hemodialysis subjects used in this study differed significantly in their family cohesion scores compared to what would be expected in the general population. Well-adjusted and poorly adjusted subjects also differed significantly from each other in the distributions of their family cohesion scores.

Correlations between family cohesion and other measures in this study were also performed, and only one was significant. A significant negative correlation was found between family cohesion and depression, as measured by the Beck Depression Inventory ( $r = -.388$ ,  $t = -2.15$ ,  $p < .05$ ). This indicates that subjects who perceive their families as more cohesive, tend to be less depressed.

### Summary

In this chapter the results of this research study have been presented in a statistical format. It was shown that there was a significant difference in the distribution of well-adjusted and poorly adjusted subjects on the marital status and education dimensions. Although  $H_1$  and  $H_2$  were not supported, it was shown that the distributions of primary and secondary appraisals differed significantly from random distributions.  $H_3$  was not supported because the subjects did not utilize emotion-focused coping significantly more than problem-

focused coping. H<sub>4</sub> was not supported because there were no significant differences between well-adjusted and poorly adjusted subjects in the means of eight coping behaviors. Likewise, H<sub>5</sub> was not supported because short-term hemodialysis users did not significantly differ from long-term users on eight coping behaviors. H<sub>6</sub> was also not supported since the mean religious coping score was not greater than the median of the other coping behaviors. H<sub>7</sub> was supported because spiritual well-being and adjustment were positively correlated. H<sub>8</sub> was also supported since assertiveness and adjustment were positively correlated. Likewise, H<sub>9</sub> was supported since the mean adjustment score of assertive subjects receiving hemodialysis longer than six months was significantly greater than the mean adjustment score of assertive subjects receiving hemodialysis less than six months. H<sub>10</sub> was not supported because there was not a curvilinear relationship between family adaptability and adjustment. Similarly, H<sub>11</sub> was not supported because there was not a curvilinear relationship between family cohesion and adjustment.

Other statistical tests were also performed. It was shown that Compliance With Treatment was not correlated with the other adjustment measures, and therefore was removed from the global adjustment scores. It was also shown that two coping behaviors, self-blame and wishful thinking, were negatively correlated with adjustment. Self-blame was found to be positively correlated with depression, and wishful thinking and problem-focused coping were negatively correlated with acceptance of disability. Problem-focused coping was negatively correlated with the length of time using hemodialysis. Spiritual well-being was found to be negatively correlated with depression, and positively correlated with acceptance of disability, assertiveness, and religious coping. It

was also found that spiritual well-being could significantly predict adjustment scores. The adjustment scores of assertive subjects were found to increase over time, whereas the adjustment scores of non-assertive subjects were found to decrease over time.

On the FACES II instrument, family adaptability and cohesion were found to be positively correlated. It was also shown that the distributions of both family adaptability and cohesion differed significantly from the distributions of the general population on these scales. Additionally, the distributions of well-adjusted and poorly adjusted subjects were significantly different from each other on these scales. Family adaptability was also positively correlated with productive use of time and growth coping behavior. Family cohesion was negatively correlated with depression.

In the next chapter these results will be discussed in detail. Efforts will be made to interpret the results in light of other relevant research.



## CHAPTER FIVE

### DISCUSSION

The empirical results which were presented in Chapter Four are discussed in this chapter. The discussion involves four sections: interpretation and implications of the results, summary, recommendations for further research, and conclusion. This chapter essentially follows the format of Chapter Four, beginning with a discussion of the adjustment measures and demographic data followed by a discussion of the hypotheses in numerical order.

#### Interpretation and Implications of the Results

In this section the statistical results presented in Chapter Four are reviewed and interpreted. Implications of the results are discussed in light of the previous related research which was discussed in Chapter Two.

#### Adjustment Measures

In this study four instruments (AD Scale, PUT, BDI, and CWT) were used to measure the adjustment of hemodialysis patients. It was found that the CWT was not significantly correlated with the other measures, and therefore it was dropped from the global adjustment scores of the subjects. Czaczkes and De-Nour (1978) recommend that various aspects of adjustment be studied separately as well as in relationship to each other. Since four instruments were used to measure adjustment, they will be discussed separately and then in relationship to each other below.

Acceptance of Disability (AD Scale). The AD Scale was positively correlated with the PUT and spiritual well-being. It was negatively correlated with the BDI, problem-focused coping, and wishful thinking. This suggests that hemodialysis patients who accept their disability have a tendency to use their time productively, and have a sense of purpose or meaning in life and their relationship with God. Likewise, hemodialysis patients who accept their disability have a tendency to be less depressed, engage in less wishful thinking, and use less active forms of coping in regard to their stressful renal failure condition.

It is unclear why acceptance of disability is negatively correlated with problem-focused coping, but perhaps it is because patients who accept their disabilities no longer find it necessary to actively engage in any kind of coping behaviors regarding their disabilities. One of the determinants of the other correlations relates to the theory upon which the AD Scale is based. Linkowski (1971) constructed the AD Scale based on Wright's (1960) theory of acceptance of loss. This theory suggests that the acceptance of disability involves a series of value changes in four areas. These are:

1. Enlargement of Scope of Values: The extent that a person is able to see values other than those that are in direct conflict with the disability.
2. Subordination of Physique: The extent that a person is able to deemphasize aspects of physical ability and appearance that contradict his disabled situation.
3. Containment of Disability Effects: The extent that a person does not spread his handicap beyond his actual physical impairment to other aspects of his functioning self.
4. Transformation from Comparative Values to Asset Values: The extent that a person does not compare himself to others in terms of the areas of limitations and liabilities, but rather emphasizes his own assets and abilities (Linkowski, 1971, pp. 236-237).

In essence, this theory, which heavily influenced the construction of the items on the AD Scale, suggests that a disabled person's satisfaction with life can be increased by following the value changes listed above. Thus, the AD Scale is a measure of life satisfaction for people with disabilities, as are the other measures with which it is correlated.

It is understandable that acceptance of disability is positively correlated with the PUT and spiritual well-being, and negatively correlated with the BDI and wishful thinking because they all reflect an individual's satisfaction with life. It is logical that a hemodialysis patient's satisfaction with life would be increased if he/she used time productively, found a meaningful purpose in life and relationship with God, was less depressed, and engaged in less wishful thinking.

An abbreviated form of the AD Scale was used in one other study to measure the adjustment of hemodialysis patients. Poll and De-Nour (1980) found that there was a significant negative correlation between the abbreviated AD Scale and locus of control. Thus, the greater the acceptance of disability, the more internal locus of control. Internal locus of control is felt to be positively correlated with adjustment for most populations. The results of the Poll and De-Nour (1980) study and the present study support the continued use of the AD Scale as a measure of adjustment for hemodialysis patients.

Productive Use of Time (PUT). The PUT was positively correlated with the AD Scale, and was discussed above. It was also positively correlated with family adaptability. This suggests that hemodialysis patients who use their time productively tend to perceive their families as ones that can easily change power structures, role relationships, and relationship rules in response to stress. The upper limit of family

adaptability, however, is labelled "chaotic" because these families are often very loosely structured. Thus, hemodialysis patients who scored high on the PUT perceive their families as very loosely structured, whereas patients who scored low on the PUT perceive their families as rigid or tightly structured.

A likely reason for this correlation between the PUT and family adaptability is that hemodialysis patients have to make numerous daily schedule changes to be able to continue to use their time productively. In other words, a loosely structured family system is necessary for many of these patients if they wish to continue working outside the home, participating in social events, etc. Likewise, the more confining the family system (rigidly structured), the less a patient is free to participate in productive activities in light of the time burden involved in hemodialysis. To the author's knowledge, productive use of time has not been used as an adjustment indicator for hemodialysis patients in previous research. It is logically sound that the productive use of time should be positively correlated with adjustment, and the present results provide some empirical support for this relationship. Therefore, productive use of time should be considered as a valuable adjustment indicator for further research on hemodialysis patients.

Beck Depression Inventory (BDI). The BDI was negatively correlated with the AD Scale, as discussed earlier. It was also negatively correlated with spiritual well-being and family cohesion, and positively correlated with blames self. This suggests that hemodialysis patients who are depressed tend not to experience a sense of purpose or meaning in life and their relationship with God. Likewise, they tend to perceive their families as disengaged or emotionally distant. Hemodialysis

patients who are depressed also tend to engage in self-blame in response to their stressful renal failure condition.

These correlations are what one would expect. That is, one would expect a depressed individual to lack a sense of meaning in life, perceive his/her family as emotionally distant, and engage in self-blaming behavior. Thus, these observed correlations in the sample of hemodialysis subjects are the same as one would expect in the general population.

One finding of interest on the BDI was that generally the scores were much lower than would be expected based on previous research with hemodialysis patients. The mean of the total sample fell into the 'mild depression' range of depression. Ten subjects scored in the 'normal range' of depression. Eleven subjects scored in the 'mild depression' range. Five subjects scored in the 'mild-moderate depression' range, and one other subject scored in the 'severe depression' range. These categories were those suggested for use with the BDI.

Daly (1970) used the BDI and found that 70% of the hemodialysis patients he surveyed were depressed. As reported in Chapter Two of this report, most research has shown that there is a high rate of depression among hemodialysis patients (60%-90%). If the subjects in this study who scored in the 'mild-moderate depression' range and above were considered clinically depressed, then only 40% of the subjects used in this study were depressed. Perhaps this is the result of differences between patient populations. The subjects in this study were patients at a privately owned hemodialysis center, rather than from a hospital where possibly hemodialysis patients are more depressed because of the severity of their conditions and the general hospital environment.

A careful examination of treatment environments may throw light on this issue.

Another possible interpretation is that the subjects in the present research had a tendency to deny their depression on the BDI. However, there is no way to detect this type of test-taking behavior using the current BDI format.

Compliance With Treatment (CWT). The CWT did not significantly correlate with the other adjustment measures, nor did it correlate with any other measures in this study. Four reasons may account for this unanticipated situation: a) compliance with treatment is not related to patient adjustment; b) the CWT scale used in this study was invalid; c) the head nurse who rated all of the patients was not a reliable evaluator; d) the CWT is a unique and valid measure of adjustment.

The first reason seems unlikely. Since non-compliance with treatment ultimately leads to death for these patients, it seems quite likely that compliance with treatment is related to adjustment. On the other hand, it may be that a certain amount of non-compliance with treatment is emotionally healthy for these patients since it is one way that they can gain some control over their situation. Thus, there may be a curvilinear relationship between compliance with treatment and adjustment, but this has not been investigated in other research.

The second reason is entirely possible. Since the questions simply asked for a subjective response from the head nurse, the questions could have been unrelated to objective data about compliance with treatment such as actual weight gained or sodium intake between hemodialysis sessions, and more related to the nurse's frame of reference.

The third reason seems unlikely. The head nurse worked full-time with these patients for several years and knew them quite well. In fact, she appeared to have a good understanding of how the subjects were responding to treatment on an on-going basis.

The fourth reason is possible, but unlikely. It is possible that since the CWT is not correlated with the other adjustment measures, it is a unique contributor to the global adjustment scores. If there was only one other adjustment measure used, this could be a tenable explanation. However, the fact that it does not correlate with any of three other adjustment measures, the global adjustment scores (after CWT was removed), or any other variables assessed in this study, leads the author to believe that the CWT measure used was invalid for the current investigation. Therefore, its deletion from the global adjustment scores was justified.

One thing that is known is that there is little known about the relationship between treatment compliance and adjustment to hemodialysis other than it appears to be important. Czaczkes and De-Nour (1978) listed three aspects of dialysis: a) general compliance, e.g. taking medications; b) compliance with the diet; c) compliance with dialysis, e.g. continuation of dialysis (p. 99). They then went on to say:

All these aspects of compliance are, naturally, important or even cardinal to patients' physical well-being as well as to survival. The lack of information about these aspects of patients' behavior is therefore all the more striking. We could find no information about the first aspect...There is some information about the other two aspects (pp. 99-100).

Thus, little is known about treatment compliance for hemodialysis patients other than that it seems to be important. This area needs to be investigated further so that it can be more fully understood.

Relationship of adjustment measures. As stated above, the CWT was not significantly correlated with other adjustment measures and therefore was dropped from the global adjustment scores. As anticipated, the other three adjustment measures were highly correlated with the global adjustment scores because these scores were formulated by averaging the individual scores on the three adjustment measures. There was a significant negative correlation between the AD Scale and the BDI, which was predicted. Likewise, there was also a predicted significant positive correlation between the AD Scale and the PUT. There was a negative correlation between the BDI and the PUT, but it was not significant. It is not known why this correlation was not large enough to be significant. Perhaps it is a result of the generally lowered scores on the BDI. If this is true it would follow that the correlation would have been significant if the subjects were more depressed.

#### Demographic Data

The various demographic data collected in this research are discussed in this section.

Sex. The subjects participating in this research project were nearly evenly divided between males and females. A survey of the literature revealed that an equal distribution of the sexes is common for hemodialysis patients in more recent research; however, earlier research tended to have more male than female participants. Thus, the present sample seems typical of the current hemodialysis population according to the sex of the subject.

Age. The age of the subjects in this study was generally older



than anticipated. Other research on this patient population usually utilizes younger subjects. However, most chronic hemodialysis patients are older, since the younger subjects either use chronic ambulatory peritoneal dialysis (CAPD) or get kidney transplants. Older subjects, therefore, are representative of this patient population and are frequently described in the research literature; although these patients are usually in their 40's rather than 50's as found in this study. There was not a significant difference between the mean age of well-adjusted subjects and the mean age of poorly adjusted subjects.

Marital status. A significant difference was found between the distributions of well-adjusted and poorly adjusted subjects according to marital status. More well-adjusted subjects were married, whereas more poorly adjusted subjects were widowed. Perhaps this is what accounted for the significant difference between the distributions. However, when the subjects were compared along an attached-unattached dimension of marital status, the difference between well-adjusted and poorly adjusted groups was not significant. Thus, although there was a difference between the distributions of well-adjusted and poorly adjusted groups according to marital status, this difference was not due simply to the fact that more well-adjusted subjects were married and more poorly adjusted subjects were single, divorced, or widowed.

A survey of the research literature revealed that earlier studies showed that hemodialysis patients were generally married. More recent research, however, indicated that fewer patients were married than found earlier. Some reports indicate that 50% or fewer of the patients were married. Of the subjects in the present study, 57% were married, which

is similar to recent research. This downward trend away from marriage is also similar to the trend of the general population.

Education. There was a significant difference between the distributions of well-adjusted and poorly adjusted subjects according to education. Poorly adjusted subjects had fewer years of education than well-adjusted subjects, which probably accounted for the significant difference. Malmquist, et. al. (1970) reported that education was not related to adjustment. Winokur, Czaczkes, and De-Nour (1972) and Malmquist (1973) also found that intelligence was not related to adjustment. Thus, the difference in the amount of education (or intelligence which is related) probably did not account for the difference between well-adjusted and poorly adjusted groups. Perhaps another variable, such as the ability of better educated people to frequently locate more flexible jobs that would allow for a hemodialysis schedule, accounted for the difference.

Other chronic illness. While more well-adjusted subjects had previous experience with chronic illness than poorly adjusted subjects, the difference between these groups was not significant. It was anticipated that a patient's previous experience with a chronic illness would aid the patient in adjustment. This was based on the findings of Malmquist, et. al. (1970) and Malmquist (1973) who found that adaptability to previous life changes and the patients' way of dealing with traumatic situations predicted adjustment for hemodialysis patients. However, these research findings do not seem applicable to hemodialysis patients' previous experience with chronic illness, and therefore a patient's previous experience with chronic illness does not aid the patient in adjusting to hemodialysis.

Religious affiliation. The religious affiliation of the subjects in this study was overwhelmingly Protestant. Very little is written about religious affiliation in the research literature, and therefore it is difficult to interpret this finding. There was not a significant difference between the distributions of well-adjusted and poorly adjusted subjects according to religious affiliation.

Time known that hemodialysis was inevitable. There was not a significant difference between the distributions of well-adjusted and poorly adjusted subjects according to the amount of time known that hemodialysis was inevitable. It was thought that subjects who had more time to prepare for hemodialysis would be more well-adjusted. The reasoning behind this was that these patients would have already engaged in anticipatory coping strategies that would have moved them into the initial stages of adjustment before hemodialysis was begun. Although this issue is rarely addressed in the research literature, it seems to have some validity. Perhaps the manner in which the data were collected in this study may have masked an important issue. It seems likely that the categories of "less than one week", "less than one month", "less than one year", and "more than one year" were inappropriate. It may have been more appropriate to identify the specific amount of time, and the circumstances surrounding the decision to use hemodialysis in exploring this issue.

### Cognitive Appraisals

The results of  $H_1$  and  $H_2$  are discussed in this section in light of the research by Lazarus on cognitive appraisals.

The cognitive appraisal process is the cornerstone of the transactional coping process suggested by Lazarus and his group of researchers.

According to his theory, people make a cognitive appraisal of a stressful situation when faced with it. The cognitive appraisal that an individual makes determines the coping behavior that is utilized. The coping behavior, in turn, determines the way that the individual emotionally adjusts to the stressful situation. Lazarus (1966) identified three cognitive appraisals that individuals make in a stressful situation. These are labelled primary appraisal, secondary appraisal, and reappraisal. Only primary and secondary appraisals were evaluated in this research.

Primary appraisal. A primary appraisal is an evaluation of potential threat or harm in a situation, and answers the question, "What is at stake?" Lazarus and Launier (1978) reviewed the transactional (or cognitive-phenomenological) model of coping and identified three basic categories of primary appraisals: a) irrelevant, b) benign-positive, and c) harmful. They also stated that a harmful (or stressful) primary appraisal indicated either harm-loss, threat, or challenge. The present author believes that a person may perceive a personal obstacle as a challenge without necessarily perceiving harm. Thus, a challenge is seen as a fourth category of primary appraisal, rather than as an element of a harmful primary appraisal. As a result there were four possible primary appraisals in this research.

The subjects were asked to respond to their hemodialysis situation with one of four primary appraisals. Three of the primary appraisals were based on the irrelevant, benign-positive, and harmful categories suggested by Lazarus and Launier (1978). The fourth primary appraisal was based on the idea that the subjects may perceive hemodialysis as a challenge. Results of the primary appraisal assessment indicated that 60.7% of the subjects identified hemodialysis as distressing or undesirable,

32.1% as challenging, 7.1% as beneficial or desirable, and 0% as irrelevant.

The fact that the majority of subjects perceived hemodialysis as distressing or undesirable lends credence to the tremendously taxing nature of hemodialysis which is presented in most of the related research literature. However, hemodialysis is seldom presented in the literature as presenting a challenge to patients, even though the present research indicated that nearly one-third of the subjects perceived their situation as a challenge. Perhaps the motivation of hemodialysis patients, which tends to diminish frequently, could be kept high if they could continue to perceive hemodialysis as challenging rather than as distressing.

Although the distribution of primary appraisals for the total sample was significantly different than what would be expected by chance,  $H_1$  was not supported because there was not a significant difference between well-adjusted and poorly adjusted subjects in the distributions of their primary appraisals. It was thought that well-adjusted and poorly adjusted subjects would appraise their hemodialysis situations differently, but this research revealed that their appraisals were not different.

The lack of a significant difference between these two groups can be attributed to two possible reasons. First, the consequences of hemodialysis presented to each subject may have been too broad. In other words, it may have been better to specify one consequence of hemodialysis and ask the subjects to respond to it. By presenting the subjects with several consequences, it was essentially assumed that they appraised all of them in the same manner. A second possible reason that the groups did not differ was that the instrumentation used to assess primary appraisals was at a more specific level, whereas the instrumentation used to assess adjustment was at a more global level. Perhaps there would have been a

difference in the distributions of primary appraisals if one specific measure of adjustment had been used rather than a global assessment of adjustment.

Secondary appraisal. A secondary appraisal involves an assessment of the consequences of coping endeavors in a stressful situation, and therefore answers the question, "Do I have the resources available to deal with this situation?" The assessment of secondary appraisals used in this research was developed by Folkman and Lazarus (1980). The subjects were asked to respond to their hemodialysis situation with one of four secondary appraisals. That hemodialysis must be accepted or gotten used to was indicated by 82.1% of the subjects; 7.1% indicated that they needed to know more before they could act; 7.1% also indicated that they believed they could change or do something about their situation, and 3.6% indicated that they had to hold themselves back from doing what they wanted to do. Thus, the subjects in this research overwhelmingly indicated that hemodialysis must be accepted or gotten used to. This finding fits with both previous research and logic. Since the only alternatives to hemodialysis at this time are kidney transplantation and alternate forms of dialysis, it stands to reason that hemodialysis is perceived as something that must be accepted.

Although the distributions of secondary appraisals for the total sample was significantly different than what would be expected by chance,  $H_2$  was not supported because there was not a significant difference between well-adjusted and poorly adjusted subjects in the distributions of their secondary appraisals. It was thought that well-adjusted and poorly adjusted subjects would appraise their situations differently, but this research revealed that their appraisals were not different.

The lack of a significant difference between these two groups can be attributed to the two possible reasons that were offered for the primary appraisals above. The consequences of hemodialysis were presented too broadly and the adjustment instruments were too broadly based. Thus, it may have been better to specify one consequence of hemodialysis and have the subjects respond to it rather than to several consequences. Likewise, it may have been better to use one specific measure of adjustment so that the specificity of the instruments used to assess secondary appraisals and adjustment was more equal.

In Chapter Two a variety of personality and environmental factors were discussed that have an affect on primary and secondary appraisals. It was assumed that these factors affected both adjustment and appraisal processes in the same manner. Since the results of this research indicate that adjustment and appraisal processes are not related, it could be inferred that the factors do not affect them in the same manner. However, there are still good reasons to believe that the personality and environmental factors do affect adjustment and appraisal processes similarly, even though these factors were not assessed in this study. Instrumentation and methodological difficulties are probably what accounted for these hypotheses not being supported.

### Coping Behaviors

The results of H<sub>3</sub>, H<sub>4</sub>, H<sub>5</sub>, and H<sub>6</sub> are discussed in this section in terms of the coping literature discussed in Chapter Two. Correlations between coping behaviors and other variables assessed in this study are presented in this section.

Problem-focused and emotion-focused coping. H<sub>3</sub> was not supported

because there was not significantly more emotion-focused than problem-focused coping utilized by all subjects. Folkman and Lazarus (1980) found that emotion-focused coping was significantly associated with stressful health situations for 100 community residents. It was thought that the same phenomena would be observed with hemodialysis patients, but in the present research it was not.

A possible explanation for this finding is that the health concerns of community residents are generally quite different from the health concerns of chronically ill patients. Whereas an illness may affect a normally healthy individual for a few days, coping with illness has become a lifestyle for chronically ill patients. Therefore, emotion-focused coping may not permit long-term adjustment to an illness like it may for a short-term illness. Well-adjusted hemodialysis subjects have to use problem-focused coping eventually to be able to deal effectively with their illness. This explanation actually fits quite nicely with the stages of adaptation suggested by Reichsman and Levy (1972). They found that after initial stages of adaptation to hemodialysis, patients began to be more active in the rehabilitation phase. Possibly the association between problem-focused and emotion-focused coping and the stages of adaptation could be investigated in the future to determine if these coping strategies change with the stages of adaptation to hemodialysis.

Coping scales. There were some high intercorrelations between the scales on the Ways of Coping instrument. High correlations were anticipated between the specific coping scales and the two broad scales of Problem-focused Coping and Emotion-focused Coping since the items are shared between specific and broad scales. However, powerful unanticipated correlations were found between Problem-focused and Mixed; Wishful Thinking



and Mixed; and between Problem-focused Coping and Emotion-focused Coping. These correlations suggest that the scales are not totally independent, and that hemodialysis patients tend to use several coping behaviors to deal with their stressful situation.

Of specific interest was the high correlation (.589) between Problem-focused Coping and Emotion-focused Coping, suggesting a moderately high degree of shared variance. On three administrations of the Ways of Coping, Folkman and Lazarus (1980, p. 226) reported a mean correlation of .44 between these two scales. They defended the continued use of the scales by stating that the two scales measure processes that are believed to be used together in normal coping, and that since the mean  $r^2 = .19$  there is enough variance not shared by the two scales to support their independent use. Although the correlation in the present research is high, Folkman and Lazarus' defense of the scales was adopted.

The most independent scales in this administration of the test were Minimize Threat and Seek Emotional Support. Religious Coping, the scale created by the author was not significantly correlated with either Problem-focused Coping or Emotion-focused Coping. It was significantly correlated with the Mixed scale. Since the Religious Coping scale is so independent, it should not be used as a part of this instrument. Rather, it should be considered as a unique measure of religious coping behaviors.

Correlations were performed between the coping scales and the subjects' adjustment scores. The results indicated that the correlations between Wishful Thinking and adjustment, and Blames Self and adjustment were significant. Both of these correlations were negative, which suggests that as the adjustment scores of the subjects increase, their tendency to engage in wishful thinking and self-blaming behaviors decrease. Thus,

those subjects who were poorly adjusted had a tendency to blame themselves for their difficulties and engage in wishful thinking, whereas well-adjusted subjects tended to not use these coping behaviors. These findings may be useful for further research and/or the development of counseling strategies with hemodialysis patients.

To further investigate the relationship between coping behaviors and the adjustment scores of the subject,  $H_4$  was tested. Since there were not significant differences between well-adjusted and poorly adjusted subjects in the means of the eight coping behaviors they endorsed,  $H_4$  was not supported. This suggests that although there were two significant correlations between coping behaviors and adjustment, significant differences did not exist between the means when the subjects were divided into well-adjusted and poorly adjusted groups. Most likely, this finding indicates that the relationships between Wishful Thinking and adjustment, and Blames Self and adjustment are weak.

One reason that these scales did not differentiate between well-adjusted and poorly adjusted subjects is that the scales generally had very large standard deviations. There was such a wide variance of scores on these scales, that even when there were large differences between means they did not reach statistical significance.

The rationale for  $H_4$ , which was based on previous research, suggested that the coping endeavors that subjects used would determine their adjustment to hemodialysis. Possibly another reason why this hypothesis did not reach significance was not because of the rationale, but rather because the subjects were asked how they coped with a variety of consequences of hemodialysis. It may have been better to ask the subjects how they coped with one specific consequence of hemodialysis. This may have reduced the

high variance on the scales as noted above.

Length of time using hemodialysis and coping behaviors.  $H_5$  was an hypothesis that assessed whether or not coping behaviors of hemodialysis patients change over time. Abram (1969) suggested that these patients moved through four stages of adaptation to hemodialysis. They begin hemodialysis in the Uremic Syndrome, and quickly move to a stage of Physiological Equilibrium. After about four weeks the patients encounter a stage of Convalescence. After three months of hemodialysis the patients begin a Struggle For Normalcy. Similarly, Reichsman and Levy (1972) described three stages of adaptation. The Honeymoon stage starts when hemodialysis begins and lasts approximately six months. The second stage, Disenchantment and Discouragement, lasts about three to 12 months. Long-term Adaptation, the third stage, begins about one year after the initiation of hemodialysis.

$H_5$  was originally designed to compare the coping behaviors of subjects in the three stages proposed by Reichsman and Levy (1972). Since the groups were very small when divided into the three stages, a median split was made on the length of time subjects used hemodialysis to obtain just two groups. The coping behaviors of these two groups were then compared. No significant differences were found between the means of the coping behaviors of short-term and long-term hemodialysis users, and therefore  $H_5$  was not supported. This indicates that patients using hemodialysis less than 29.8 months (the median time of hemodialysis usage) did not use different coping behaviors than those patients using hemodialysis longer than 29.8 months.

The majority of subjects used in this study had been using hemodialysis for a long time, as indicated by the median length of time using

hemodialysis of 29.8 months. Thus, it could be argued that what the results really indicate is that long-term hemodialysis patients tend to use similar coping behaviors, since the majority of subjects were long-term hemodialysis users according to the time-frames proposed by Abram (1969) and Reichsman and Levy (1972). Whether or not the coping behaviors of hemodialysis patients differ according to the three stages proposed by Reichsman and Levy (1972) is still unknown. Perhaps an effort could be made in the future to locate patients that fit into the time frame of adaptation to hemodialysis proposed by Reichsman and Levy (1972) and assess their coping behaviors.

Correlations between coping behaviors and the length of time using hemodialysis were also obtained in this study. A significant negative correlation was found between problem-focused coping and the length of time using hemodialysis. This indicates that hemodialysis patients use fewer direct actions to deal with their stressful situation as they stay on hemodialysis longer. Thus, problem-focused coping diminishes over time for these patients.

Religious coping.  $H_6$  was not supported, which indicates that religious coping was used less than the average of the other seven coping behaviors. The median was used as the measure of central tendency for this hypothesis since the distribution of the coping behavior means was skewed. As indicated in Chapter Two, little is known about religious coping in this patient population, and this hypothesis was an attempt to ascertain more information about religious coping.

The results of this hypothesis indicate that although religious coping is used by hemodialysis patients, it is not used more than the average of other coping behaviors. Since the Religious Coping scale

designed for the Ways of Coping instrument did not correlate with the other coping scales, except the Mixed coping scale, there is some question regarding what this scale measures and the validity of its use with the other coping scales. Thus, there are instrumentation problems involved in comparing the scales which make the interpretation of the results difficult.

Other correlations including coping behaviors. A positive correlation was found between self-blame coping behavior and depression. This indicates that depressed hemodialysis patients tend to blame themselves for the stressful aspects of their disease and treatment, while non-depressed patients tend not to blame themselves. One could expect that self-blame and depression are positively correlated for any population. Beck, Rush, Shaw, and Emery (1979) describe one component of the cognitive triad found among depressed people as a negative view of self. Thus, it is not at all unusual that depression and self-blame are found to be positively correlated in a sample of hemodialysis subjects.

A negative correlation was found between wishful thinking coping behavior and acceptance of disability. Thus, the more hemodialysis patients accept their disability, the less wishful thinking they engage in. This relationship is also what one could expect. If patients accepted their disability as a reality that needed to be dealt with, then there would not be a need to engage in wishful thinking.

### Spiritual Well-being

Correlations between spiritual well-being and other variables assessed in this research are reviewed in this section in addition to a discussion of H<sub>7</sub>.

H<sub>7</sub> was supported since a strong positive correlation was found between spiritual well-being and adjustment. Thus, the more adjusted hemodialysis patients are, the greater is their satisfaction with both life and their relationship with God. The most tenable explanation for the positive correlation between spiritual well-being and adjustment is that they are both measures of quality of life. Paloutzian and Ellison (Note 1) presented empirical support for the Spiritual Well-being Scale as an indicator of quality of life. They found that it was positively correlated with social skill, self-esteem, and intrinsic religious commitment, and negatively correlated with loneliness. It is also logical that adjustment is an indicator of quality of life for hemodialysis patients. Therefore, spiritual well-being and adjustment are positively correlated for hemodialysis patients, since both are indicators of quality of life.

A negative correlation was found between spiritual well-being and depression. Thus, depressed hemodialysis patients tend to be dissatisfied with life and their relationship with God. Beck, et. al. (1979) write that one of the components of the cognitive triad found in depressed people is a negative view of the world. Therefore, it is not surprising that depressed hemodialysis patients are dissatisfied with life and their relationship with God.

A positive correlation was found between spiritual well-being and acceptance of disability. This indicates that hemodialysis patients who accept their disability tend to be satisfied with life and their relationship with God, whereas patients who do not accept their disability tend to be dissatisfied with life and their relationship with God. Linkowski and Dunn (1974) found that acceptance of disability was positively

correlated with both self-esteem and satisfaction with social relationships for physically disabled persons. Thus, it is logical that acceptance of disability was found to be positively correlated with spiritual well-being in this study.

A positive correlation was also found between spiritual well-being and assertiveness for hemodialysis patients. This indicates that goal-directed hemodialysis patients tend to be satisfied with life and their relationship with God, while non-assertive patients are not satisfied in these areas. Perhaps the reason for this correlation is that both constructs are indicators of satisfactory relationships. People high in spiritual well-being are generally satisfied with life and their relationship with God. People high in assertiveness generally deal better with people and have satisfactory relationships. Thus, one of the reasons spiritual well-being and assertiveness are positively correlated is because they both are indicators of satisfactory relationships.

Finally, a positive correlation was found between spiritual well-being and religious coping. This indicates that hemodialysis patients who engage in specific religious coping behaviors such as prayer and Scripture reading tend to be satisfied with life and their relationship with God. This correlation suggests that there is a consistency between specific religious behaviors as measured by the Religious Coping Scale, and more general religious beliefs, as measured by the Spiritual Well-being Scale.

### Assertiveness

H<sub>8</sub> and H<sub>9</sub> are discussed in this section, as well as correlations between assertiveness and other variables assessed in this study.

H<sub>8</sub> was supported in this research since a positive correlation was

found between assertiveness and adjustment. Thus, well-adjusted hemodialysis patients tend to be more assertive or goal-directed. As discussed in Chapter Two, it is believed that this correlation exists because assertive people are less likely to experience the deleterious effects of anger, depression, and dependency. In other words, anger, depression, and dependency, all of which are promoted by renal failure and hemodialysis, are negatively related with both assertiveness and adjustment. Therefore, since these underlying relationships exist, assertiveness and adjustment are positively correlated for hemodialysis patients.

$H_9$  was also supported since the mean adjustment score of assertive subjects receiving hemodialysis longer than six months was significantly greater than the mean adjustment score of those assertive subjects receiving hemodialysis less than six months. This indicates that assertive hemodialysis patients are better adjusted after the initial phases of hemodialysis than they are nearer the beginning of hemodialysis.

Supporting evidence for this finding was also demonstrated in the present research. A significant positive correlation was found between adjustment and length of time using hemodialysis for assertive subjects. Likewise, a significant negative correlation was found between adjustment and length of time using hemodialysis for non-assertive subjects. A correlation between adjustment and length of time using hemodialysis for the whole sample was not significant because the assertive and non-assertive subjects counter-balanced each other. A correlation between assertiveness and the length of time using hemodialysis was also not significant.

The above findings indicate that assertiveness is an important factor



in adjustment to hemodialysis. As a whole sample, subjects who were more assertive were better adjusted. When the sample was divided into assertive and non-assertive groups, it was shown that assertive subjects became better adjusted over time on hemodialysis and non-assertive subjects became less adjusted over time on hemodialysis. Therefore, assertiveness appears to be a helpful quality in hemodialysis patients, and seems to assist them in being able to deal with the stresses of their situation.

The most tenable explanation for  $H_9$  being supported in this research was given in Chapter Two. Anderson (1975) reviewed the research on psychological adjustment to hemodialysis and, although no empirical evidence was offered, he suggested that assertive patients adjusted better to later phases of hemodialysis when rehabilitation was the goal. Likewise, he suggested that sub-assertive patients adjusted better to the initial phases of hemodialysis. The reasoning behind these suggestions was that patients need to be rather passive during the initial phase of hemodialysis when they are learning about it and the effects that it has on their bodies. Later, however, during rehabilitation, patients need to be more goal-directed and active in order to become vocationally and socially involved. Anderson's (1975) reasoning offers a tenable explanation of the results of  $H_9$ . Likewise, the results of this study give empirical support to his contentions.

A significant negative correlation was also found between assertiveness and minimizes threat coping behavior. Thus, the more assertive hemodialysis patients are, the less likely they are to minimize the threat involved in the process of hemodialysis. Perhaps one of the reasons for this correlation is that assertive hemodialysis patients find it unnecessary to minimize threat; rather, they deal directly with environmental threats and remain task-oriented.

Assertiveness, spiritual well-being, and adjustment. The results of the sequential multiple regression of assertiveness and spiritual well-being on adjustment was significant. Spiritual well-being accounted for 26% of the variance of adjustment scores, while assertiveness accounted for only 2% of the variance. This indicates that spiritual well-being can be used with a moderate degree of confidence to predict adjustment to hemodialysis. Most likely this finding is related to the fact that spiritual well-being is an indicator of quality of life, just as adjustment for these patients is also. Perhaps more effort will be devoted to addressing spiritual issues with these patients in the future.

#### Family Adaptability and Cohesion

H<sub>10</sub> and H<sub>11</sub> are discussed in this section, as well as correlations between other variables assessed and family adaptability and cohesion.

Family adaptability. Linear regression and curvilinear regression analyses were performed on family adaptability and adjustment scores for the total sample of subjects. These analyses were not significant, and therefore H<sub>10</sub> was not supported. The reason that the predicted curvilinear relationship was not significant was because the distribution of family adaptability scores was not similar to what previous research suggested. In fact, the distribution of family adaptability scores was significantly different than what one would expect. Generally, the subjects' family adaptability scores indicated that they perceived their families as more chaotic and rigid, and less flexible than the general population. Thus, these patients perceived their families as having little capacity for constructive change in response to situational or developmental stress, but rather perceived their families as becoming

chaotic or rigid in response to stress.

It is unclear why this hypothesis was not supported in this study. It could be that the families of hemodialysis patients are truly different from the general population in terms of family adaptability; however, this seems unlikely. It is more reasonable that the responses obtained in the present research were demographically biased. Many of the subjects were elderly and/or widowed, divorced, or single. Thus, it was difficult for them to accurately recall the functioning of their families of origin or current families. It is likely that the results obtained are affected by these factors, and therefore do not coincide with the scores of the general population.

Well-adjusted and poorly adjusted subjects were also compared on family adaptability. The distributions of their scores were found to be significantly different. Well-adjusted hemodialysis subjects perceived their families as more chaotic, less flexible, and less rigid than poorly adjusted hemodialysis subjects in terms of family adaptability. This suggests that well-adjusted patients perceive their families as being able to change, sometimes too much, in response to stress; whereas poorly adjusted patients perceive their families as being unable to change in response to stress.

There was a positive correlation between family adaptability and productive use of time. This indicates that hemodialysis patients who perceive their families as being able to change easily in response to stress tend to use their time productively, whereas patients who perceive their families as rigid tend not to use their time productively. It is unclear why this correlation exists. Perhaps patients who describe their families as more open to change are more free to be involved in a wide variety

of activities.

There was also a positive correlation between family adaptability and growth coping behavior. This indicates that hemodialysis patients who perceive their families as being able to change easily in response to stress tend to be involved in a personal growth process, whereas patients who perceive their families as rigid tend not to be involved in a personal growth process. Perhaps patients who feel that their families can change easily feel the freedom to grow and change themselves.

There was also a strong positive correlation between family adaptability and family cohesion--the two scales of the FACES II instrument. This indicates that these scales were not totally independent in their administration to this sample, but rather tended to measure the same phenomena. Olson, et. al. (1982) do not offer information on the correlation of the scales in the standardization of FACES II.

Family Cohesion. Linear regression and curvilinear regression analyses were performed on family cohesion and adjustment scores for the total sample of subjects. The linear regression was positive and significant, which indicates that adjustment can be used to predict family cohesion for hemodialysis patients. It also indicates that as adjustment scores increase for these patients, so also do family cohesion scores. However, because the curvilinear regression was not significant,  $H_{11}$  was not supported.

The reason that there was not a curvilinear relationship between family cohesion and adjustment, as predicted, was because the distribution of family cohesion scores was significantly different than expected from previous research. Generally, the subjects' family cohesion scores indicated that their perceptions of their families were as more disengaged

and enmeshed, and less separated and connected than the general population. Thus, the subjects perceived their families as being either emotionally distant or intensely emotionally bonded, and not in between these extremes. As suggested earlier, the reason that this hypothesis was not supported was probably a result of a demographic bias in the results obtained. Many of the subjects were elderly and/or widowed, divorced, or single, and therefore had difficulty recalling their family functioning in terms of family cohesion.

Well-adjusted and poorly adjusted subjects were also compared on family cohesion. The distributions of their scores were found to be significantly different. Well-adjusted hemodialysis patients perceived their families as more separated, connected, and enmeshed, and less disengaged than poorly adjusted hemodialysis patients in terms of family cohesion. This suggests that well-adjusted patients perceive their family members as more emotionally bonded than poorly adjusted patients, who perceive their family members as more detached and emotionally distant from each other.

There was also a negative correlation between family cohesion and depression. This indicates that depressed hemodialysis patients tend to view their family members as being detached from each other, whereas less depressed patients view their family members as being emotionally bonded. This appears to be what one would expect for depressed people, whether they are hemodialysis patients or not. Frequently depressed persons feel lonely and isolated in their families, and it appears that this phenomenon has contributed to the negative correlation between depression and family cohesion found in this study.

#### Summary

A summary of the hypotheses which this study supported is presented below, followed by a summary of the hypotheses not supported by this study. A third section presents a summary of additional findings obtained through this research. Finally, a section incorporating the results into the integrated Moos and Lazarus model is presented.

### Supported Hypotheses

The results of this study support  $H_7$ , which indicates that a positive correlation exists between spiritual well-being and adjustment for hemodialysis patients. An explanation of this finding is that both spiritual well-being and adjustment are quality of life indicators.

$H_8$  was also supported, which indicates that a positive correlation exists between assertiveness and adjustment for hemodialysis patients. An explanation of this finding is that assertive patients tend to deal more effectively with anger, depression, and dependency; therefore, they are better adjusted.

The results of this study also support  $H_9$ , which indicates that the mean adjustment score of assertive patients receiving hemodialysis longer than six months is significantly greater than the mean adjustment score of assertive patients receiving hemodialysis less than six months. An explanation of this finding is that the rehabilitation phase (or later phases) of adaptation to hemodialysis requires patients to be goal-directed and actively involved with their environment, whereas the initial phases of adaptation require more passivity from patients. Assertive hemodialysis patients, then, feel more comfortable, and therefore are better adjusted, after the initial phases of adaptation to hemodialysis.

The above findings show that well-adjusted hemodialysis patients tend

to be satisfied with life and their relationship with God, and also tend to be more goal-directed and actively involved with their environment. The opposite of this is true for poorly adjusted hemodialysis patients. The findings also show that goal-directed and active hemodialysis patients are better adjusted in the later phases rather than initial phases of adaptation to hemodialysis.

### Non-supported Hypotheses

The results of this study do not support  $H_1$ , which indicates that the distributions of primary appraisals for well-adjusted and poorly adjusted hemodialysis patients are not significantly different. A possible reason for the failure of this hypothesis is that the subjects were asked to respond to a wide variety of the consequences of renal failure and hemodialysis. A more specific response format may have yielded different results.

The results of this study also do not support  $H_2$ , which indicates that the distributions of secondary appraisals for well-adjusted and poorly adjusted hemodialysis patients are not significantly different. A possible reason for the failure of this hypothesis is the same as given for  $H_1$ .

$H_3$  was not supported, which indicates that hemodialysis patients do not use significantly more emotion-focused coping than problem-focused coping. A possible reason for the failure of this hypothesis is that problem-focused coping is a very necessary and valuable tool for chronically ill patients, and therefore it is used at least as much as emotion-focused coping.

The results of this study also do not support  $H_4$ , which indicates that well-adjusted and poorly adjusted hemodialysis patients do not differ significantly in their use of eight coping behaviors. A possible reason for

the failure of this hypothesis is that the subjects were asked how they coped with a wide variety of the consequences of renal failure and hemodialysis. A specific response format would have allowed for a determination of how the subjects coped with a specific difficulty, and may have yielded different results.

H<sub>5</sub> was not supported, which indicates that short-term hemodialysis users do not use significantly different coping behaviors than long-term hemodialysis users. A possible reason for the failure of this hypothesis is that many of the subjects classified as "short-term" hemodialysis users were actually long-term users according to previous research. Thus, if more true short-term hemodialysis patients had been assessed, the results may have been different.

H<sub>6</sub> was also not supported, which indicates that religious coping is not used more than the average of seven other coping behaviors by hemodialysis patients. Although hemodialysis patients use religious coping behaviors, they do not use them as much as the author anticipated. A possible reason for the failure of this hypothesis concerns the difficulty of incorporating the Religious Coping scale into the Ways of Coping instrument.

The results of this study also do not support H<sub>10</sub>, which indicates that a curvilinear relationship does not exist between family adaptability and adjustment for hemodialysis patients. A possible reason for the failure of this hypothesis is that many of the subjects assessed were elderly and/or widowed, divorced, or single, and therefore had difficulty recalling their family functioning in terms of family adaptability.

The results of this study also do not support H<sub>11</sub>, which indicates that a curvilinear relationship does not exist between family cohesion



and adjustment for hemodialysis patients. A possible reason for the failure of this hypothesis is that many of the subjects assessed were elderly and/or widowed, divorced, or single, and therefore had difficulty recalling their family functioning in terms of family cohesion.

#### Additional Findings of the Study

Adjustment measures. Compliance with treatment did not correlate with the other measures of adjustment. This was probably due to the methodology and instrumentation involved in obtaining compliance with treatment data, rather than with the concept of treatment compliance itself. Acceptance of disability was positively correlated with productive use of time, and negatively correlated with depression. Both acceptance of disability and productive use of time were positively correlated with global adjustment, while depression was negatively correlated with global adjustment.

Demographic data. A significant difference was found between the distributions of well-adjusted and poorly adjusted hemodialysis patients according to marital status. More well-adjusted patients were married, whereas more poorly adjusted patients were widowed. A significant difference was also found between the distributions of well-adjusted and poorly adjusted hemodialysis patients according to education. Well-adjusted patients had more years of education than poorly adjusted patients.

Cognitive appraisals. The distribution of primary appraisals for hemodialysis patients was significantly different than what was expected by chance. The distribution of secondary appraisals was also significantly

different than what was expected by chance. Generally, the patients appraised hemodialysis as distressing, and something that had to be accepted.

Coping behaviors. Numerous significant correlations were found between the scales of the Ways of Coping instrument. This indicates that the scales are not independent, and that hemodialysis patients tend to use several coping behaviors to deal with their stressful situation. Problem-focused coping was negatively correlated with acceptance of disability. Problem-focused coping behavior was negatively correlated with the length of time using hemodialysis. Wishful thinking coping behavior was negatively correlated with acceptance of disability and global adjustment. Growth coping behavior was positively correlated with family adaptability. Self-blame coping behavior was positively correlated with depression, and negatively correlated with global adjustment. Religious coping behavior was positively correlated with spiritual well-being. Finally, minimizes threat coping behavior was negatively correlated with assertiveness.

Spiritual well-being. Spiritual well-being was positively correlated with acceptance of disability, religious coping behavior, assertiveness, and global adjustment. Spiritual well-being was negatively correlated with depression. It was also shown that spiritual well-being could be used to predict adjustment to hemodialysis with a moderate degree of confidence.

Assertiveness. Assertiveness was positively correlated with spiritual well-being and global adjustment, and negatively correlated with minimizes threat coping behavior. It was also found that assertive patients become

less adjusted over time on hemodialysis.

Family adaptability. Family adaptability was positively correlated with productive use of time, family cohesion, and growth coping behavior. The hemodialysis patients also perceived their families as having little capacity to constructively deal with stress, but rather perceived their families as becoming chaotic or rigid in response to stress.

Family cohesion. Family cohesion was positively correlated with family adaptability, and negatively correlated with depression. The hemodialysis patients also perceived their families as being either emotionally distant or intensely emotionally bonded, and not in between these extremes.

#### Integrated Moos and Lazarus Model

The integrated Moos and Lazarus model provided the conceptual rationale of this study and was presented in Figure 3. The results of this study indicate that many of the variables assessed are related to each other. Background and personal factors such as assertiveness and education were shown to be related to adjustment. Likewise, physical and social environmental factors such as marital status were shown to be related to adjustment. Coping behaviors were shown to be related to both background and personal factors and physical and social environmental factors. Coping behaviors were also related to certain aspects of adjustment such as acceptance of disability and depression.

Cognitive appraisals and illness-related factors were not shown to be related to other variables. The intent of this study was to show that many variables relevant to hemodialysis are related as the model indicates, and this was shown. However, this study did not show whether

cognitive appraisals and coping behaviors mediated between adjustment variables and background, personal, physical environmental, and social environmental factors, as the model indicates. Perhaps the results of the current study can be used in constructing a research design which will help to increase understanding of these relationships.

#### Recommendations for Further Research

This study has provided data to increase our understanding of the research literature on the psychological adjustment to hemodialysis. Many variables have been identified as either contributing or not contributing to the adjustment process. In evaluating the results of this study, as many questions have probably been raised as have been answered. Both the questions raised and the questions answered have implications for further research. Recommendations for further research are as follows.

1. The Acceptance of Disability Scale appears to be useful in measuring one aspect of adjustment for hemodialysis patients. This scale has some good psychometric properties, and it would be helpful to have a study performed to obtain some norms for hemodialysis patients.
2. When measuring the adjustment of hemodialysis patients, the adaptive or functional level of the patients needs to be considered. Thus, measures such as the Productive Use of Time, and quality of life indicators such as the Spiritual Well-being Scale, U.C.L.A. Loneliness Scale, job satisfaction, family satisfaction, and income should be useful in determining adaptive or functional levels.
3. Logic indicates that compliance with treatment is an important variable in the adjustment process of hemodialysis patients. However, little research has supported its importance. The various variables involved in treatment compliance need to be identified and accurately

measured. It would also be helpful to determine how treatment compliance interacts with other measures of adjustment for hemodialysis patients.

4. Further information about the variables that contribute to a patient being placed on hemodialysis treatment and how these variables relate to adjustment needs to be obtained. For example, the specific disease or accident that retarded kidney functioning, the length of time the individual knew that hemodialysis was inevitable, and his/her beliefs about hemodialysis may all affect adjustment to hemodialysis.

5. An assessment of hemodialysis patients' cognitive appraisals should be made in regard to one specific consequence of hemodialysis, such as having to be dependent on a machine for survival. An investigation of how these appraisals affect patients' coping behaviors in a specific situation should also be made. This information, in turn, could be used to better understand how cognitive appraisals fit into the integrated Moos and Lazarus model presented in Figure 3.

6. Predictions about the relationship between coping behaviors used in a specific situation and the adjustment of hemodialysis patients can also be made and investigated. For example, it could be predicted that wishful thinking and self-blaming coping behaviors could be negatively correlated with adjustment.

7. Hemodialysis patients who fit into the adaptation categories suggested by Reichsman and Levy (1972) should be located and assessed in terms of their cognitive appraisals and coping behaviors regarding a specific consequence of hemodialysis. This could give empirical support to the categories, as well as show that patients cope differently over time.

8. Further development of a religious coping scale for use with

patients who have a wide variety of physical and mental disabilities would be beneficial. Patients use religious coping behaviors to deal with difficulties, but little empirical data is available on this subject.

9. The relationship between family adaptability and cohesion and adjustment to hemodialysis should be investigated using subjects who are still living with their families. This would yield a more accurate indication of their perception of their family functioning.

10. An intervention program should be developed that encouraged hemodialysis patients to be assertive and teaches them assertiveness skills. This would especially aid in the later phases of adaptation to hemodialysis when rehabilitation is a goal. An experimental research design could be used to test the impact of assertiveness training on patient adjustment.

11. Since spiritual well-being is an important factor in adjustment to hemodialysis, pastoral counselors and hospital chaplains should take an active role with these patients. They could assist patients in exploring spiritual issues that would eventually have a positive impact on their adjustment to hemodialysis. An experimental research design could be used to test the impact of pastoral counseling on patient adjustment.

### Conclusion

This study produced several findings relevant to the adjustment process required of hemodialysis patients. The results of supported hypotheses, non-supported hypotheses, and unanticipated findings were reported.

Two research questions were presented in Chapter One. The first question was in regard to whether well-adjusted renal failure patients used different coping behaviors than poorly adjusted patients in adapting

to hemodialysis. The results of this study showed that they do not use different coping strategies, but that methodological difficulties may have affected the results. The second question concerned the relationship between adjustment of hemodialysis patients and spiritual well-being, assertiveness, and family adaptability and cohesion. The results of this study showed that adjustment was positively correlated with spiritual well-being and assertiveness, and unrelated to family adaptability and cohesion.

The theoretical and practical value of these findings have been presented including how they may be incorporated into the existing research on this subject. Recommendations for further research to promote our understanding of these patients and the hemodialysis experience have also been presented.

## APPENDIX A

## Demographic Data Sheet



I.D. # \_\_\_\_\_

## INFORMATION QUESTIONNAIRE

Name: \_\_\_\_\_

Sex: \_\_\_\_\_ Age: \_\_\_\_\_

Marital Status: \_\_\_\_\_

Does your spouse live with you? \_\_\_\_\_ Yes \_\_\_\_\_ No

Number of children in family: \_\_\_\_\_

Number of children living in your home: \_\_\_\_\_ Ages: \_\_\_\_\_

Occupation: \_\_\_\_\_

Education: (Check one)

\_\_\_\_\_ Less than high school graduation \_\_\_\_\_ College graduate

\_\_\_\_\_ High School graduate \_\_\_\_\_ Completion of graduate school

Do you currently have, or have you ever had, other chronic illnesses other than the one currently affecting your kidneys? \_\_\_\_\_ Yes \_\_\_\_\_ No

If yes, what was the illness(es)? \_\_\_\_\_

Approximately how long ago were you diagnosed as having this illness?

\_\_\_\_\_

Do you still have it? \_\_\_\_\_

How long have you been using hemodialysis? \_\_\_\_\_ Years \_\_\_\_\_ Months

Have you ever had a kidney transplant? \_\_\_\_\_ Yes \_\_\_\_\_ No

Religious Affiliation (please check one).

\_\_\_\_\_ Protestant \_\_\_\_\_ Jew \_\_\_\_\_ Denomenational Affiliation:

\_\_\_\_\_ Catholic \_\_\_\_\_ Other \_\_\_\_\_

How many hours do you use hemodialysis per week? \_\_\_\_\_ Hours

How long did you know that you would eventually need hemodialysis before you actually began hemodialysis? (Please check one)

\_\_\_\_\_ less than one week

\_\_\_\_\_ less than one month, more than one week

\_\_\_\_\_ less than one year, more than one month

\_\_\_\_\_ more than one year

Do you have/own a pet? \_\_\_\_\_ Yes \_\_\_\_\_ No

If so, how long has your pet(s) been a part of your household? \_\_\_\_\_

How much interaction (time/day) do you have with your pet? \_\_\_\_\_

How important is your pet to you personally at this time? (Mark the answer that best describes your own feelings.)

\_\_\_\_\_ Not important at all \_\_\_\_\_ Somewhat important

\_\_\_\_\_ Not too important \_\_\_\_\_ Very important

Do you agree to have the information obtained on these tests and questionnaires used for research purposes? \_\_\_\_\_ Yes \_\_\_\_\_ No Your confidentiality is guaranteed.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## APPENDIX B

## Family Adaptability and Cohesion Scales

Name: \_\_\_\_\_

## FACES II

I.D.# \_\_\_\_\_

by  
 David H. Olson, Joyce Portner, and Richard Bell  
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 University of Minnesota

PLEASE DESCRIBE YOUR CURRENT FAMILY BY ANSWERING ALL OF THE QUESTIONS USING THE FOLLOWING SCALE. CIRCLE ONE NUMBER FOR EACH QUESTION.

- |  | 1            | 2               | 3         | 4          | 5             |
|--|--------------|-----------------|-----------|------------|---------------|
|  | ALMOST NEVER | ONCE IN A WHILE | SOMETIMES | FREQUENTLY | ALMOST ALWAYS |
| 1. Family members are supportive of each other during difficult times.                             | 1            | 2               | 3         | 4          | 5             |
| 2. In our family, it is easy for everyone to express his/her opinion.                              | 1            | 2               | 3         | 4          | 5             |
| 3. It is easier to discuss problems with people outside the family than with other family members. |              |                 |           |            | 1 2 3 4 5     |
| 4. Each family member has input in major family decisions.   |              |                 |           |            | 1 2 3 4 5     |
| 5. Our family gathers together in the same room.   |              |                 |           |            | 1 2 3 4 5     |
| 6. Children have a say in their discipline.  |              |                 |           |            | 1 2 3 4 5     |
| 7. Our family does things together.  |              |                 |           |            | 1 2 3 4 5     |
| 8. Family members discuss problems and feel good about the solutions.                              |              |                 |           |            | 1 2 3 4 5     |
| 9. In our family, everyone goes his/her own way.   |              |                 |           |            | 1 2 3 4 5     |
| 10. We shift household responsibilities from person to person.                                     |              |                 |           |            | 1 2 3 4 5     |
| 11. Family members know each other's close friends.  |              |                 |           |            | 1 2 3 4 5     |
| 12. It is hard to know what the rules are in our family.   |              |                 |           |            | 1 2 3 4 5     |
| 13. Family members consult other family members on their decisions.                                |              |                 |           |            | 1 2 3 4 5     |
| 14. Family members say what they want.   |              |                 |           |            | 1 2 3 4 5     |
| 15. We have difficulty thinking of things to do as a family.                                       |              |                 |           |            | 1 2 3 4 5     |
| 16. In solving problems, the children's suggestions are followed.                                  |              |                 |           |            | 1 2 3 4 5     |
| 17. Family members feel very close to each other.  |              |                 |           |            | 1 2 3 4 5     |
| 18. Discipline is fair in our family.  |              |                 |           |            | 1 2 3 4 5     |
| 19. Family members feel closer to people outside the family than to other family members.          |              |                 |           |            | 1 2 3 4 5     |
| 20. Our family tries new ways of dealing with problems.  |              |                 |           |            | 1 2 3 4 5     |
| 21. Family members go along with what the family decides to do.                                    |              |                 |           |            | 1 2 3 4 5     |
| 22. In our family, everyone shares responsibilities.   |              |                 |           |            | 1 2 3 4 5     |
| 23. Family members like to spend their free time with each other.                                  |              |                 |           |            | 1 2 3 4 5     |
| 24. It is difficult to get a rule changed in our family.   |              |                 |           |            | 1 2 3 4 5     |
| 25. Family members avoid each other at home.   |              |                 |           |            | 1 2 3 4 5     |
| 26. When problems arise, we compromise.  |              |                 |           |            | 1 2 3 4 5     |
| 27. We approve of each other's friends.  |              |                 |           |            | 1 2 3 4 5     |
| 28. Family members are afraid to say what is on their minds.                                       |              |                 |           |            | 1 2 3 4 5     |
| 29. Family members pair up rather than do things as a total family.                                |              |                 |           |            | 1 2 3 4 5     |
| 30. Family members share interests and hobbies with each other.                                    |              |                 |           |            | 1 2 3 4 5     |

Name: \_\_\_\_\_

## FACES II: COUPLE FORM

I.D.# \_\_\_\_\_

by

David H. Olson, Joyce Portner, and Richard Bell

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University of Minnesota

PLEASE DESCRIBE YOUR CURRENT FAMILY BY ANSWERING ALL OF THE QUESTIONS USING THE FOLLOWING SCALE. CIRCLE ONE NUMBER FOR EACH QUESTION.

	1	2	3	4	5
	ALMOST NEVER	ONCE IN A WHILE	SOMETIMES	FREQUENTLY	ALMOST ALWAYS
1. We are supportive of each other during difficult times.					1 2 3 4 5
2. In our relationship, it is easy for both of us to express our opinion.					1 2 3 4 5
3. It is easier to discuss problems with people outside the marriage than with my partner.					1 2 3 4 5
4. We each have input regarding major family decisions.					1 2 3 4 5
5. We spend time together when we are home.					1 2 3 4 5
6. We are flexible in how we handle differences.					1 2 3 4 5
7. We do things together.					1 2 3 4 5
8. We discuss problems and feel good about the solutions.					1 2 3 4 5
9. In our marriage, we each go our own way.					1 2 3 4 5
10. We shift household responsibilities between us.					1 2 3 4 5
11. We know each other's close friends.					1 2 3 4 5
12. It is hard to know what the rules are in our relationship.					1 2 3 4 5
13. We consult each other on personal decisions.					1 2 3 4 5
14. We freely say what we want.					1 2 3 4 5
15. We have difficulty thinking of things to do together.					1 2 3 4 5
16. We have a good balance of leadership in our family.					1 2 3 4 5
17. We feel very close to each other.					1 2 3 4 5
18. We operate on the principle of fairness in our marriage.					1 2 3 4 5
19. I feel closer to people outside the marriage than to my partner.					1 2 3 4 5
20. We try new ways of dealing with problems.					1 2 3 4 5
21. I go along with what my partner decides to do.					1 2 3 4 5
22. In our marriage, we share responsibilities.					1 2 3 4 5
23. We like to spend our free time with each other.					1 2 3 4 5
24. It is difficult to get a rule change in our relationship.					1 2 3 4 5
25. We avoid each other at home.					1 2 3 4 5
26. When problems arise, we compromise.					1 2 3 4 5
27. We approve of each other's friends.					1 2 3 4 5
28. We are afraid to say what is on our minds.					1 2 3 4 5
29. We tend to do more things separately.					1 2 3 4 5
30. We share interests and hobbies with each other.					1 2 3 4 5

## APPENDIX C

## Spiritual Well-being Scale

Name: \_\_\_\_\_

I.D.# \_\_\_\_\_

## SPIRITUAL WELL-BEING SCALE

For each of the following statements circle the choice that best indicates the extent of your agreement or disagreement as it describes your personal experience:

SA = Strongly Agree  
MA = Moderately Agree  
A = Agree

D = Disagree  
MD = Moderately Disagree  
SD = Strongly Disagree

1. I don't find much satisfaction in private prayer with God. SA MA A D MD SD
2. I don't know who I am, where I came from, or where I'm going. SA MA A D MD SD
3. I believe that God loves me and cares about me. SA MA A D MD SD
4. I feel that life is a positive experience. SA MA A D MD SD
5. I believe that God is impersonal and not interested in my daily situations. SA MA A D MD SD
6. I feel unsettled about my future. SA MA A D MD SD
7. I have a personally meaningful relationship with God. SA MA A D MD SD
8. I feel very fulfilled and satisfied with life. SA MA A D MD SD
9. I don't get much personal strength and support from my God. SA MA A D MD SD
10. I feel a sense of well-being about the direction my life is headed in. SA MA A D MD SD
11. I believe that God is concerned about my problems. SA MA A D MD SD
12. I don't enjoy much about life. SA MA A D MD SD
13. I don't have a personally satisfying relationship with God. SA MA A D MD SD
14. I feel good about my future. SA MA A D MD SD
15. My relationship with God helps me not to feel lonely. SA MA A D MD SD
16. I feel that life is full of conflict and unhappiness. SA MA A D MD SD
17. I feel most fulfilled when I'm in close communion with God. SA MA A D MD SD
18. Life doesn't have much meaning. SA MA A D MD SD
19. My relation with God contributed to my sense of well-being. SA MA A D MD SD
20. I believe there is some real purpose for my life. SA MA A D MD SD

## APPENDIX D

### Cognitive Appraisals

## APPRAISAL QUESTIONNAIRE

Name: \_\_\_\_\_

I.D.# \_\_\_\_\_

Patients using hemodialysis have reported several situations which they find stressful. These situations are:

1. fatigue/lack of energy
2. painful medical procedures (such as needle sticks)
3. being dependent on a machine for survival
4. sexual difficulties
5. changes in working capabilities
6. changes in personal schedule because of dialysis treatment
7. dietary restrictions

You may have encountered some or all of these. Please answer the questions below and those on the following pages in regard to how you deal with these stressful situations.

I. In general, are these situations: (please circle only one)

- a) irrelevant to you.
- b) beneficial or desireable to you.
- c) distressing or undesireable to you.
- d) challenging to you.

II. In general, are these situations: (please circle only one)

- a) ones that you could change or do something about.
- b) ones that must be accepted or gotten used to.
- c) ones that you needed to know more about before you could act.
- d) ones in which you had to hold yourself back from doing what you wanted to do.



## APPENDIX E

### Ways of Coping

## WAYS OF COPING

Thinking about the stressful situations just described that hemodialysis patients face, put a check in the "yes" or "no" column for each item, depending on whether that item applies to you.

	Yes	No
1. Just concentrated on what you had to do next — the next step.	___	___
2. You went over the problem again and again in your mind to try to understand it.	___	___
3. Turned to work or substitute activity to take your mind off things.	___	___
4. You felt that time would make a difference, the only thing to do was to wait.	___	___
5. Bargained or compromised to get something positive from the situation.	___	___
6. Did something which you thought wouldn't work, but at least you were doing something.	___	___
7. Got the person responsible to change his or her mind.	___	___
8. Talked to someone to find out more about the situation.	___	___
9. Blamed yourself.	___	___
10. Concentrated on something good that could come out of the whole thing.	___	___
11. Criticized or lectured yourself.	___	___
12. Tried not to burn your bridges behind you, but leave things open somewhat.	___	___
13. Hoped a miracle would happen.	___	___
14. Went along with fate; sometimes you just have bad luck.	___	___
15. Went on as if nothing had happened.	___	___
16. Felt bad that you couldn't avoid the problem.	___	___
17. Kept your feelings to yourself.	___	___
18. Looked for the "silver lining," so to speak; tried to look on the bright side of things.	___	___
19. Slept more than usual.	___	___
20. Got mad at the people or things that caused the problem.	___	___
21. Accepted sympathy and understanding from someone.	___	___
22. Told yourself things that helped you to feel better.	___	___
23. You were inspired to do something creative.	___	___
24. Tried to forget the whole thing.	___	___

	Yes	No
25. Got professional help and did what they recommended.	___	___
26. Changed or grew as a person in a good way.	___	___
27. Waited to see what would happen.	___	___
28. Did something totally new that you never would have done if this hadn't happened.	___	___
29. Tried to make up to someone for the bad thing that happened.	___	___
30. Made a plan of action and followed it.	___	___
31. Accepted the next best thing to what you wanted.	___	___
32. Let your feelings out somehow.	___	___
33. Realized you brought the problem on yourself.	___	___
34. You came out of the experience better than when you went in.	___	___
35. Talked to someone who could do something concrete about the problem.	___	___
36. Got away from it for a while; tried to rest or take a vacation.	___	___
37. Tried to make yourself feel better by eating, drinking, smoking taking medication, etc.	___	___
38. Took a big chance or did something very risky.	___	___
39. Found new faith or some important truth about life.	___	___
40. Tried not to act too hastily or follow your first hunch.	___	___
41. Joked about it.	___	___
42. Maintained your pride and kept a stiff upper lip.	___	___
43. Rediscovered what is important in life.	___	___
44. Changed something so things would turn out all right.	___	___
45. Avoided being with people in general.	___	___
46. Didn't let it get to you; refused to think too much about it.	___	___
47. Asked someone you respected for advice and followed it.	___	___
48. Kept others from knowing how bad things were.	___	___
49. Made light of the situation; refused to get too serious about it.	___	___
50. Talked to someone about how you were feeling.	___	___
51. Stood your ground and fought for what you wanted.	___	___
52. Took it out on other people.	___	___
53. Drew on your past experiences; you were in a similar situation before.	___	___
54. Just took things one step at a time.	___	___
55. You knew what had to be done, so you doubled your efforts and tried harder to make things work.	___	___
56. Refused to believe that it had happened.	___	___

	Yes	No
57. Made a promise to yourself that things would be different next time.	___	___
58. Came up with a couple of different solutions to the problem.	___	___
59. Accepted it, since nothing could be done.	___	___
60. Wished you were a stronger person -- more optimistic and forceful.	___	___
61. Accepted your strong feelings, but didn't let them interfere with other things too much.	___	___
62. Wished that you could change what had happened.	___	___
63. Wished that you could change the way you felt.	___	___
64. Changed something about yourself so that you could deal with the situation better.	___	___
65. Daydreamed or imagined a better time or place than the one you were in.	___	___
66. Had fantasies or wishes about how things might turn out.	___	___
67. Thought about fantastic or unreal things (like the perfect revenge or finding a million dollars) that made you feel better.	___	___
68. Wished that the situation would go away or somehow be over with.	___	___
69. Prayed about the situation.	___	___
70. Asked someone to pray with you about the situation.	___	___
71. Asked someone to pray for you about the situation.	___	___
72. Searched the Scripture (or other religious literature) for spiritual insight or comfort.	___	___
73. Reflected on spiritual thoughts such as "God is in control of my life in this situation."	___	___
74. Talked with a priest, minister, or rabbi about the situation.	___	___

Copyright: Richard S. Lazarus (questions 1-68).

## APPENDIX F

Linkowski Acceptance of Disability Scale

## AD SCALE

Copyright: Donald Linkowski

Name: \_\_\_\_\_

I.D.# \_\_\_\_\_

THE WORD "DISABILITY" IN THE FOLLOWING QUESTIONS IS INTENDED TO REFER TO YOUR KIDNEY DISORDER. READ EACH STATEMENT AND CIRCLE THE LETTERS TO INDICATE HOW MUCH YOU AGREE OR DISAGREE WITH EACH STATEMENT.

DV = I disagree very much  
 DP = I disagree pretty much  
 DL = I disagree a little

AL = I agree a little  
 AP = I agree pretty much  
 AV = I agree very much

1. A physical disability may limit a person in some ways, but this does not mean he/she should give up and do nothing with his/her life. DV DP DL AL AP AV
2. Because of my disability, I feel miserable much of the time. DV DP DL AL AP AV
3. More than anything else, I wish I didn't have this disability. DV DP DL AL AP AV
4. Disability or not, I'm going to make good in life. DV DP DL AL AP AV
5. Good physical appearance and physical ability are the most important things in life. DV DP DL AL AP AV
6. My disability prevents me from doing just about everything I really want to do and from becoming the kind of person I want to be. DV DP DL AL AP AV
7. I can see the progress I am making in rehabilitation, and it makes me feel like an adequate person in spite of the limitations of my disability. DV DP DL AL AP AV
8. It makes me feel very bad to see all the things non-disabled people can do which I cannot. DV DP DL AL AP AV
9. My disability affects those aspects of life which I care most about. DV DP DL AL AP AV
10. Though I am disabled, my life is full. DV DP DL AL AP AV
11. If a person is not entirely physically able, he/she is that much less a person. DV DP DL AL AP AV
12. A person with a disability is restricted in certain ways, but there is still much he/she is able to do. DV DP DL AL AP AV
13. There are many more important things in life than physical ability and appearance. DV DP DL AL AP AV

14. There are times I forget that I am physically disabled. DV DP DL AL AP AV
15. You need a good and whole body to have a good mind. DV DP DL AL AP AV
16. There are many things a person with my disability is able to do. DV DP DL AL AP AV
17. Since my disability interferes with just about everything I try to do, it is foremost in my mind practically all the time. DV DP DL AL AP AV
18. If I didn't have my disability, I think I would be a much better person. DV DP DL AL AP AV
19. My disability, in itself, affects me more than any other characteristic about me. DV DP DL AL AP AV
20. The kind of person I am and my accomplishments in life are less important than those of nondisabled persons. DV DP DL AL AP AV
21. I know what I can't do because of my disability, and feel that I can live a full and normal life. DV DP DL AL AP AV
22. Though I can see the progress I am making in rehabilitation, this is not very important since I can never be normal. DV DP DL AL AP AV
23. In just about everything, my disability is annoying to me so that I can't enjoy anything. DV DP DL AL AP AV
24. How a person conducts himself or herself in life is much more important than physical appearances and ability. DV DP DL AL AP AV
25. A person with my disability is unable to enjoy very much in life. DV DP DL AL AP AV
26. The most important thing in this world is to be physically normal. DV DP DL AL AP AV
27. A person with a disability finds it especially difficult to expand his/her interests and range of abilities. DV DP DL AL AP AV
28. I believe that physical wholeness and appearance make a person what he/she is. DV DP DL AL AP AV
29. A physical disability affects a person's mental ability. DV DP DL AL AP AV
30. With my condition, I know just what I can and cannot do. DV DP DL AL AP AV
31. Almost every area of life is closed to me because of my disability. DV DP DL AL AP AV
32. Because of my disability, I have little to offer other people. DV DP DL AL AP AV

- |   |                   |
|---|-------------------|
| 33. Besides the many physical things I am unable to do, there are many many other things I am unable to do.                               | DV DP DL AL AP AV |
| 34. Personal characteristics such as honesty and a willingness to work hard are much more important than physical appearance and ability. | DV DP DL AL AP AV |
| 35. I get very annoyed with the way some people offer to help me.   | DV DP DL AL AP AV |
| 36. With my disability, there isn't a single area of life that is not affected in some major way.   | DV DP DL AL AP AV |
| 37. Though I can see that disabled people are able to do well in many ways, still they can never lead normal lives.                       | DV DP DL AL AP AV |
| 38. A disability, such as mine, is the worst possible thing that can happen to a person.  | DV DP DL AL AP AV |
| 39. No matter how hard I try or what I accomplish, I could never be as good a person as one without my disability.                        | DV DP DL AL AP AV |
| 40. There is practically nothing a person in my condition is able to do and really enjoy it.  | DV DP DL AL AP AV |
| 41. Because of my disability, I am unable to enjoy social relationships as much as I could if I were not disabled.                        | DV DP DL AL AP AV |
| 42. There are more important things in life than those my physical disability prevents me from doing.                                     | DV DP DL AL AP AV |
| 43. I want very much to do things that my disability prevents me from doing.  | DV DP DL AL AP AV |
| 44. Because of my disability, other people's lives have more meaning than my own.   | DV DP DL AL AP AV |
| 45. Oftentimes, when I think of my disability, it makes me feel so sad and upset that I am unable to think of or do anything else.        | DV DP DL AL AP AV |
| 46. A disability changes one's life completely. It causes one to think differently about everything.                                      | DV DP DL AL AP AV |
| 47. I feel that I should be as able as the next guy, even in areas where my disability limits me.   | DV DP DL AL AP AV |
| 48. Life is full of so many things that I sometimes forget for brief periods of time that I am disabled.                                  | DV DP DL AL AP AV |
| 49. Because of my disability, I can never do most things that normal people can do.   | DV DP DL AL AP AV |
| 50. I feel satisfied with my abilities and my disability doesn't bother me too much.  | DV DP DL AL AP AV |



## APPENDIX G

## Beck Depression Inventory

## BECK INVENTORY

Name \_\_\_\_\_ Date \_\_\_\_\_

On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the PAST WEEK, INCLUDING TODAY. Circle the number beside the statement you picked. If several statements in the group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

- |   |   |
|---|---|
| <p>1 0 I do not feel sad.<br/>1 I feel sad.<br/>2 I am sad all the time and I can't snap out of it.<br/>3 I am so sad or unhappy that I can't stand it.</p> <p>2 0 I am not particularly discouraged about the future.<br/>1 I feel discouraged about the future.<br/>2 I feel I have nothing to look forward to.<br/>3 I feel that the future is hopeless and that things cannot improve.</p> <p>3 0 I do not feel like a failure.<br/>1 I feel I have failed more than the average person.<br/>2 As I look back on my life, all I can see is a lot of failures.<br/>3 I feel I am a complete failure as a person.</p> <p>4 0 I get as much satisfaction out of things as I used to.<br/>1 I don't enjoy things the way I used to.<br/>2 I don't get real satisfaction out of anything anymore.<br/>3 I am dissatisfied or bored with everything.</p> <p>5 0 I don't feel particularly guilty.<br/>1 I feel guilty a good part of the time.<br/>2 I feel quite guilty most of the time.<br/>3 I feel guilty all of the time.</p> <p>6 0 I don't feel I am being punished.<br/>1 I feel I may be punished.<br/>2 I expect to be punished.<br/>3 I feel I am being punished.</p> <p>7 0 I don't feel disappointed in myself.<br/>1 I am disappointed in myself.<br/>2 I am disgusted with myself.<br/>3 I hate myself.</p> <p>8 0 I don't feel I am any worse than anybody else.<br/>1 I am critical of myself for my weaknesses or mistakes.<br/>2 I blame myself all the time for my faults.<br/>3 I blame myself for everything bad that happens.</p> <p>9 0 I don't have any thoughts of killing myself.<br/>1 I have thoughts of killing myself, but I would not carry them out.<br/>2 I would like to kill myself.<br/>3 I would kill myself if I had the chance.</p> <p>10 0 I don't cry any more than usual.<br/>1 I cry more now than I used to.<br/>2 I cry all the time now.<br/>3 I used to be able to cry, but now I can't cry even though I want to.</p> <p>11 0 I am no more irritated now than I ever am.<br/>1 I get annoyed or irritated more easily than I used to.<br/>2 I feel irritated all the time now.<br/>3 I don't get irritated at all by the things that used to irritate me.</p> | <p>12 0 I have not lost interest in other people.<br/>1 I am less interested in other people than I used to be.<br/>2 I have lost most of my interest in other people.<br/>3 I have lost all of my interest in other people.</p> <p>13 0 I make decisions about as well as I ever could.<br/>1 I put off making decisions more than I used to.<br/>2 I have greater difficulty in making decisions than before.<br/>3 I can't make decisions at all anymore.</p> <p>14 0 I don't feel I look any worse than I used to.<br/>1 I am worried that I am looking old or unattractive.<br/>2 I feel that there are permanent changes in my appearance that make me look unattractive.<br/>3 I believe that I look ugly.</p> <p>15 0 I can work about as well as before.<br/>1 It takes an extra effort to get started at doing something.<br/>2 I have to push myself very hard to do anything.<br/>3 I can't do any work at all.</p> <p>16 0 I can sleep as well as usual.<br/>1 I don't sleep as well as I used to.<br/>2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.<br/>3 I wake up several hours earlier than I used to and cannot get back to sleep.</p> <p>17 0 I don't get more tired than usual.<br/>1 I get tired more easily than I used to.<br/>2 I get tired from doing almost anything.<br/>3 I am too tired to do anything.</p> <p>18 0 My appetite is no worse than usual.<br/>1 My appetite is not as good as it used to be.<br/>2 My appetite is much worse now.<br/>3 I have no appetite at all anymore.</p> <p>19 0 I haven't lost much weight, if any, lately.<br/>1 I have lost more than 5 pounds. I am purposely trying to lose weight<br/>2 I have lost more than 10 pounds. by eating less. Yes _____ No _____<br/>3 I have lost more than 15 pounds.</p> <p>20 0 I am no more worried about my health than usual.<br/>1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.<br/>2 I am very worried about physical problems and it's hard to think of much else.<br/>3 I am so worried about my physical problems that I cannot think about anything else.</p> <p>21 0 I have not noticed any recent change in my interest in sex.<br/>1 I am less interested in sex than I used to be.<br/>2 I am much less interested in sex now.<br/>3 I have lost interest in sex completely.</p> |
|---|---|

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## APPENDIX H

## Productive Use of Time Questionnaire

## PRODUCTIVE USE OF TIME

Name: \_\_\_\_\_

I.D.# \_\_\_\_\_

Please answer all of the following questions regarding how you currently use your time. Circle only one letter for each question.

1. How much time do you spend working apart from your home each week (eg., time at employment)?
  - a) less than 10 hours.
  - b) 10 to 19 hours.
  - c) 20 to 29 hours.
  - d) 30 to 40 hours.
  - e) more than 40 hours.
2. How much time do you spend working at home each week (eg., household chores)?
  - a) less than 5 hours.
  - b) 5 to 9 hours.
  - c) 10 to 19 hours.
  - d) 20 to 30 hours.
  - e) more than 30 hours.
3. How much time do you spend with hobbies or avocational interests each week?
  - a) less than 2 hours.
  - b) 2 to 5 hours.
  - c) 6 to 9 hours.
  - d) 10 to 20 hours.
  - e) more than 20 hours.
4. How much time do you spend with friends or at social activities each week?
  - a) less than 2 hours.
  - b) 2 to 5 hours.
  - c) 6 to 9 hours.
  - d) 10 to 20 hours.
  - e) more than 20 hours.
5. How much time do you spend in church or social service organizations each week?
  - a) zero hours.
  - b) 1 hour.
  - c) 2 hours.
  - d) 3 to 5 hours.
  - e) more than 5 hours.
6. How much time do you spend doing structured liesure-time activities each week including such things as going to movies, reading books, bowling leagues, playing cards, bingo, etc.?
  - a) less than 2 hours.
  - b) 2 to 5 hours.
  - c) 6 to 9 hours.
  - d) 10 to 20 hours.
  - e) more than 20 hours.

## APPENDIX I

## Compliance With Treatment Questionnaire

I.D.# \_\_\_\_\_

## COMPLIANCE WITH TREATMENT QUESTIONNAIRE

Patient Name: \_\_\_\_\_

Please rate this patient in the three areas below regarding how well he/she is complying with the treatment regimen. Circle only one response for each question.

1. How well is this patient complying with the treatment regimen regarding taking medications and undergoing routine tests?
  - a) completely resistant to treatment in this area.
  - b) poor compliance with treatment in this area.
  - c) moderate compliance with treatment in this area.
  - d) good compliance with treatment in this area.
  - e) excellent compliance with treatment in this area.
2. How well is this patient complying with the treatment regimen regarding following the prescribed diet?
  - a) completely resistant to treatment in this area.
  - b) poor compliance with treatment in this area.
  - c) moderate compliance with treatment in this area.
  - d) good compliance with treatment in this area.
  - e) excellent compliance with treatment in this area.
3. How well is this patient complying with the treatment regimen regarding scheduling dialysis and continuing dialysis?
  - a) completely resistant to treatment in this area.
  - b) poor compliance with treatment in this area.
  - c) moderate compliance with treatment in this area.
  - d) good compliance with treatment in this area.
  - e) excellent compliance with treatment in this area.

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