

STRENGTHS AND WEAKNESSES OF THE SPOUSAL RELATIONSHIP  
FOLLOWING A STROKE

by

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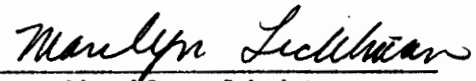
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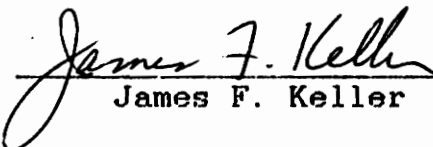
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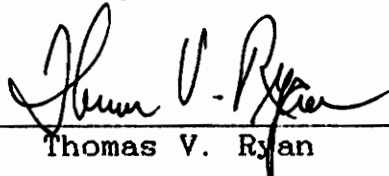
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(ABSTRACT)

The purpose of this study was to investigate the strengths/weaknesses of the stroke spouse/stroke caregiver relationship in relation to the cerebral hemisphere affected by the stroke, the gender of the stroke spouse, the functional capacity of the stroke spouse, the length of time since the stroke, and the socioeconomic status of the couple.

Forty stroke spouses, who had received medical rehabilitation at four medical facilities (Woodrow Wilson Rehabilitation Center, Waynesboro Community Hospital, Chambersburg Hospital, and Blue Ridge Rehabilitation Hospital), and stroke caregivers were interviewed regarding their pre- and post-stroke marital relationship. This study specifically investigated the the spouse caregivers' perceptions of the impact stroke had upon the marriage. Scales assessing the variables of marital health/dysfunction and functional independence of stroke spouse were selected. These included: the Family

Assessment Measure (FAM) - dyadic relationship version and the Barthel Index.

All scores on FAM were within the normal range of strength/weakness. Results indicated that a significant proportion of the variance in task accomplishment, role performance, communication, control, and total relationship health were associated with the gender of the stroke spouse and the level of functional independence. Spouse caregivers perceived more post-stroke than pre-stroke difficulties in these relationship areas, when the stroke spouse was male and functional disability was high. High functional disability was associated with increased difficulties in values and norms post-stroke and low SES was related to increased problems in affective expression. The cerebral location of the stroke and the length of time since the stroke were not associated with significant changes in caregivers' perceptions of pre- and post-stroke marital health/dysfunction. Couples with male stroke spouses and/or stroke spouses with significant physical disability are at risk for marital dysfunction. Marital counseling services during medical rehabilitation may be useful to these couples.

## ACKNOWLEDGMENTS

This document and the ensuing degree are fondly shared with my family and friends.

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Finally, this manuscript is dedicated to my sister, Jenny, who died in 1979. In life, she was motivated by a desire to give her best in the classroom, on the job, and to friends and family. The memory of her commitment to excellence provides inspiration for living my life to it's full potential. Achieving this goal is all the more meaningful because it is shared with special friends and family.

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## CHAPTER I

### INTRODUCTION

There has been growing concern in American society in the last 15 years regarding the rising cost of health care and the insufficient assistance Social Security and Medicare provide for citizens on "fixed" incomes. These concerns, coupled with the limited availability of long term care facilities and a growing population of senior citizens, have placed an added responsibility on the family unit for health care when chronic illness suddenly strikes. Cerebrovascular disease (stroke) is a physically and cognitively debilitating illness that usually occurs in the "golden years" of life - a catastrophic physical insult from which survivors seldom recover completely.

Stroke is the third major cause of death in the United States following heart disease and cancer. Researchers have estimated that approximately 275,000 die each year from stroke, another 300,000 are disabled, and total survivors of stroke number as high as two million (Goodstein, 1983; Thames & McNeil, 1987). Fields, Cordle, and Bowman (1983) described stroke as the most common cause of chronic disability in the Western World

and indicated that prognosis for survivors is variable. Citing the work of Ford and Katz (1966), Fields et al. indicated that it is generally accepted by health care professionals that approximately one-third of stroke survivors will recover fully, one-third will have some degree of impairment and disability, and one-third will be completely dependent. Goodstein (1983) concurred with this finding and stated that one-third of survivors find themselves completely dependent on various support systems, such as health care institutions and their families. This dependence is due primarily to decreased functional ability in activities of daily living, and to emotional and cognitive incapacitation.

Stroke is not a technical medical term, but rather a general one which refers to a number of related disorders. Stroke, in general, refers to the sudden onset of a frequently persistent neurological deficit. More specifically, it refers to illnesses resulting from damage of the blood circulation system to the brain. Other commonly used terms are cerebrovascular accident or cerebrovascular disease, which differentiates stroke from other brain disorders that are not related to circulation but have a strong stroke-like onset, such as rapid growing malignancies and metabolic brain disorders (Evans & Miller, 1984; Metter, 1986).

A host of researchers and theorists are asserting that stroke is much more than a medical and psychological catastrophe for the individual - it is a family catastrophe. Cohen, Harbin, Collis, and Greenberger (1986) suggest that "the psychological impact of stroke can be devastating to families as well as to patients. Without a doubt the entire family 'has a stroke'" (p.93). Stroke traumatizes family members as well as patients, and family reactions have a strong effect upon stroke patients (Thames & McNeil, 1987).

The relationship between the family and physical health has not been well studied, however, there appears to be a "general consensus within medicine that illness affects the family and that the family must adapt to the ill family member" (Campbell, 1986, p.137). Most family members of stroke survivors, particularly spouses, experience difficulty coping with changed behavior and personality disturbances. A host of circumstances appear to have impact upon the family adjustment process. These include (but are not limited to): extent and location of the cerebral damage, age of the stroke spouse and caregiver, time since the stroke, family income, gender of the stroke spouse and caregiver, the independence level of the stroke spouse in activities of daily living (e.g., dressing, feeding, toileting, and mobility),

changes in family roles, communicational deficits, and the quality of family interaction prior to the stroke (Campbell, 1986; Cohen, et al., 1986; Montgomery, Gonyea, & Hooyman, 1985; Sackeim et al., 1982; Sundet, Finset, & Reinvang, 1988). The patient and the family remain highly vulnerable for many months following the stroke. Effective treatment hinges on a complete evaluation of the patient's limitations and the family's strengths/weaknesses (Evans & Miller, 1984; Langton-Hewer, 1982).

### **Purpose**

In the fields of family health and stroke rehabilitation there is current interest in the response of the family unit to the disabling effects of stroke. Generally, family researchers have examined the impact of stroke on overall family or marital functioning (e.g. family adjustment, family compliance with medical regimes, and marital satisfaction). The medical literature has emphasized the effect of stroke lateralization on the psychiatric functioning and activities of daily living of stroke survivors. There is very little empirical data regarding the effects of

stroke on specific relationship processes of the spousal dyad.

The purpose of this study was to investigate the strengths and weaknesses of the stroke spouse-caregiver relationship in relation to the cerebral hemisphere affected by the stroke and the gender of the stroke spouse. The specific areas of strengths and weaknesses to be studied are: task accomplishment, role performance, communication, affective expression, affective involvement, control, and values and norms. This study also assesses the level of independent functioning of the stroke spouse (activities of daily living) and the effect of this variable on perceived strengths and weaknesses of the spousal relationship. The research problem is: How the cerebral location of stroke and the gender of the stroke spouse affect the strength/weakness of the spousal relationship.

The specific questions are as follows:

(1) Does the cerebral location of stroke (left or right hemisphere) have an effect on the strength/weakness of the spousal relationship.

(2) Does the gender of the stroke spouse have an effect on the strength/weakness of the spousal relationship.

(3) Does the level of physical disability of the stroke spouse have an effect on the strength/weakness of the spousal relationship.

(4) Does the length of time since stroke have an effect on the strength/weakness of the spousal relationship.

(5) Does the level of socioeconomic status have an effect on the strength/weakness of the spousal relationship following a stroke.

### **Theoretical Rationale**

This exploratory study was designed to investigate the relationship between stroke spouses (the patients) and their spousal caregivers. A self-report was obtained from the spousal caregiver and a subsample of the stroke spouses to assess the impact of stroke on the spousal relationship. Much of the empirical data regarding the quality of life following stroke has been based on an assessment of the functional limitations of the stroke survivor and the impact these limitations have had on depression, the use of leisure time, travel, and the frequency of social contacts which the stroke spouse and the spousal caregiver have experienced. This study provided information about changes in the specific



strengths and weaknesses of the spousal dyad after stroke, while controlling for pre-stroke perceptions of relationship strength/weakness.

Researchers are not in complete agreement regarding theories of left hemisphere and right hemisphere emotional functions of the brain (lateralization). Whitey (1987) noted in his review of the literature that some researchers believe that both hemispheres are active in producing language and prosody (intonation, feeling, and affective nuance) in speech. Generally, the accepted theory is that left hemisphere brain structures are responsible for the linguistic abilities, while the right hemisphere structures facilitate the simultaneous processing of language prosody.

Citing Krohn (1947), Heilman, Bowers, Speedie, and Collett (1984) defined prosody as the component of speech that communicates meaning by variations in stress and pitch, irrespective of the words used or of the grammatical structure. Speech prosody can not only express emotion, but can alter the meaning of language. For example, a rise in pitch near the end of a sentence can suggest a question in a sentence without reversing the order of the noun and verb (e.g., "did she"), or without an interrogative word (e.g., "how").

Right hemisphere stroke in most left hemisphere dominant individuals does not disrupt a set of symbolic behaviors but interferes with a more general and a more immediate response to experience itself (Myers, 1986). Frequently, these individuals do not display obvious language difficulties, i.e., dysphasia. Therefore, the behavioral manifestations of a right hemisphere stroke present to the family an overly optimistic picture of the stroke survivor's cognitive and communicative abilities.

Right hemisphere stroke individuals tend to be unresponsive to the emotional tone of a conversation and may not maintain eye contact. They may appear disorganized, verbose, tangential, and tend to manifest limited awareness of their deficits. Metter (1986) has noted that individuals with right hemisphere impairments frequently manifest a variety of perceptual deficits (e.g., spatial, visual, auditory, kinesthetic, and communicative).

For most people, the left hemisphere is programmed to learn and utilize symbols for speech. Generally, left hemisphere damage involves a communication deficit known as dysphasia (Evans & Miller, 1984). Dysphasia is a language disorder that can be of an expressive or receptive nature, or both. Stroke survivors with expressive dysphasias have trouble communicating ideas to

others by speech or writing. Expressively, one person may be unable to remember the name of a familiar object, while another may mislabel familiar objects with closely associated words. For example, a left hemisphere stroke person may use the word "chicken" when referring to an egg. Therefore it is essential that the level of language comprehension of stroke survivors be assessed.

Lateralization of language and perceptual abilities is not a clear-cut issue. Pimental (1986) in his review of the literature noted that in approximately 90-99% of right-handed individuals the left hemisphere was dominant for language, and in left-handed individuals approximately 50-75% were left hemisphere dominant for language. Benson (1979) suggested that it is important to remember that no single symptom within a syndrome can be used to indicate the location of cerebral damage.

Left and right hemisphere injured individuals do experience different patterns of initial deficits and "react to treatment in different ways depending primarily on the site and size of the lesion" (Sundet, et al., 1988, p. 364). The first research question of this study examined whether left and right hemisphere stroke has a differential effect on spousal strength/weakness. Stroke couples were chosen for this study because of the tendency for the brain damage to be more focal compared

to the more diffuse and multifocal lesions associated with traumatic head injury (Rollin, 1987). "Regardless of focal or diffuse head injury, the individual is thrust into a strange, frightening, and unfamiliar world, with the body and the brain struggling to regain a grip on reality. The perception of the actual reality by the patient is colored by the unique features that characterize that person's premorbid state and previous environment and certainly by the nature of the injury itself" (p. 83). Therefore, this study assessed the pre-stroke perceptions of the spousal relationship and statistically control (i.e., regression analysis) for its influence on post-stroke family processes.

Perceptions of individuals regarding their family roles and sense of identity are likely to heavily influence their response to sudden illness or loss. Social learning theory purports that an individual's sense of self and behavior is shaped by environmental models (Bandura & Walters, 1963). Parson (1955) suggested that males and females develop different behavioral patterns based on significant role models. Males tended to manifest the "instrumental" behaviors of their fathers and females model the "expressive" behaviors of their mothers. Hafstrom and Schram (1984) indicated that wives of chronically ill husbands tended

to be less satisfied with their own maternal and spousal roles, and their husband's roles of father and spouse. The **second research question** addressed the impact of the stroke patient's gender on the spousal relationship (role performance was of particular interest here).

Evaluation forms for activities of daily living (ADL) have been devised to objectively assess self-care and mobility variables (e.g., feeding, bathing, dressing, and ambulation) as a gauge of the patient's quality of life following an injury or illness. Katz, Ford, Moskowitz, Jackson, and Jaffe (1963) theorized that "the patient who is able to bathe, and dress himself and transfer independently requires much less assistance from his family or attendants than one who is limited in these spheres. Those who give care try to decrease dependency whenever possible on the premise that independence helps to sustain physical, emotional, and social strength. Independence in activities of daily living is important to such well-being and may, in fact, be a basic component in any definition of health of the aged" (p. 98). Klonoff, Costa, and Snow (1985) suggested that motor disabilities have had a deteriorating effect on social functioning, as individuals with slowed motor abilities evidenced increased dysfunction in work and home settings. The **third research question** examined the

influence of physical disability following stroke on the couples' basic family processes.

Campbell (1986) suggests that in recent years there are beginnings of collaboration between family medicine and family therapy to develop a holistic and family-based approach to health care. Norlin (1986) has noted that approximately 35 years ago theoreticians began to investigate the milieu of human relationships. "Instead of supporting the prevalent hypothesis that a person's behavior should be interpreted in isolation, as a figure that emerges from the ground of family connection, these authors began to suggest that individual actions are embedded in a complex, interdependent tapestry of family dynamics, and that what seems to be independent, autonomous behavior is, in fact, subtly controlled by the action of other family members, both past and present. This model of reality, given the label ecological, does not negate the notion of individual freedom and choice. What it demands, however, is a less simplistic explanation of why things happen" (pp. 174-175). This ecological approach suggests that when an individual changes his/her behavior in any way, this change reverberates throughout his/her relationships.

Campbell indicated that in 1968 von Bertalanffy believed that science had become too reductionistic. According to this view, an entire phenomena can not be understood by breaking it into small parts and analyzing each unit. It was advised that researchers investigate the complex interactions which occur between the elements of the system. One of the major assertions of this systems theory was that it is essential that researchers examine the multidirectional and sometimes circular interactions which occur in family relationships.

"At the core of a systems perspective is the belief that the cause of behavior cannot be traced backward to a single source. The stage has been conveniently set for the emergence of the systems model, a view that joins cause and effect into a recurring, inseparable loop. By definition, the 'glue' that holds these objects or people together is created by their interdependency. That is, it is assumed that within a system, all its elements exert some type of mutual influence on one another, because each depends on the others in some way. Thus, the behavior of any single element of a system represents a response to the behavior patterns of all the other members of that system, each of which, in turn, also responds simultaneously to the behavior of this individual, target element" (Norlin, 1986, p. 176).

Bubolz and Whiren (1984), in their review of the family ecological systems model, noted that "family systems are constantly coping and adapting to changing internal and external conditions. In so doing, families experience periods of growth and integration, periods of relative balance and stability, as well as periods of disorder and disintegration. Based on the general systems concept of 'wholeness', it can be conceived that as segments of the family system or the environment change, the state of equilibrium of the ecosystem will be disrupted, calling for counterbalancing or elaborating changes. Such stress, within limits, is a natural or necessary condition. It serves as a motivating or activating force to create change. The intensity of stress can be overwhelming, however, and may result in disruption and breakdown of system functioning when the demands on the physical and psychic energy and other resources are too great" (p. 6).

Zarski, DePompei, West, and Hall (1988) asserted that when chronic illness strikes the family's homeostatic balance is disrupted, and the system is confronted with the challenge to reorganize in an attempt to stabilize and adjust. The degree of crisis experienced by the family unit is embedded in the family's ability to cope with the multiple demands which



occur during the adjustment process to chronic illness. This adjustment process may be hindered or facilitated by factors, such as length of time since the onset of illness and family income (Molumphy & Sporakowski, 1984; Montgomery, et al., 1985). Research questions four and five explored the influence these characteristics have on the couple's relationship post-stroke.

The family's perception of their resources and the chronic illness strongly influences their coping response and the potential for crisis development. For this study, perception is described as the assessment made by the spousal caregivers relative to how they view the functional abilities of the stroke spouse and the basic family processes pre- and post-stroke.

Health-care and family professionals have indicated that while survivors of chronic illness often recover adequate physical abilities, the cognitive and communicative impairments that remain frequently cause difficulties (DePompei, Zarski, & Hall, 1988; Rollin, 1987; Zarski, et al., 1988). Family balance is disrupted by communication impairments, as communicative deficits are prone to misinterpretation and misunderstanding because these deficits are less visible than compromised physical and motor functions. Frequently family members struggle to develop different roles, communication

patterns, boundaries, or ways for reintegrating the chronically ill member into the unit and dealing with this new reality.

Skinner, Steinhauer, and Santa-Barbara (1983) propose a Process Model of Family Functioning which "emphasizes family dynamics, attempts to define the processes by which families operate, and emphasizes how basic dimensions of family functioning interrelate" (pp. 93-94). Key concepts of the Process Model of Family Functioning are : task accomplishment, role performance, communication, affective expression, affective involvement, control, and values and norms. Task accomplishment is the overriding goal of the family and refers to "the successful achievement of a variety of basic, developmental and crisis tasks. These functions include allowing for the continued development of all family members, providing reasonable security, ensuring sufficient cohesion to maintain the family as a unit, and functioning effectively as a part of society" (p.93).

Role performance is essential to successful task accomplishment and involves: (1) the assignment of specific activities, (2) the acceptance of assigned roles, and (3) the enactment of the prescribed behaviors. Successful role performance is contingent on effective communication. Effective communication refers

to the achievement of mutual understanding when clear and direct messages are sent and received. Affective expression is a vital element of effective communication and can hinder or facilitate task accomplishment and role performance. Affective expression includes content, intensity, and timing of feelings, and is likely to become disrupted or distorted during stressful times. "Affective involvement refers to both the degree and quality of family members' interest in one another", which can either hinder or help task accomplishment (p. 93). Control is a necessary process for the family to accomplish daily functions and to successfully adapt to changing task demands. Finally, values and norms provide the definitions of the family tasks and they supply direction on how to complete those tasks. Values and norms provide the cultural context in which basic family processes are analyzed and understood (Skinner, et al., 1983).

Doherty and McCubbin (1985), in their review of the family health literature, conclude that "there are signs of an awakening interest in the family in areas dominated by the bio-medical approach and the individual behavioral approach. This interest has stemmed both from concerns about family-based alternatives to costly institutionalization and from research on the prevention

and treatment of chronic illnesses. It appears, then, that economic, bio-medical, and behavioral approaches to health care are increasingly recognizing family issues in prevention, health, illness, and treatment. In our opinion, there is a strong tendency in traditional family studies to partial out or even ignore the biological aspects of family life. It is equally true that biological and behavioral scientists have tended to partition out or ignore the familial aspects of health promotion, health risks, and treatment. Since the humans we study are biopsychosocial in nature, so too must be our most comprehensive theories and methods" (p. 5).

In view of the influence the family (i.e., spousal caregiver) has in stroke rehabilitation, it is essential to document not only the impact of stroke on the dyadic unit but also to estimate the couple's ability to cope and respond effectively. Such research can provide health care professionals with data to make predictions regarding which couples may experience the greatest difficulty in adjusting to stroke. "Once a family experiences stroke, the family is never the same" (Watson, 1986, p. 15).

## CHAPTER II

### LITERATURE REVIEW

The empirical literature on stroke has typically focused on the effects of lateralization (i.e., cerebral location of the lesion) and the concomitant cognitive deficits. Researchers have investigated a variety of stroke outcomes, such as the affective/emotional changes, communication impairments, the quality of life, and gender differences. The empirical literature on family health care has investigated a variety of chronic illnesses including: asthma, hemodialysis, diabetes, and hypertension. The literature which has reviewed the impact of stroke on the family has generally addressed the topics of life and marital satisfaction following stroke, independence issues, family support, and family caregivers.

#### Stroke Literature

Stroke is a neurological dysfunction which is characterized by sudden paralysis stemming from vascular changes in the brain. Stroke is the popular term for cerebral vascular accident (CVA). Evans and Miller

(1984) define stroke as a sudden disruption of blood flow to part of the brain. A brief 10 second interruption of oxygen to the brain causes fainting and a disruption of several minutes results in permanent damage to brain cells. Metter (1986) notes that strokes are generally divided into two categories. Hemorrhagic strokes are the result of bleeding within the cerebral cavity (intracranial hemorrhage). Hemorrhagic strokes are destructive for two reasons. First, the brain cells are deprived of oxygen and die, and second, direct contact between blood and brain tissue is lethal to nerve cells. This is the least frequent type stroke but the most damaging. The other major category of strokes is ischemic cerebrovascular accidents. Sudden loss of blood supply to the brain is caused by either partial or complete occlusion of arteries due to blood clotting. There are two major causes of occlusions: cerebral thrombosis and cerebral embolism. Cerebral thrombosis refers to a clot (thrombosis) that blocks flow to the brain by forming in the arteries of the neck or brain. Cerebral embolism refers to a clot traveling from another part of the body and lodging in one of the arteries supplying blood to cerebral tissue.

The criteria for discriminating stroke from other neurological disorders include: sudden onset and focal deficits. The onset of stroke is usually in the course of minutes or hours and the insidious onset of progressive cognitive disorders is not characteristic of strokes. The neurological impairment is focal and restricted to the brain tissue damaged by the CVA. The stroke survivor will have islands of preserved cognitive functioning and areas of measurable cognitive decline (Karp, 1986). The diagnosis of CVA is typically confirmed by X-ray computed tomography (CT scan). CT scans have the capability of locating relatively small lesions and are a useful tool in correlating brain structure abnormalities with cognitive and behavioral deficits (Metter, 1986).

Typically, neurological and neuropsychological researchers have been intrigued with the lateralization effects of stroke on the cognitive and emotional functioning of the stroke survivor. The empirical literature is sparse on the effects of lateralization on the dynamics of the spousal relationship. Sackeim et al. (1982) highlighted two central problems associated with the interpretation of a stroke survivor's emotional expression following hemispheric damage. First, they suggest that it is feasible that mood changes, resulting

from cerebral injury, are not the direct product of brain structures responsible for those emotions. It is possible that these emotions are instead secondary reactions to sensorimotor and cognitive deficits following a stroke. The second problem involves establishing the relationship between the hemispheric lesion and the subsequent emotional changes. They suggest that unilateral damage (e.g., damage to one hemisphere of the brain) may release emotional reactions that are subserved more by the side of the brain contralateral (opposite) to the lesion.

Sackeim et al. (1982) studied 119 lateralized cases of indifferent-euphoria (pathological laughing) and dysphoric reaction (pathological crying). Indifferent-euphoria refers to subjects who appear indifferent, carefree, placid, inappropriately humorous, or socially disinhibited. Dysphoric reaction describes subjects who appear anxious, depressed, self-reproaching, and socially withdrawn. Lateralization of brain lesion and degree of pathological emotion were rated by a neurologist and neuropsychologist. Their findings indicated that individuals with indifferent-euphoria were three times more likely to have predominantly right- as compared to left-hemisphere damage. Left-damaged individuals were twice as likely to experience dysphoric reaction than



right-damaged individuals. Gender differences were also recorded, in that generally, male subjects expressed more indifferent-euphoria than female subjects, and female subjects presented more dysphoric reaction than male subjects. Males with left hemisphere damage were as likely to manifest laughing as crying outbursts. Females with left damage were three times more likely to express crying as compared to laughing.

Sackeim et al. (1982) also investigated the emotional expression of 14 individuals, who received right hemispherectomy (surgical removal of virtually an entire cerebral hemisphere). These individuals also expressed euphoria and uncontrollable laughter. Removal of the right hemisphere precludes its involvement in the expression of positive affect. Therefore, "if it is believed that cortical centers are necessary to experience mood, this finding suggests that the left side of the brain subserves certain positive emotional states to a greater extent than does the right side" (p. 213). They concluded that: (1) predominantly right hemisphere lesions lead to uncontrollable laughing, (2) left hemisphere lesions result in uncontrollable crying, and (3) that emotional behavior is "subserved by integrating networks comprising cortical and subcortical regions" (p. 217).

Citing the untranslated work of Terzian and Ceccotto in 1959, Gainotti (1972) noted that these researchers found that individuals who had received left intracarotid injection of Amytal (sedating the left hemisphere) expressed a 'depressive-catastrophic' reaction. Subjects who received injection in the right carotid artery expressed a 'euphoric-manical' reaction (1959). Gainotti generally confirmed these results with 80 left hemisphere and 80 right hemisphere subjects. Depressive reactions were significantly more prevalent among left hemisphere than right hemisphere individuals, and indifferent reactions prevailed among right hemisphere individuals. Lack of awareness of disability (anosagnosia) and impulsivity are more common in right hemisphere strokes than left, particularly for individuals which also experience left-sided neglect (inattention to the left-half of space). Myers (1986) noted that unilateral neglect was observed more frequently, lasted longer, and was usually more intense following right hemisphere than left hemisphere lesions. He suggested that the right hemisphere generally performed the task of attending to external stimuli and spatial orientation.

In the past 10 years, empirical research has investigated the role of the right hemisphere in nonverbal communication. Benowitz, et al. (1983) found that subjects who sustained right hemisphere injuries were impaired in their ability to interpret emotional situations which were presented through non-verbal means, particularly facial expressions. Borod, Koff, Lorch, and Nicholas (1985) found that individuals with right hemisphere lesions less frequently used intonational and facial modes of communication than left hemisphere individuals and controls. They concluded that individuals with right hemisphere damage manifested difficulty in the perception and expression of facial emotion. This finding concurred with Speedie, Coslett, and Heilman, who noted that "patients with right hemisphere lesion have been reported to have disturbances in the ability to comprehend and express the affective prosody of speech" (1984, p. 268). The impaired ability to nonverbally express emotion or alter voice intonation is referred to as dysprosody of speech.

In her review of the literature on communication problems following stroke, Pimental (1986) noted that the "left hemisphere is responsible for propositional language (conveying of meaning through actual word order, word choice, specific combinations of words and phrases

into sentences, and so on) and that the right hemisphere is responsible for affective language (prosody, or melody of speech, and the conveying of meaning through emotional tone via changes in stress, tempo, rhythm, duration, and intonation of speech sounds). Right hemisphere is also said to process pragmatic language. Pragmatics refers to a rule system which delineate the appropriate use of language according to situational contexts and constraints. In other words, pragmatics involve meaning conveyed beyond the actual words themselves through the use of gestures, body language, facial expression, and other innuendoes" (p. 323.).

Communication impairments subsequent to a stroke have devastating effects on the stroke survivor and his/her family. Rollin (1987) commented that studies of dysphasic individuals indicated that frequently the aphasic demonstrated diminished self-concept, loneliness, and feelings of isolation. There is a profound sense of loss experienced by these individuals, particularly in relation to their personal and family situations. Binder (1984) suggests that individuals with right hemisphere lesions may be more disruptive in families than aphasics, since they tend to lose their sensitivity to the needs of others. At the same time, the families of these right hemisphere individuals have high expectations for

complete or near complete recovery because the patient's verbal language is intact.

Gender and marital status appear to have a differential impact on stroke recovery and family functioning. In a study of 84 stroke patients, DeJong and Branch (1982) found that stroke survivors, who were married, tended to live in less restrictive environments. This was particularly true for men, since men were more likely than women to have had caregiving spouses. The Barthel Index of physical functioning and mobility was the second largest predictor of independent living status for both men and women, particularly women. In a study of 52 stroke patients, Thames and McNeil (1987) reported that families of male stroke patients expressed more relationship difficulties, restriction of life style, irritation, and guilty feelings than families with female stroke patients.

In a study conducted in Finland, researchers found a more severe, but not significant, decline in quality of life, particularly for leisure time activities, for men than women (Niemi, Laaksonen, Kotila, & Waltimo, 1988). The family-health literature suggests that chronic illness takes its toll on the marital relationship. Wives whose husbands had chronic medical conditions were significantly more dissatisfied with their husband's

personality and his attention to and companionship in the the relationship than wives whose husbands were not chronically ill (Hafstrom & Schram, 1984).

An important determinant in the stroke survivor's rehabilitation and the family adjustment process is the motor ability of the stroke survivor. Kolnoff, Costa, and Snow (1985) reported that stroke individuals, who experienced motor slowing, showed decreased social role functioning at work and home. In their review of the literature, they noted that mobility deficits were associated with increased distress levels, decreased post-injury independent functioning, and poorer neurological performance three years post-injury. Researchers in Sweden interviewed 110 stroke patients and found that the degree of physical impairment post-stroke was negatively related to frequency of sexual intercourse and leisure activities (Sjogren & Fugl-Myer, 1982). Researcher have reported that left hemisphere, hemiplegic stroke patients with intact vision and higher cortical functioning were more likely to attain functional independence than right hemisphere, hemiplegic patient with visual field cuts and higher cortical dysfunction (Sundet, et al., 1988).

Goodkin (1969) asserted that aphasic individuals are influenced by the verbal behavior of their family members to such a degree that verbal recovery can be

facilitated or impeded by the family's pattern of communication. Mykyta (1976) noted that over 66% of spouses seeking psychotherapy for stroke-related issues had partners who were dysphasic, suggesting that communication was more of a hindrance to family adjustment than the physical difficulties. In a study of 407 stroke survivors, Metter (1986) reported that 52% were functionally independent in self-care and 75% were able to return home.

In summary, stroke frequently results in a sudden loss of circumscribed cognitive and motor functions. Survivors of right hemisphere stroke tend to manifest uncontrollable laughter, limited awareness of their disability, and difficulties interpreting the nonverbal, emotional components of language. Survivors of left hemisphere stroke tend to experience uncontrollable crying and compromised abilities in the expression and comprehension of the semantic aspects of language. Motor and language deficits are frequently associated with increased difficulties in social functioning and functional independence. From these observations it is apparent that stroke has a significant impact on the stroke survivor and the entire family system.

### Family Health Literature

"A stroke may be seen as a threat to the integrity of the family and is likely to have profound effects both on the patient and his/her close relatives" (Langton-Hewer, 1982, p. 136). Langton-Hewer reported that the psychosocial difficulties that follow a stroke will be influenced by a variety of factors. These include: the extent of the neurological compromise, the strokes survivors premorbid personality and quality of life, the stability of the marriage, and the family's financial security. Goodstein (1983) notes that at times the family is more hesitant to accept the disabilities of stroke than the stroke patients themselves. The family (spouse) may have an unrealistic expectation of a magical recovery or deny the illness, and reject the stroke member when expected improvement does not occur.

Zarski et al. (1988) asserts that the way a family copes with a crisis hinges on the family's perception of that illness and their available resources. They reported that studies have shown that the expression of feeling and the affective integrity of the family determined the long-term adjustment of the family to chronic illness. The intensity of a family crisis (should one occur) depends on the family's ability to



cope with multiple needs and changes which occur following an illness.

Evans et al. (1987) suggested that the stroke survivor's family faces significant changes in adjusting to the survivor and his/her treatment regime. In a study of 60 familial caregivers of stroke patients, they found that families who were functioning well on measures of affective involvement, problem solving, communication, and general functioning evidenced significantly better adherence to treatment recommendations than dysfunctional families. In general, these findings indicate family functioning has an impact on treatment adherence and, more specifically, healthy affective involvement provides support for family members and autonomy for the stroke survivor.

Bishop, Epstein, Keitner, Miller, and Srinivasan (1986) interviewed 22 stroke patients and their spouses at least 1 year following stroke. Right and left hemisphere strokes were compared on measures that assessed morale, family functioning, and health or functional capacity. The results indicated that more than 1 year after a stroke couples were reporting good levels of morale, couple functioning, and functional capacity. The couples' perception of their psychosocial adjustment did not significantly differ from the

perceptions of a randomly selected group of matched peers. The authors suggested that the stroke couples' perception of the spouses' morale and the level of family functioning improved as the time since the onset of the stroke increased. However, this study did not control for the degree of residual impairment and noted that their sample was highly independent and that the functional incapacity of the stroke patients was minimal in most cases.

Langton-Hewer (1982) asserted that the stroke survivor and his/her family were quite vulnerable to psychosocial difficulties following the stroke and continued support for the family was important after physical rehabilitation had ended. Mumma (1986) conducted open-ended interviews with 60 stroke couples at least 3 months following a stroke. She found that the loss most frequently mentioned by both the patients and spouses was independence. The most frequently mentioned loss by both male and female patients was mobility, and independence and mobility was mentioned most by male and female spouses. Patients with right hemisphere strokes reported losses of independence and mobility most often, and left hemisphere patients reported mobility, driving, and communication losses.

Williams and Freer (1986) studied the marital satisfaction of 16 spouses of aphasic stroke patients at least 3 months post-stroke. They found that spouses were significantly less satisfied in general with their marriage after stroke and, specifically, were dissatisfied with their changed life style, the emotional support from the stroke patient, and their sexual relationship. There was also a slight tendency for couples who had been married longer to report more negative change in their marital satisfaction following a stroke. Stroke spouses tended to lack knowledge and understanding of the stroke patient's communication skills, comprehension difficulties, and prognosis.

Swedish investigators interviewed 62 stroke survivors 4 to 6 years after stroke regarding their experience of global and domain specific life satisfaction. When comparing pre- and post-stroke perceptions of satisfaction, the researchers found that 61% of the sample reported declines in their general or domain specific satisfaction with life. Specific areas of dissatisfaction included: sexual relationship, leisure activities, and self-care activities of daily living. The authors suggested that psychosocial difficulties in the adjustment process to stroke occurred shortly after

stroke onset and were long lasting (Viitanen, Fugl-Myer, Bernspang, & Fugl-Myer, 1988).

Jarmon (1982) interviewed nearly 200 stroke survivors in their homes and reported that irritability was frequently present a year or more post-stroke. Behaviors were observed as ranging from blatant aggressiveness to a self-centeredness which made caring and living with such individuals burdensome. Less frequently the person was easier to live with after a stroke. Patients were observed to differ in their response to stroke depending on their personality, social environment, premorbid health, and the severity of the stroke. Jarmon stated that the ability to adapt to stroke "varies and not surprisingly those who have demonstrated adaptability in their lives before tend to do better than rigid, obsessional individuals whose inability to compromise, and single-minded determination to achieve complete recovery, not infrequently leads to depression and despair when total success is not achieved. Those without this drive usually settle more resignedly for a less self-sufficient life. Those whose personalities are marked by traits of dependence find in their new role a fresh justification for leaning on another. The quality of life in the home, which is the arena for the great majority of stroke patients, depends

critically on the provision of adequate income, a range of services, and diversionary activities" (p. 607).

Since a large number of stroke survivors return home following hospitalization and/or rehabilitation, families, generally spouses, are frequently challenged with the responsibility of care-giving. Mykyta (1976) indicated communication problems, changed family roles, over-protection, and guilty feeling as frequent areas of concern for the primary caregiver of stroke patients. Brocklehurst, Morris, and Andrews (1981) found that communication and the stroke patient's behavior were major topics of concern for caregivers. While these problems tended to attenuate over time, the support provided for caregivers by friends and family also diminished.

In interviews with 147 caregivers of stroke patients, Silliman, Fletcher, Earp, and Wagner (1986) reported a variety of influences caregiving had on caregivers. Eighty-four percent of the caregivers indicated an increase in self-esteem because they were able to manage their family member's illness. Sixty-nine percent reported more personal closeness with the stroke patient and 76% worried about hardships arising should the caregivers themselves become ill. Seventy percent believed they could have been more understanding and 40-

45% reported having less personal time and more financial hardships.

Wade, Legh-Smith, and Hewer (1986) analyzed the impact of stroke on the moods of 302 caregivers of stroke patients (85% spouses). They found that heightened anxiety was the most frequently reported change 6 months following stroke. The stroke patient's decreased ability to perform self-care activities was associated with depression of the caregiver in the first year post-stroke, and 11-13% of caregivers experienced significant depression over the first 2 years following the stroke. Depression in the patient and a perception by the caregiver of patient low activity and poor recovery attributed to the depression of the caregiver in the first year after the stroke, but not at 2 years. Patients living with depressed caregivers tended to view their own recovery as less complete than patients with less depressed caregivers.

Carnwath and Johnson (1987) compared 103 stroke couples with 51 control couples and found that at 1 to 3 years post-stroke the stroke spouses reported more depression and physical complaints than control spouses. Depression in the spouse increased as the severity of the stroke increased and the social rehabilitation of the couple was less complete when the stroke spouse was

depressed. The authors suggest that depression in spousal caregivers is likely to hinder the rehabilitation of stroke patients.

Evans and Miller (1984) believe that the cognitive changes in the stroke patient disrupts his/her family life and interpersonal relationships in ways that demand social rehabilitation as part of the adjustment process. "Effective case planning and goal setting cannot take place without a thorough assessment that identifies the family strengths and weaknesses and the patient's capabilities and deficits. The family plays an important role in the restorative process after stroke and can prevent or promote recovery" (p. 245).

To summarize the family health literature, families display unique and diverse reactions to stroke. These reactions range on a continuum with unrealistic expectations for recovery and denial of the illness as polar extremes. Family members tend to report troubling post-stroke circumstances, such as loss of independence, decreased marital satisfaction, patient irritability, and long lasting psychosocial difficulties. It appears that families, who have adequate income, available professional services, and demonstrated adaptability prior to stroke, adjust better to the demands stroke places on them, than families with more limited financial

and coping resources. Likewise, stroke caregivers report a mixture of experiences. These range from increased self-esteem by caring for their spouse and personal closeness with the stroke spouse to financial hardships, depression, and worry regarding the consequences of a personal illness. Without exception, stroke has a significant impact on families beyond the physical and cognitive impairments experienced by the stroke family member.



## CHAPTER III

### METHODOLOGY

#### Sample and Procedures

Self-reports of family strengths and weaknesses of stroke couples were compared across hemispheric lateralization of stroke and gender of the stroke spouse (patient). The sample consisted of 40 stroke spouses and their caregiving spouses who have received hospitalization for stroke.

Participants were chosen who had no previous neurological history (i.e., stroke, head injury, and/or dementia), previous psychiatric history of intensive inpatient and outpatient treatment, or rehabilitation for substance abuse because of the possible confounding effect this would introduce. Couples studied had been married 5 years or more. Couples with stroke spouses who had been ill enough to require acute-care hospitalization, and who had been discharged home and not to an institution were included. This ensured that the stroke was severe enough to require medical treatment, but not so severe as to limit daily spousal interaction. Couples were chosen who had stroke spouses discharged not

less than 1 month before selection. This provided the couple with sufficient time to experience the impact of the stroke on their daily interactions prior to the interview.

Sample selection was carried out by a review of the stroke patients medical records at rehabilitation centers of central Virginia and south-central Pennsylvania. Stroke support groups were also contacted. Lateralization of stroke was determined by reports of computerized tomography (CT scans). Medical records were also utilized to determine possible previous neurological history. Consent to release information and participate in this study (Appendix A) was obtained at the time of the interview and prior to data collection. Hemispheric dominance was also assessed at the time of the interview by a lateral dominance examination (Appendix B).

All spousal caregivers were requested to provide perceptions of basic family (dyadic) processes prior to the stroke and as they currently perceived them since the stroke. A subsample of stroke spouses, who attained a minimum age equivalent reading comprehension score of 10 to 12 years on the Peabody Individual Achievement Test - Reading Comprehension, also provided pre- and post-stroke perceptions of basic family processes. This level of reading comprehension was required for self-

administration of the marital relationship instrument. The data collected on the caregivers' perceptions of basic family processes was the primary focus of this study and was utilized in the statistical analysis. The perceptions of the stroke spouses were utilized to describe potential discrepancies between the reports of stroke spouses and caregivers on the basic family processes.

The couple was also requested to provide a mutual assessment of the stroke spouse's current level of functioning in activities of daily living. This was considered an important estimate of the objective stressors being experienced by the couple. Finally, using an open ended interview format, the couple was asked to provide information regarding the strain that stroke has placed on their relationship, the coping resources utilized by the couple, and other potential stressors in the relationship. These questions were exploratory in nature and utilized to help clarify the effects of stroke and rehabilitative services on basic family processes, and provided suggestions for further intervention (Appendix C). Demographic information was obtained regarding the ages of the participants, time since onset of stroke, time since discharge from the

hospital, educational level, occupation, years of marriage, and history of psychiatric treatment.

Sixty-five percent of participants had received medical and psychosocial rehabilitation at the Woodrow Wilson Rehabilitation Center (WWRC). WWRC is a division of the Virginia Department of Rehabilitative Services, and provides comprehensive treatment and promotes the development of expert and innovative rehabilitation practices. The Center has an average enrollment of over 500 individuals and serves over 2,000 individuals per year. There is a 76 bed hospital which is licensed to provide acute rehabilitation care with full-time physician and nursing services. WWRC is located in the rural, central portion of Virginia.

The remainder of participants had participated in medical rehabilitation at 3 other facilities. The Blue Ridge Rehabilitation Hospital is located in Charlottesville, Virginia, and is part of the University of Virginia School Health Services Center. The Waynesboro Community Hospital is located in Waynesboro, Virginia, and operates a medical rehabilitation unit as part of its general health care services. Chambersburg Hospital is located in Chambersburg, Pennsylvania, and maintains a rehabilitation unit in the total health care facility.

## Instrumentation

The Family Assessment Measure (FAM) was developed by Skinner, Steinhauer, and Santa-Barbara in 1981 to evaluate general family functioning and specifically to provide indices of family strengths and weaknesses (Skinner et al., 1983). The current version of FAM (FAM III) has three forms: (1) a General Scale which provides an overall estimate of family functioning as a unit, (2) a Dyadic Relationship Scale which targets the relationship of specific pairs (dyads) in the family, and (3) a Self-Rating Scale which assesses an individual's perception of his/her functioning in the family. The Dyadic Relationship Scale has been selected as the specific FAM version to be used for this study. The items were reworded to directly apply to the respondent's perceptions of the current and pre-stroke relationship (Appendix D).

Theoretically, "FAM is based on a Process Model of Family Functioning which provides a framework for integrating different approaches to family therapy and research" (p. 91). The model provides a conceptual framework for assessing family functioning and emphasizes relationship dynamics. There is emphasis neither on the

total family system nor individual intrapsychic dynamics, but basic family processes are considered with an acknowledgment that a variety of factors influence these processes. FAM attempts to identify components that are relevant to family health/pathology and the processes by which the family functions.

The Dyadic Relationship version has 42 items which focus on the relationships among specific pairs in the family. An overall rating of family health/pathology is provided plus scores on seven subscales relating to the following constructs: task accomplishment, role performance, communication, affective expression, affective involvement, control, and values and norms. FAM III takes approximately 30 - 45 minutes to administer and can be completed by individuals who are at least 10 - 12 years of age. Normative data is available for adults, adolescents, and various clinical populations.

Skinner et al. (1983) presented statistical analyses on FAM III using a sample of 475 families (933 adults and 502 children). The internal consistency reliability estimate (coefficient alpha) was .95 for the Dyadic Relationship version. Intercorrelations among the subscales of the Dyadic Relationship scale were moderate to high (.63 - .82) in a sample of 277 clinical families. A multiple discriminant analysis was conducted

on the General Scale to identify linear combinations of subscales that differentiated among (1) problem versus nonproblem families and (2) family position (father, mother, and child). Two dimensions were major discriminators among these groups. The first dimension differentiated children from adults by the identification of problems in the areas of control, affective expression, and values and norms. The second discriminating dimension clearly distinguished nonproblem families from problem families by the tendency of the latter to report more dysfunction in the areas of role performance and affective involvement.

The raw scores on the FAM subscales consist of the numerical sum of the items. These raw scores can be converted into standard scores using normative data from nonproblem families. An increase in the standard scores represents an increase in the number of family problems reported. The Overall Rating is computed by averaging the seven clinical subscales and provides an index of family health and pathology.

Scores in the FAM profile are normalized such that each subscale has a mean of 50 and a standard deviation of 10. Therefore, a majority of the scores (64%) should fall within one standard deviation of the mean (between 40 and 60). Relative to the sample of normal families,

scores below 40 are likely to represent healthy family functioning and scores above 60 disturbed family functioning.

The Barthel Index is an empirical instrument developed by Mahoney and Barthel (1965) to evaluate the physical functioning of disabled individuals. Dudas (1986) considered this scale to be a valid, reliable, and sensitive measure of functional levels of self-care and mobility and to describe progress over time in individuals with disabilities. The Barthel Index consists of 10 items (Appendix E) which are assigned points depending on whether the individual performs the function alone or with help. Scores can range from 0 to 100 with low scores representing more severe physical impairment and high scores indicating more functional independence. When all activities are completed successfully and independently, the sum of these activities is 100. Individuals scoring 75 or more points are more likely to be discharged home than those with lower scores (Wylie, 1967).

Donaldson, Wagner, and Gresham (1973) suggested that ADL scales such as the Barthel Index have served as an objective evaluation and communication tool to inform family members and health care professional of the patients physical disability. These authors evaluated



100 patients and found that, when compared to the Kenny Self Care Score and the Katz Index, the Barthel Index demonstrated intermediate sensitivity to changes in independent functioning. Wylie (1967) assessed validity by comparing the Barthel Index scores of 1,025 stroke patients with mortality rates and physician ratings of clinical improvement. Lower scores were associated with increased mortality rates and less clinical improvement at discharge from the hospital. In a study of 164 stroke patients, Granger, Greer, Liset, Coulombe, and O'Brien (1975) reported 86% of patients with scores greater than 60 were discharged home from the hospital. Seventy-six percent of patients sent to rehabilitation centers and 90% of patients sent to long term care facilities had scores less than 60.

The Peabody Individual Achievement Test (PIAT) is an individually administered screening assessment of achievement. The Reading Comprehension subtest consists of a multiple choice format of selecting from four illustrations the one that best conveys the meaning of a passage (Dunn & Markwardt, 1970). The median test-retest reliability for Reading Comprehension is .64 with a retest interval of one month. Sattler (1982) reported that "the concurrent validity of the PIAT, using a variety of achievement and ability tests in a variety of

populations, is excellent. Thus, the evidence indicates that the PIAT measures general achievement areas" (p. 261).

The measure of socioeconomic status (SES) for this study was derived for each couple using the regression equations suggested by Nock and Rossi (1979). This model combines the occupations, educations, and ages of the husbands and wives to compute a single family SES (Appendix F). Scores of SES range from 0 to 100 with lower scores representing low SES and higher scores representing high SES. Nock and Rossi suggest that family SES based on the traditional method of assessing work status of the head of the household inaccurately reflects the actual SES of dual income families.

### **Data Analysis**

The results from the FAM III, the Barthel Index, and the couple's predicted SES were initially analyzed by calculation of means, standard deviations, and Pearson correlations. The main analysis, involving the perceptions of spousal caregivers, consisted of eight multiple regression analyses with lateralization of stroke, gender of the patient, level of physical disability, length of time since stroke, and level of

socioeconomic status as the predictor (independent) variables. Eight criterion (dependent) variables were analyzed; these included the FAM III scores, i.e., the Overall Rating and seven subscale scores of the FAM for spousal caregiver. The post-stroke perceptions of the spousal caregiver regarding the basic family processes of FAM III were statistically interpreted according to the perceptions of pre-stroke functioning, via entry first into the regression equation. Data collected on stroke spouses' perceptions of basic family processes and responses to open-ended question were presented in a descriptive manner.

## CHAPTER IV

### RESULTS AND DISCUSSION

#### Description of Sample

Sixty-one stroke patients and their spouses were identified by a review of the medical records of four medical institutions as potential research participants. Forty couples met the criteria for the study. Forty spouse caregivers completed the FAM materials. Fifteen stroke spouses obtained a age equivalent score of 10 years for reading comprehension on the PIAT and also completed the FAM questionnaires. Twenty-one couples were not included in this study. In 6 couples, 1 of the spouses was in a hospital or nursing home. Five couples could not be contacted by telephone to schedule interviews. In 4 couples, 1 of the spouses had died, and in 3 situations 1 of the spouses had a psychiatric history. Two couples refused to participate and 1 couple declined to complete the second administration on FAM. This resulted in an overall response rate of 66%. The sample was comprised of 4 groups of 10 couples. Group differentiation was based on the gender of the stroke spouse and the cerebral location of the stroke, i.e.,

female stroke spouses with left hemisphere strokes, female stroke spouses with right hemisphere strokes, male stroke spouses with left hemisphere strokes, and male stroke spouses with right hemisphere strokes.

### Characteristics of Respondents

Demographic information was gathered during the interview and specifically focused on the stroke spouse's and caregiver spouse's ages, educational levels, years of marriage, joint incomes, and the number of months since the stroke. These demographics along with each couple's socioeconomic status (see Appendix F) and the patients' Barthel Index score are presented in Table 1.

Stroke and caregiver spouse ages ranged from 39 to 78 and 42 to 76 years of age, respectively. The mean ages of stroke and caregiver spouses were 61.7 years and 60.2 years, respectively. These means were considerably higher than the mean age of the adults found in the normative data of FAM, i.e., mean age = 38.6 years. The largest percentage of stroke spouses (35.5%) and caregivers (40%) were between the ages of 60 and 69 years. The results of a two-way analysis of variance indicated no statistically significant difference among sample groups, i.e., left hemisphere female spouses, right

hemisphere female spouses, left hemisphere male spouses, and right hemisphere male spouses (see Table 2).

The education of stroke spouses ranged from 3 to 20 years as reported in Table 1. The educational attainment of caregivers ranged from 4 to 16 years. The mean years of education for stroke and caregiver spouses were approximately equivalent at 10.4 and 10.6, respectively. The largest percentage of stroke spouses (40%) and caregivers (42.5%) had completed 10 to 12 years of education. Seven and one-half percent of the stroke spouses and 5% of the caregivers reported less than 6 years of formal education. No significant difference among gender and location of lesion groups was found regarding the educational level of caregivers. However, there was a significant main effect between left hemisphere and right hemisphere stroke spouses with left hemisphere individuals reporting more education  $F(1,36)=4.32, p<.05$  (Table 2). Two individuals with left hemisphere strokes had completed 16 years of education and one person had 20 years.

One of the criteria for inclusion of subjects in the study was that couples had to be married at least 5 years. The mean number of years of marriage across all groups was 36.3 years. Years of marriage ranged from 17 to 58 and the largest percentage of couples (45%) were

married more than 40 years. No significant difference was found among groups for years of marriage.

The combined income of the stroke spouses and caregivers is also presented in Table 1. The income of couples for the overall sample ranged from \$400 to \$3500 per month with a mean of \$1347. Approximately 43% of couples reported that their income was between \$1000 and \$1999; and 35% reported monthly incomes less than \$1000. Many respondents indicated that their only source of income was Social Security and/or disability insurance. Other monetary assets, such as savings accounts and IRAs, were not assessed. No statistical significance was found among the groups for monthly income

Participant couples were also compared on the length of time since the onset of the stroke. Overall, a wide range of time since stroke (3 to 78 months) was reported with the mean length of time approximately 16 months (Table 1). The largest percentage of stroke spouses (37.5%) had incurred their strokes 7 to 12 months prior to the time of the interview. While left hemisphere strokes had the lowest average, there was no statistically significant difference on gender and location of stroke.

Table 1 also presents a description of couples' socioeconomic status. This socioeconomic status (SES) score was calculated for each couple based on the age of the husband, and the education and occupation of each spouse and their adult children. The authors (Nock & Rossi, 1979) do not present criteria for ranking family status based on these scores. A clear majority of the sample (65%) obtained a SES score between 50 and 59. Scores for the entire sample ranged from 33 to 71 with a mean of 54.4. There was no statistically significant difference among the male/female and right/left hemisphere groups on SES score.

The last variable described in Table 1 is the Barthel Index scores for each stroke spouse. This score represents the patient's level of functional independence in activities of feeding, personal care, and ambulation. Higher scores represent higher levels of independence in these activities than lower scores. The largest percentage of patients (40%) scored between 90 and 100 and a clear majority (75%) obtained a score of 75 and higher. This high percentage of high Barthel Index scores may be due to the restrictions of this study which required that the patient had received medical rehabilitation and had been living at home for at least one month. Patients with low scores, i.e., less than 50,



**Table 1**  
**Frequencies of Stroke and Caregiver Spouse**  
**Characteristics on Age, Education, Marriage, Income, Time**  
**Since Stroke, SES, and Barthel Index**

Variable	Female Stroke Spouse Groups		Male Stroke Spouse Groups		Percent Total (n=40)
	L-CVA (n=10)	R-CVA (n=10)	L-CVA (n=10)	R-CVA (n=10)	
<b><u>Age Stroke Spouse</u></b>					
70+	1	3	1	5	25%
60-69	5	3	5	2	35.5%
50-59	1	1	4	2	20%
<50	3	3	0	1	17.5%
Range	39-71	48-75	55-71	45-78	39-78
Mean	58.1	61	62.4	65.3	61.7
<b><u>Age Caregiver</u></b>					
70+	2	3	0	3	20%
60-69	3	4	5	4	40%
50-59	2	0	4	2	20%
<50	3	3	1	1	20%
Range	42-74	48-76	42-68	43-74	42-76
Mean	59.5	62.3	57.6	61.3	60.2
<b><u>Education of Patient</u></b>					
>12	2	3	3	1	22.5%
10-12	7	3	3	3	40%
6-9	1	3	4	4	30%
<6	0	1	0	2	7.5%
Range	8-16	3-14	6-20	4-15	3-20
Mean	11.8	10.2	11.3	8.4	10.4

**Note.** L-CVA = left hemisphere cerebrovascular accident;  
R-CVA = right hemisphere cerebrovascular accident.

(table continues)

Table 1 continued

Variable	Female Stroke Spouse Groups		Male Stroke Stroke Groups		Percent Total (n=40)
	L-CVA (n=10)	R-CVA (n=10)	L-CVA (n=10)	R-CVA (n=10)	
<b><u>Education of Caregiver</u></b>					
>12	2	3	3	1	22.5%
10-12	4	3	2	8	42.5%
6-9	3	3	5	1	30%
<6	1	1	0	0	5%
Range	4-16	4-15	7-16	8-13	4-16
Mean	10.4	10.7	10.4	10.9	10.6
<b><u>Marriage Length (years)</u></b>					
40+	3	5	4	6	45%
30-39	2	2	4	2	25%
20-29	4	2	0	2	20%
<20	1	1	2	0	10%
Range	17-54	19-52	17-46	21-58	17-58
Mean	33.1	37.4	34.4	40.4	36.3
<b><u>Family Income (per month)</u></b>					
\$3000+	1	1	0	0	5%
\$2000-2999	2	0	3	2	17.5%
\$1000-1999	4	6	2	5	42.5%
<\$1000	3	3	5	3	35%
Range	500-3100	550-3500	480-2500	400-2050	400-3500
Mean	\$1502	\$1253	\$1352	\$1282	\$1347

(table continues)

Table 1 continued

Variable	Female Stroke Spouse Groups		Male Stroke Spouse Groups		Percent Total (n=40)
	L-CVA (n=10)	R-CVA (n=10)	L-CVA (n=10)	R-CVA (n=10)	
<b><u>Time Since Stroke (months)</u></b>					
1-6	2	4	1	3	25%
7-12	6	3	3	3	37.5%
13-24	2	0	4	2	20%
24+	0	3	2	2	17.5%
Range	4-20	4-78	2-25	3-78	3-78
Mean	10.3	19.3	16.1	18.9	16.1
<b><u>SES</u></b>					
60+	1	2	3	0	25%
50-59	7	7	4	8	65%
40-49	2	0	3	1	15%
<40	0	1	0	1	5%
Range	46-60	33-65	45-71	37-58	33-71
Mean	54.5	54.7	55.7	52.7	54.4
<b><u>Barthel Index</u></b>					
90-100	3	3	7	3	40%
75-89	4	4	3	3	35%
50-74	1	3	0	2	15%
<50	2	0	0	2	10%
Range	35-100	60-95	75-100	40-100	35-100
Mean	72	80	92	73.5	79.4

**Note.** Higher SES scores represent higher socioeconomic status. Patients with Barthel Index scores  $\geq 75$  are more functionally independent and are more likely to be discharged home than patients with lower scores.

are generally admitted to long-term care facilities following medical stabilization. There was no statistically significant main effect for gender or location groups on the Barthel Index; however, a significant interaction effect was noted,  $F(1,36)=5.32, p<.05$  (Table 2). T-tests of the cell means found that the average Barthel Index score for male spouses with left hemisphere strokes was significantly higher than male right hemisphere spouses,  $t(1,18)=5.75, p<.05$ ; female left hemisphere spouses  $t(1,18)=6.77, p<.05$ ; and female right hemisphere spouses  $t(1,18)=5.16, p<.05$ . All male strokes spouses with left sided strokes obtained a Barthel Index score of 75 or greater. Therefore, left hemisphere male spouses in this study experienced less severe strokes and/or recovered more functional independence than other stroke spouse groups.

#### Description of Stroke Spouse Hand Dominance

All stroke patients (N=40) were administered a lateral dominance examination to determine handedness prior to the stroke. A clear majority of the patients were right hand dominant (90%). One left hemisphere female and 2 left hemisphere male spouses were noted to be left hand dominant. One left hemisphere male spouse was ambidextrous.

**Table 2**  
Two-way ANOVA Summary of Gender and Location of Stroke by  
Demographic Characteristics

Variable	Gender n=20 (g)	Location n=20 (l)	g x l	within
<b>Age Patient</b>				
MS	184.9	84.1	0	103.37
F	1.79	.81	0	
<b>Age caregiver</b>				
MS	21.03	105.63	2.03	97.25
F	.22	1.09	.02	
<b>Education Patient</b>				
MS	13.23	50.63	4.23	11.71
F	1.13	4.32*	.36	
<b>Education Caregiver</b>				
MS	.1	1.6	.1	8.83
F	.01	.18	.01	
<b>Marriage</b>				
MS	46.23	265.23	7.23	135.28
F	.34	1.96	.05	
<b>Family Income</b>				
MS	3.66	25.44	8.01	52.81
F	.07	.48	.15	
<b>Time Since Stroke</b>				
MS	72.23	349.58	95.33	290.36
F	.25	1.2	.33	
<b>Socioeconomic Status</b>				
MS	1.44	19.43	26.96	49.42
F	.03	.39	.55	
<b>Barthel Index</b>				
MS	455.63	275.63	1755.63	329.79
F	1.38	.84	5.32*	

\*p<.05.

### Description of FAM Scores for Stroke Spouse Subsample

Prior to the administration of the FAM questionnaire, stroke spouses were administered the Reading Comprehension subtest of the Peabody Individual Achievement Test (PIAT). Individuals who scored an age equivalent score of 10 or higher were subsequently administered the FAM. Of the total 40 spouses, 15 completed both administrations of the FAM. This subsample was comprised of 1 female with a left hemisphere stroke, 8 females with right hemisphere strokes, 4 males with left hemisphere strokes, and 2 males with left hemisphere strokes. The woman who had a left cerebrovascular stroke was left hand dominant. She reported that, immediately following her stroke, she experienced minor dysarthria (slurring of speech) which cleared within approximately 1 week. This suggests that she was right hemisphere dominant for speech. Due to the marked disparity of group size formal statistical analysis of the patient subsample was not conducted.

Intercorrelations among the seven subscales of FAM1 and FAM2 for stroke spouses ranged from .50 to .89 and .61 to .95, respectively. Skinner (1987) reported that intercorrelations among the content subscales for 433

individuals who represented 182 problem and nonproblem families ranged from .55 to .79. He noted that this degree of correlation suggests that a general factor of family health or pathology underlies these subscales.

Table 3 presents a summary of the mean scores and standard deviations (SD) for the pre-stroke perceptions of the marital relationship (FAM1) and the current perception of the spousal relationship (FAM2). FAM2 scores were consistently smaller (.7 to 4.3 T-scores) than FAM1 scores. This suggests that stroke spouses perceive the quality of their relationship with their spouse caregiver as unchanged or slightly improved following their stroke.

#### **Description of FAM Scores for Spouse Caregivers**

All spouse caregivers also completed two administrations of the FAM, i.e., FAM1 and FAM2 which assessed the dyadic pre-stroke relationship and post-stroke relationship, respectively. The primary focus of this study was an investigation of the strengths and weaknesses of the spousal relationship based on the perceptions of the spouse caregiver. These scores were used in the statistical analysis of the research

**Table 3**  
Mean Performance, Standard Deviations, and Ranges of  
Stroke Spouses' Scores on FAM

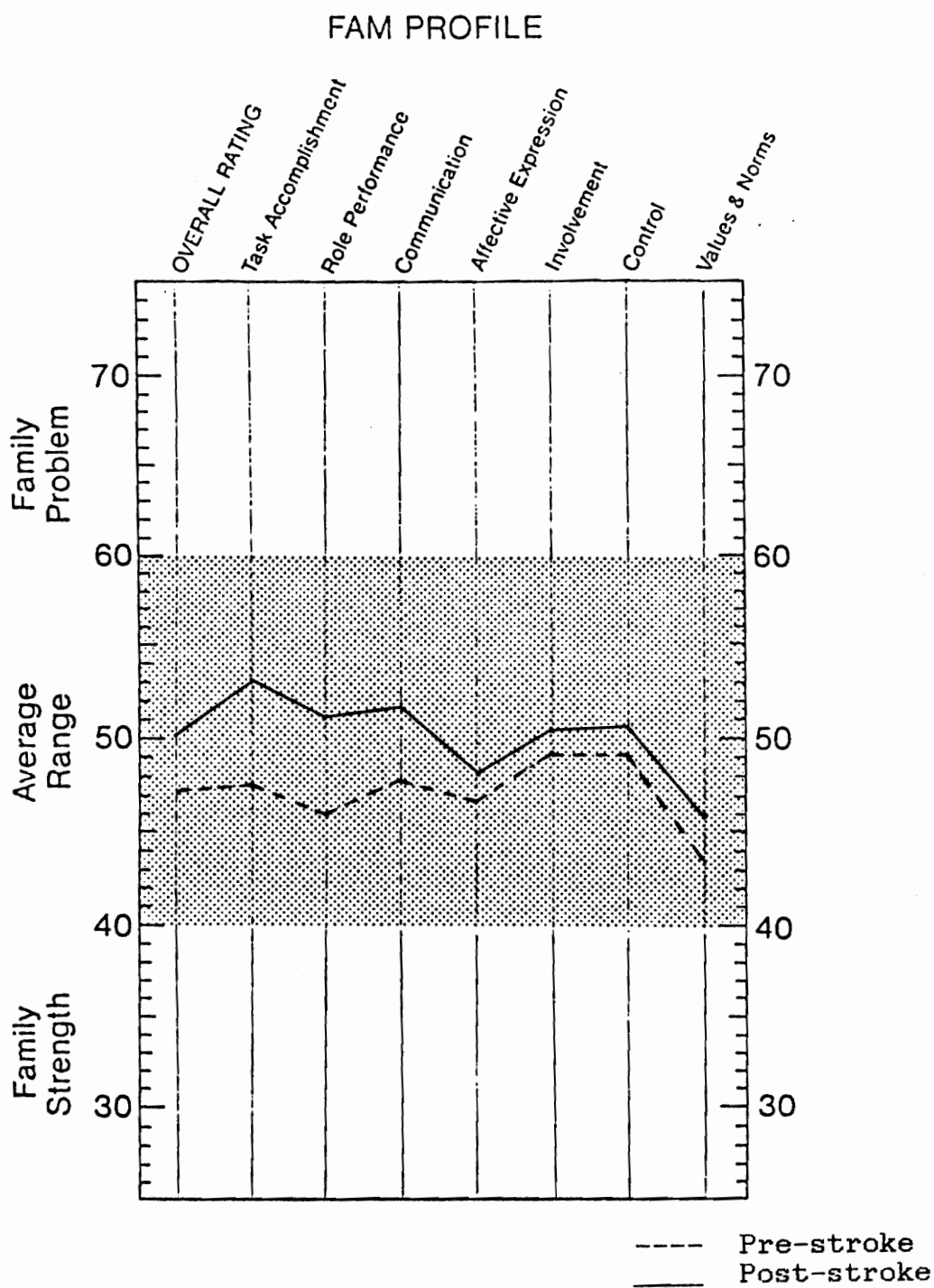
Subscale	(n=15)	Mean	SD	Min.	Max
Pre-stroke (FAM1)					
Task Accomplishment		48.1	11.5	30	62
Role Performance		45.9	11.7	28	60
Communication		49.1	13.4	27	68
Affective Expression		48.1	14.9	23	73
Affective Involvement		50.7	13.1	28	79
Control		48.9	12.5	29	63
Values and Norms		47.1	14.6	24	69
Total		48.3	11.6	27	64.6
Post-stroke (FAM2)					
Task Accomplishment		47.3	10.1	30	70
Role Performance		45.1	10.4	28	56
Communication		44.9	9.4	27	60
Affective Expression		43.9	12.2	23	60
Affective Involvement		47.6	10	32	62
Control		44.6	8.7	29	55
Values and Norms		43.5	12	24	64
Total		45.3	9.2	30.7	60.2



questions to be discussed in the next section of this chapter.

Figure 1 represents a graphic description of the discrepancies between mean scores on FAM1 and FAM2. It should be noted that all FAM scores were between 43 and 54; and the majority of scores for the FAM normative group fall between 40 and 60. Scores below 40 indicate very healthy couple functioning and scores above 60 represent disturbance in functioning. Therefore, the general increase of scores on FAM2 does not represent significant difficulties for the overall sample of spouse caregivers; however, individual spouses did report scores greater than 60 on FAM1 and FAM2. Intercorrelations among the 7 subscales of FAM1 and FAM2 for spouse caregivers ranged from .52 to .88 and .41 to .79, respectively. As reported earlier, this degree of correlation lends supports to the assumption that a general factor of family health or disturbance underlies these subscales.

Table 4 presents a summary of the mean scores and standard deviations for FAM1 and FAM2. Contrary to the FAM scores of patients, caregiver FAM2 scores were slightly to moderately higher (1 to 5.6 T-score points) than FAM1 scores. Paired t-tests for these discrepancies were conducted and revealed that post-stroke FAM subscale



**Figure 1** Comparison of Pre-stroke and Post-stroke FAM for Spouse Caregiver.

**Table 4**  
Mean Performance, Standard Deviations, and Ranges of  
Caregiver Spouses' Scores on FAM

Subscale	Mean	SD	Min.	Max
Pre-stroke (FAM1)				
Task Accomplishment	47.7	13	26	85
Role Performance	46	11.9	28	88
Communication	48.1	12.2	27	81
Affective Expression	47	12.5	23	73
Affective Involvement	49.6	11.1	28	75
Control	49.2	13.4	29	78
Values and Norms	43.8	14.3	24	87
Total	47.2	11	28.3	72
Post-stroke (FAM2)				
Task Accomplishment	53.2	14.5	26	85
Role Performance	51.2	13.6	28	84
Communication	51.5	13.1	27	85
Affective Expression	48.3	12.8	23	78
Affective Involvement	50.6	10.6	28	71
Control	50.6	10.7	29	78
Values and Norms	45.7	12.6	24	73
Total	50.1	10.5	27.7	68.7

scores were significantly higher than pre-stroke scores for task accomplishment,  $t(39) = -2.7, p < .001$ ; role performance,  $t(39) = -2.34, p < .05$ ; communication,  $t(39) = -2.26, p < .05$ ; and total FAM,  $t(39) = -2.42, p < .05$ . These increases suggest that spouse caregivers perceive more difficulties in these areas following stroke than prior to stroke.

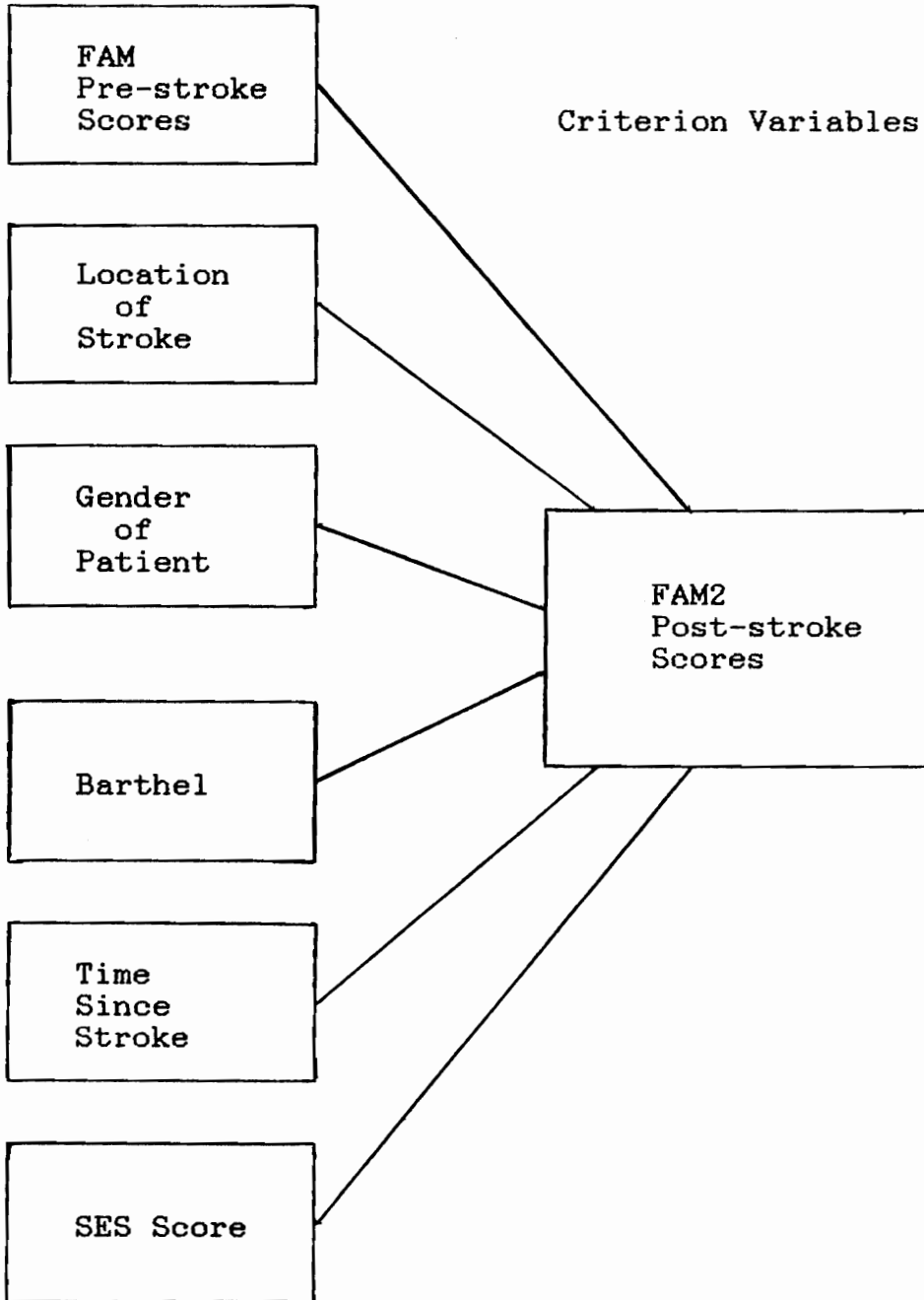
### **Descriptive Analysis and Discussion of Research Questions**

This study investigated five specific research questions. These questions focused on the degree of effect that the independent variables, i.e., cerebral location of the stroke, gender of the stroke patient, level of physical disability, length of time since the stroke, and level of socioeconomic status, had on the strength/weakness (FAM2 scores) of the spousal relationship following stroke. FAM1 scores were also designated as independent variables. Table 5 presents a summary of the intercorrelations among the independent variables and the FAM2 scores. Multiple regression analysis was used to regress these independent variables on the FAM2 scores, i.e., post-stroke scores on task accomplishment (TA2), role performance (RP2), communication (CM2), affective expression (AE2),

affective involvement (AI2), control (CN2), values and norms (VN2), and total FAM score (Total2), which represented the criterion measures. Seven regression equations resulted and are summarized in Table 6.

The Number Cruncher Statistical System (Hintze, 1987) computer program was used to perform these calculations. First, a step-wise variable selection procedure was conducted for each independent variable to begin the variable selection process. Figure 2 presents a model of the independent variables and the criterion variables used in the multiple regression analysis. Step-wise forward estimation of the regression model continued in each case with a simple regression model in which the independent variable most highly correlated with the criterion was used. In each model the FAM2 criterion variable, e.g., TA2, RP2, etc., was correlated highest with the respective FAM1 scores, i.e., TA1, RP1, and etc. (Table 5). Subsequent independent variables were entered into the model based on the magnitude of the partial correlations with the criterion variable, i.e., highest first. Finally, the independent variables with statistically significant betas were retained in the model. An example of these steps is presented in Appendix G.

## Independent Variables



Note. Each regression model (7) included respective FAM scores, i.e., role performance<sub>1</sub> and role performance<sub>2</sub>, and the remaining 5 independent variables.

**Figure 2** Variable Used in Selection Procedure and Model Building.

**Table 5**  
Correlations Among FAM Subscales, Location Stroke,  
Gender, Barthel Index, Times Since Stroke, and SES

	TA2	TA1	Loc	Gen	Barth	Time	SES
TA2	-						
TA1	.56**	-					
Loc	.05	.08	-				
Gen	.35	.30	-.00	-			
Barthel	-.29	.10	.14	.18	-		
Time	-.04	-.02	-.18	.08	-.26	-	
SES	-.31	-.48**	.10	-.03	-.13	.20	-

	RP2	RP1	Loc	Gen	Barth	Time	SES
RP2	-						
RP1	.42*	-					
Loc	-.04	-.10	-				
Gen	.39*	.35	-.00	-			
Barthel	-.37*	.06	.14	.18	-		
Time	.12	.09	-.18	.08	-.26	-	
SES	-.33	-.46**	.10	-.03	-.13	.20	-

**Note.** TA2=post-stroke task accomplishment; TA1=pre-stroke task accomplishment; RP2=post-stroke role performance; RP1=pre-stroke role performance; Loc=location of stroke; Gen=gender; Barth=Barthel score; Time=time since stroke; SES=socioeconomic status score.

\*p< .05.      \*\*p<.01.

(table continues)

Table 5 continued

	CM2	CM1	Loc	Gen	Barth	Time	SES
CM2	-						
CM1	.72***	-					
Loc	.08	-.004	-				
Gen	.44*	.37*	-.00	-			
Barthel	-.19	.10	.14	.18	-		
Time	.03	.10	-.18	.08	-.26	-	
SES	-.37*	-.46**	.10	-.03	-.13	.20	-

	AE2	AE1	Loc	Gen	Barth	Time	SES
AE2	-						
AE1	.82***	-					
Loc	.06	-.03	-				
Gen	.33	.36*	-.00	-			
Barthel	-.04	.10	.14	.18	-		
Time	.02	-.02	-.18	.08	-.26	-	
SES	-.55**	-.47**	.10	-.03	-.13	.20	-

**Note.** CM2=post-stroke communication; CM1=pre-stroke communication; AE2=post-stroke affective expression; AE1=pre-stroke affective expression; Loc=location of stroke; Gen=gender; Barth=Barthel score; Time=time since stroke; SES=socioeconomic status score.

\*p < .05. \*\*p < .01. \*\*\*p < .001. (table continues)



Table 5 continued

	AI2	AI1	Loc	Gen	Barth	Time	SES
AI2	-						
AI1	.68***	-					
Loc	-.14	-.24	-				
Gen	.20	.12	-.00	-			
Barthel	-.19	.02	.14	.18	-		
Time	-.07	-.01	-.18	.08	-.26	-	
SES	-.41*	-.37*	.10	-.03	-.13	.20	-

	CN2	CN1	Loc	Gen	Barth	Time	SES
CN2	-						
CN1	.65***	-					
Loc	-.04	.02	-				
Gen	.34	.15	-.00	-			
Barthel	-.32	.20	.14	.18	-		
Time	.01	-.03	-.18	.08	-.26	-	
SES	-.43*	-.51**	.10	-.03	-.13	.20	-

**Note.** AI2=post-stroke affective involvement; AI1=pre-stroke affective involvement; CN2=post-stroke control; CN1=pre-stroke control; Loc=location of stroke; Gen=gender; Barth=Barthel score; Time=time since stroke; SES=socioeconomic status score.

\* $p < .05$ .    \*\* $p < .01$ .    \*\*\* $p < .001$ .    (table continues)

Table 5 continued

	VN2	VN1	Loc	Gen	Barth	Time	SES
VN2	-						
VN1	.61***	-					
Loc	-.14	-.14	-				
Gen	.26	.22	-.00	-			
Barthel	-.15	.16	.14	.18	-		
Time	-.15	-.10	-.18	.08	-.26	-	
SES	-.30	-.40*	.10	-.03	-.13	.20	-

	TOT2	TOT1	Loc	Gen	Barth	Time	SES
TOT2	-						
TOT1	.75***	-					
Loc	-.02	-.07	-				
Gen	.40*	.31	-.00	-			
Barthel	-.27	.10	.14	.18	-		
Time	-.01	-.004	-.18	.08	-.26	-	
SES	-.46*	-.52**	.10	-.03	-.13	.20	-

**Note.** VN2=post-stroke values and norms; VN1=pre-stroke values and norms; TOT2=post-stroke total score; TOT1=pre-stroke total score; Loc=location of stroke; Gen=gender; Barth=Barthel score; Time=time since stroke; SES=socioeconomic status score.

\*p < .05.    \*\*p < .01.    \*\*\*p < .001.

### Research Question 1

The first research question asked: Does the cerebral location of stroke (left or right hemisphere) have an effect on the strength/weakness of the spousal relationship?

Stroke location was included in the seven model building procedures to determine its effect on the health of the spousal relationship as assessed by the FAM2 subscales. Location of stroke variable is not included among the variables in Table 6 that contribute significantly to the explanation of FAM2 scores. Table H-1 presents a summary of the partial correlations and partial R-squares with each criterion variable (see Appendix H). These partial correlations represent the correlation of FAM2 scores with location of stroke after the influence of FAM1, gender, Barthel Index, time since the stroke, and SES have been removed. These correlations range from .02 to .14. The partial R-squared represents the amount which the overall R-squared would increase if this variable was added to the equation. Therefore, a very small portion of the variance in post-stroke FAM scores is associated with cerebral location of the stroke.

### Research Question 2

The second research question asked: Does the gender of the stroke survivor have an effect on the strength/weakness of the spousal relationship?

To determine the effect of gender on the strength/weakness of the spousal relationship, gender was also entered into each regression equation with the FAM2 subscale scores. Table 6 presents a summary of these regression equations. As can be seen from this table, gender was found to have significant standardized betas for task accomplishment,  $t(37)=2.12, p<.05$ ; role performance,  $t(37)=2.71, p<.05$ ; communication,  $t(37)=2.3, p<.05$ ; control,  $t(37)=3.07, p<.01$ ; and total FAM,  $t(37)=2.71, p<.01$ . Gender was not found to have significant betas when included in equation of post-stroke scores on affective expression, affective involvement, and values and norms.

To determine the merit of gender as a singular explanation of the variance in FAM2 scores independent of FAM1 scores and other variable, seven simple regression analyses were conducted. As noted in Table I-1, gender was associated with a significant portion of the variance with the same FAM2 subscales as were reported above in the multiple regression analyses and affective expression (Appendix I).

Such discrepancies underscore the importance of conducting multivariate methods for assessing the complex and multidirectional interactions of relational systems (Campbell, 1986). These data suggest that male and female spouses have differential perceptions of the marital functioning following the stroke of their partner. Specifically, female caregivers report significantly more difficulties than male caregivers in the areas of task accomplishment, role performance, communication, control, and total health of the marital relationship. This finding concurs with Skinner's (1987) finding that mothers of clinical families (reporting difficulties) gave the most pathological FAM profiles compared to fathers and children. He also reported that mothers of nonproblem families rated their family functioning as most healthy. Although the data do not directly indicate this, mothers and wives may be more sensitive to the quality of interpersonal dynamics within the family. Again, it is important to note that generally the perception of female caregivers in this study were within the normative range of T-score and do not represent dysfunctional marriages.

### Research Question 3

The third question asked: Does the level of physical disability of the stroke survivor have an effect on the strength/weakness of the spousal relationship?

The effect of Barthel Index scores on the strength/weakness of the spousal relationship was also entered into each regression equation. Again, Table 6 presents a summary of these regression equations. The level of physical disability as assessed by the Barthel Index was found to have significant standardized betas for task accomplishment,  $t(37) = -3.27, p < .01$ ; role performance,  $t(37) = -3.62, p < .001$ ; communication,  $t(37) = -2.81, p < .01$ ; control,  $t(37) = -3.84, p < .001$ ; values and norms,  $t(38) = -2.07, p < .05$ ; and total FAM,  $t(37) = -4.39, p < .001$ . As the degree of functional independence increases in stroke spouses (higher Barthel Index), spouse caregivers report more strengths in completion of essential tasks, performance of prescribed roles, mutual understanding of communications, maintenance of ongoing functions (control), agreement on family norms, and the overall marital relationship (lower FAM2 scores). These results concur with the findings of Steidl et al. (1980) that family functioning and medical compliance are positively associated with medical condition of patients on long-term dialysis. Level of functional independence

was not found to have significant betas in equations of post-stroke scores on affective expression, and affective involvement. This suggests that, regardless of the extent of functional disability of the stroke patient, the husband or wife caregiver did not perceive any reduction in the intensity of feeling or the quality of interest toward their spouse.

Table I-2 presents a summary of the simple regressions of the Barthel Index with FAM2. A quite different picture unveils when functional disability is employed as a single explanation of post-stroke marital functioning. When the Barthel Index is the only variable considered, it is found to be significant in the areas of role performance and control, and not task accomplishment, control, and total family health. The nature of these associations remains the same, i.e., high levels of functional independence is associated with healthier relationships. This finding underscores the importance of obtaining an estimate of premorbid relationship functioning when investigating the impact of a catastrophic illness on family dynamics.

#### Research Question 4

Research question number four asked: Does the length of time since stroke have an effect on the strength/weakness of the spousal relationship?

Similar to the cerebral location of the stroke variable, the length of time since the stroke does not significantly contribute to an explanation of FAM2 scores (see Table 6). The partial correlations and partial R-squares of time since the stroke and the subtest score of FAM2 are presented in Table H-2. It should be noted that a very small portion of the variance in the post-stroke scores of spouse caregivers is explained by the passage of time since the stroke. These findings do not concur with the findings of Bishop et al. (1986) that an increase in time since stroke onset was significantly correlated with improved morale of the caregiver spouse and improved functioning of the family. These discrepant findings may be due to characteristics of the samples. Stroke spouses had all completed inpatient medical rehabilitation in the current study while approximately half to the stroke spouse spouses in the Bishop et al. study were in out-patient rehabilitation and half were members of a regional stroke club. Also, the previous study did not consider the couples' pre-stroke functioning, and nearly twice as many male as female stroke patients comprised the Bishop et al. sample.



### Research Question 5

The final question asked: Does the level of socioeconomic status have an effect on the strength/weakness of the spousal relationship following a stroke?

Socioeconomic status had a significant standardized beta with affective expression and was not found to be significantly related to other FAM2 scores (Table 6). Therefore, in this study higher levels of socioeconomic status were associated with lower scores by caregivers on affective expression. These lower scores on affective expression in turn represent more satisfaction regarding the content, intensity, and timing of feeling in the marital relationship. Socioeconomic status was moderately correlated with AE1 and AE2, i.e.,  $-.47$  and  $-.55$ , respectively, (Table 5); the R-squared value of SES regressed on AE1 was  $.22$ . These statistics raise suspicions of multicollinearity among independent variables and threats to interpretation of regression coefficients (Hair, Anderson, Tatham, & Grablowsky, 1979; Pedhazur, 1982). The SES used in this study constitutes a multivariant score of husband, wife, and adult child variables, i.e., age, education, and occupation, and is useful for comparing family social standing; however, its

interpretative clarity is difficult in coefficient analysis.

The importance of conducting multivariate analysis in research of relationship dynamics is again underscored in the simple regressions of SES on FAM2 scores. Table I-3 presents a summary of these regressions and SES was found to be significantly related to nearly all subscales scores. Without accounting for the influence of other variables related to post-stroke perceptions of marital health, particularly pre-stroke perceptions of the relationship, erroneous conclusions regarding the impact of SES on the strengths of the marriage would have resulted. This finding underscores the importance of obtaining an estimate of premorbid relationship functioning when investigating the impact of a catastrophic illness on family dynamics.

### **Results of Regression Models**

A review of the regression models is provided in Table 6. A consistent finding was the large amount of variance which was explained in each model by the perceptions of pre-stroke marital functioning. Pre-stroke perceptions of task accomplishment were associated with approximately 32% of the variance in post-stroke

**Table 6**  
**Multiple Regression Summary for Spouse Caregiver**  
**Post-stroke FAM Scores Regressed on Pre-stroke FAM,**  
**Barthel Index, Gender, and SES**

Criterion Predictor	R <sup>2</sup> Sequential	R <sup>2</sup> Change	beta	t
<b>TA2</b>				
TA1	.318	.318	.524	4.91***
Barthel	.44	.122	-.391	-3.27**
Gender	.502	.062	.265	2.12*
<b>RP2</b>				
RP1	.174	.174	.315	2.38*
Barthel	.333	.159	-.457	-3.62***
Gender	.446	.113	.365	2.71*
<b>CM2</b>				
CM1	.512	.512	.648	5.94***
Barthel	.576	.064	-.289	-2.81**
Gender	.63	.054	.254	2.30*
<b>AE2</b>				
AE1	.676	.676	.724	7.2 ***
SES	.709	.033	-.208	-2.07*
<b>AE2</b>				
AI1	.467	.467	.684	5.77***

**Note.** Only variable with significant betas are shown in the summary. TA=task accomplishment; RP=role performance; CM=communication; AE=affective expression; AI=affective involvement; 1=pre-stroke FAM; 2=post-stroke FAM.

\*p<.05. \*\*p<.01. \*\*\*p<.001. (table continues)

Table 6 continued

Criterion Predictor	R <sup>2</sup> Sequential	R <sup>2</sup> Change	beta	t
<b>CN2</b>				
CN1	.426	.426	.613	6.02***
Barthel	.54	.114	-.392	-3.84***
Gender	.635	.095	.318	3.07**
<b>VN2</b>				
VN1	.374	.374	.653	5.23***
Barthel	.439	.065	-.258	-2.07*
<b>Total2</b>				
Total1	.567	.567	.714	7.93***
Barthel	.685	.118	-.381	-4.39***
Gender	.738	.053	.246	2.71**

**Note.** Only variable with significant betas are shown in the summary. TA=task accomplishment; RP=role performance; CM=communication; AE=affective expression; AI=affective involvement; 1=pre-stroke FAM; 2=post-stroke FAM.

\*p<.05.    \*\*p<.01.    \*\*\*p<.001.

scores. The remaining variance (18%) was explained by the level of physical disability and the gender of the patient. Role performance was the only subscale in which the percentage of variance attributed to the pre-stroke score (17%) was not larger than the combined percentage for the remaining variables, i.e., 27% for Barthel Index and gender. In post-stroke perceptions of communication, 51% of the variance was related to pre-stroke communication, and functional independence and gender accounted for the remainder (12%) of the total explained variance.

Seventy-one percent of the variance for post-stroke affective expression was associated with the combined influence of pre-stroke affective expression (68%) and socioeconomic status (3%). Affective involvement was the only FAM subscale which resulted in a simply regression model. Approximately 47% of the variance in post-stroke affective involvement was explained by pre-stroke affective involvement.

Pre-stroke scores on control, Barthel Index scores, and gender were associated with 63.5% of the variance in post-stroke control; and 44% of the variance in values and norms scores was explained by pre-stroke values and norms and the level of physical disability. Finally, approximately 74% of the variance in the overall total

FAM was explained by the pre-stroke total score, level of the functional independence, and the gender of the stroke spouse.

### **Descriptive Analysis of Interview Questions**

An open ended interview was conducted with each couple at the end of each evaluation. The stroke patient and the caregiver spouse were encouraged to respond independently and provide personal impressions of the impact stroke had on their relationship. When couples were in strong agreement regarding an answer, it was recorded as a response for each person.

Table J-1 (see Appendix J) presents a summary of each respondent's answer to the question: What is it since the stroke that put the most strain on your relationship? Six male and 6 female patients (30%) reported that being dependent on others put strain on them and in turn on the marital relationship. This was the most frequently reported difficulty that resulted from the stroke. Approximately 25% of male patients indicated that being unable to work had strained the relationship, while 20% reported the strain they experienced was the added stress, i.e., work and health, their stroke placed on their wife. Three men reported the loss of their driving privileges as stressful and 2

indicated that travel and going out was difficult. Two females reported strains due to the slowness of their recovery and 2 reported distress because they no longer slept with their spouse. Male and female stroke spouses also reported strains regarding finances and unpleasant emotional changes in themselves.

The strains reported by spouse caregivers are also reported in Table J-1. Approximately 45% of female and 25% of male caregivers reported stress due to extra household duties and chores. Thirty percent of female caregivers and 40% of male caregivers reported financial strains. A total of 3 women reported concerns regarding the health of their husband, e.g., another stroke or danger of falling, while 4 male caregivers related these same fears. Twenty percent of caregiving wives noted the communication difficulties they experienced and 10% of husbands reported strains in communication. Other strains noted by spouse caregivers include: feeling homebound, physical demands of caregiving, emotional changes in the patient, and uncertainties regarding future improvements and health of the patient. Three couples asserted that their relationship had improved since the stroke while six spouse caregivers and two stroke spouses reported no strains associated with the stroke.

Couples were also asked to report things that they could not do since the stroke (see Table J-2). The most frequently reported loss by patients was in the area of performing chores around the house, i.e., 45% females and 25% males. Twenty percent of women and 35% of men indicated that they have not been able to work since their stroke, while 20 percent of female and 30% of male stroke spouses reported they could no longer drive. Stroke spouses also reported that they could no longer travel, socialize, engage in leisure activities, walk, and perform personal self-care activities independently. Two female and 3 male stroke spouses noted that they could perform regular pre-stroke activities but these required more time and effort.

Table J-2 also presents a summary of the activities spouse caregiver reported they could no longer perform. Twenty-five percent of wives reported that they could no longer travel, while 30% of husbands indicated that travel had ceased since the stroke. Spouses also reported that they could no longer dine at a restaurant or socialize as before, i.e., females 25% and males 10%. One woman and 4 men reported that it was no longer possible for them to engage in personal leisure activities, i.e., hobbies and clubs. Other activities which had stopped included: work, going out alone,



dancing together, and sexual relations with the patient. Two female and two male spouse caregivers reported that they continued to do the same activities they had performed prior to the stroke.

Couples were also asked to respond to the question: What has helped you most to cope with the stroke? A large number of couples reported more than one resource and the responses of patients and caregivers are presented in Table J-3. Religious belief was the most frequently reported coping mechanism by stroke spouses (9 females and 3 males). Medical rehabilitation, i.e., physical therapy, occupational therapy, speech therapy, etc.) was reported by 6 female and 3 male stroke spouses as very beneficial in their recovery. Thirty percent of female and 15% of male stroke spouses reported that their spouse had helped them the most to cope. Thirty-five percent of women with strokes reported the support of other family member helped them to cope while only 5% of men with strokes identified family as a coping resource. Equal numbers of wives and husbands (5) noted that the support of friends and neighbors was an important source of coping. The determination to "keep trying and not give up" was reported by 7 women and 1 man with strokes. Other responses of stroke spouses included: patience, acceptance, hope, optimism, kindness of others, and

helping others. One male stroke spouse reported that he could not cope with his stroke. This man had been very active as a physician prior to his stroke, had recently fallen and broken his hip, and his wife was also experiencing significant back problems.

Fifteen percent of female caregivers and 60% of male caregivers reported religious beliefs as a useful coping tool. The support of family was identified by 30% of female caregivers and 25% male caregivers as significant coping mechanism. Thirty percent of both wives and husbands of patients noted the support of friends and neighbors as helping them to cope. Determination was mentioned by 1 wife and 5 husbands as an important coping mechanism. Additional coping sources reported by caregivers included: education about stroke, patient's positive attitude, home health care, humor, acceptance, hope, patience, and "taking it one day at a time".

Finally, stroke spouses and caregivers were requested to provide information regarding other recent stressors and chronic health problems prior to the stroke. Death of a close relative was reported by 17.5% of the couples as a recent stressor (Table J-4). Other family members with health problems was mentioned by 12.5% of the couples, while 10% reported recent health

problems for either the stroke spouse or the spouse caregiver. Five percent of couples reported other family stressors such as marital separation and drug abuse.

Table J-5 presents a summary of chronic health problems reported by couples. The most frequently reported chronic health problem of stroke patients was hypertension (70% of females and of 45% males). Hypertension was also noted by 15% of female caregivers and 20% of male caregivers. Fifteen percent of female and male patients indicated a history of diabetes mellitus. One female stroke spouse, 1 male caregiver, and 4 female caregivers reported chronic back problems. Other health problems, e.g., heart, renal, emphysema, etc., were noted by 25% of the stroke spouses, while 5% of the caregivers reported other medical conditions, e.g., heart and emphysema.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

The purpose of this study was the investigation of strengths and weaknesses of the marital relationship following stroke. Independent variables included: the cerebral location of the stroke, the gender of the stroke patient, the degree of functional disability post-stroke, the length of time since the stroke, and the socioeconomic status of the couple. Research questions focused on caregiver spouses' assessment of the pre-stroke and post-stroke strengths/weaknesses of their relationship with their spouse who had the stroke. Multiple regression analysis was conducted on this data. Stroke spouses also provided pre- and post-stroke perceptions of relationship strengths/weaknesses which were compared by descriptive statistics. A sample of 40 caregiver spouses and 15 stroke spouses completed two administrations of the Family Assessment Measure, i.e., FAM1 (pre-stroke) and FAM2 (post-stroke). Couples provided demographic information and self-reports regarding the strains of the stroke on their relationship and the coping resources they utilized. This sample consisted of 4 groups (n=10 each) which were included

based on the location of the stroke and gender of the stroke spouse, i.e., left hemisphere females, right hemisphere females, left hemisphere males, and right hemisphere males.

### Summary of Findings

Overall, couples represented an elder citizen group (mean age = approximately 62 years) with nearly equal levels of education (10 years). On the average, couples had been married about 36 years and reported a wide range of incomes (\$400-\$3500/month). The average length of time since the stroke was 16 months and stroke spouses indicated moderate to high levels of functional independence based on the Barthel Index, i.e., 75% reported a score of 75 or higher.

Stroke spouses and caregiver spouses were found to have FAM scores which were within the average range for relationship strengths/weaknesses. Stroke spouses as a group reported improvements in the strength of their marital relationship since the stroke. It is suggested that these stroke spouses perceived their marriages to be healthier due to their increased need for care. While a majority of patients had recovered much of their functional independence, the most frequent strain

reported by stroke spouses was their dependence on others. Therefore, to cope with the cognitive dissonance of being an adult and being more reliant on their spouse since the stroke, these individuals report experiencing their marriages as healthier to compensate for perceived threats to their personal autonomy and integrity. Guilford (1986) asserts that marriage is a popular status among seniors and a "happy marriage" is ranked as the most important aspect of life by adult Americans.

While caregiver spouses also reported average levels of marital strength and weakness, their post-stroke perceptions indicated an increase in marital difficulties. Significantly greater difficulties were reported in task accomplishment, role performance, communication, and overall relationship health. These increased difficulties indicate that caregiver spouses experience more hardship in accomplishing the daily routines and chores of maintaining a marriage and household. This is supported by the frequent report of caregivers that household duties/chores and finances strained the marital relationship since the stroke.

#### Specific Research Questions

The cerebral location of the stroke was not found to significantly contribute to the variance in marital health/dysfunction. Specifically, scores on

communication and affective expression were not significantly influenced by location of the cerebral lesion. It is believed that this finding is an artifact of the FAM subscales and not evidence to refute the theory that verbal language and nonverbal language are subserved by the left and right cerebral hemispheres, respectively. Skinner (1983) indicated that the primary goal of communication was the achievement of mutual understanding and the subscale communication was constructed to this end. Therefore, FAM did not detect the subtle linguistic disturbances of left hemisphere patients that were noted during the interview by both stroke and caregiver spouses. Couples indicated that word finding problems and mislabeling of common objects occurred; however, caregiving spouses had grown accustomed to these patterns and could readily understand their spouses. Likewise, affective expression was constructed to assess the intensity and content of emotion rather than the impairments of speech intonation and facial expression which are characteristic of right hemisphere brain damage.

The length of time since the stroke did not significantly influence the caregiver's perception of marital health. Generally, marital strengths and weaknesses were within the average range for couples 3

months to 78 months post-stroke. The couples' assessment of pre-stroke health was also within normal limits and well balanced relationships continued after the stroke.

The level of socioeconomic status was found to significantly influence affective expression as perceived by the caregiving spouse. Specifically, higher SES scores were associated with caregiver reports of healthier expression of feelings. A number of components, such as age, education, and occupation, undergird this score and a rationale for this finding is unclear. Further study of the relationship between SES and affective expression is indicated with particular attention to the impact length of marriage has on emotional intimacy and intensity.

The gender of the stroke spouse was found to be significantly associated with task accomplishment, role performance, communication, and general relationship health. Caregiving husbands reported more health on these relationship dimensions than caregiving wives. This finding is consistent with the gerontology literature which reports that older men are more satisfied with marriage than older women (Guilford, 1986; Troll, 1986). The increased satisfaction that husbands experience may be linked to satisfaction in other life arenas, i.e., work, which has traditionally not been the



case for older women. Husbands generally report less strain associated with caregiving and generally receive more help from relatives and friends than wives (Noelker & Shaffer, 1986). Lastly, male stroke patients have been reported by family members to be more irritable than female stroke patients (Thames & McNeil, 1987) and, therefore, relationships are strained.

The level of functional disability was found to be the most pervasive influence on caregiver's assessment of marital strength/weakness. As the level of functional disability increased, the caregivers report of difficulties in the areas of task accomplishment, role performance, communication, control, values and norms, and overall marital relationship also increased significantly. This finding concurs with other studies of stroke and head injury which reported that increased motor disability was associated with increased levels of patient relative distress, and dysfunction within the work and home settings (Klonoff et al., 1985 ; Weddell, 1987).

With the exception of affective expression and affective involvement, the level of the patient's functional autonomy and the gender of the stroke spouse were consistent predictors of the caregiver's perceptions of marital health. This suggests that subscales of the

FAM may cluster together and assess two general dimensions of marital functioning following stroke. Skinner (1987) reported that two dimensions were major discriminators among problem versus nonproblem families and family position (father, mother, child). Problem families tended to report more difficulties in role performance and affective involvement than nonproblem families, and children were differentiated from adults based on problems in the areas of control, values and norms, and affective expression. Miller (1986) and Guilford (1986) theorize that there are 3 basic dimensions of interpersonal relationships, i.e., belonging, intimacy, and interdependence.

The degree of belonging is influenced by approval, consensus of values, and a sense of membership. Intimacy refers to the level of mutual affection, attraction, trust, and sexual expression. Interdependence is characterized by mutual sharing of resources (financial, goods, family) and daily living responsibilities (household chores, child-rearing). This model has similarities with Parson's antiquated theory of gender socialization which suggests that fathers provide the children with "instrumental" prototypes of decision making and action oriented behavior, while mothers fulfill the "expressive" role and provide nurturance, caring, and emotional security.

Parson's dichotomy is blurred in Miller and Guilford's model of interpersonal relationships and Skinner's conceptualization of basic family processes that underlie the FAM instrument. The subscales of task accomplishment, roles performance, communication, and control clustered together in this study and appear similar to the concept of interdependence and instrumental behavior. Affective expression and affective involvement seem consistent with the dimension of intimacy and expressiveness, while the subscale of values and norms appears to coincide with the interpersonal component of shared belonging. Of the variables considered in this study, level of functional independence and gender appear to influence an instrumental/interdependence dimension and not an expressive/affective dimension of marriage following stroke. Further research of this hypothesis may provide insight regarding the sense of "completeness" that women and men describe in healthy marriages.

#### Merit and Flaws of the Study

The family ecosystem approach to research is one of the basic theoretical assumptions underlying this study. This approach emphasizes the biological and physical dimensions of organisms and environment, as well as their

psychosocial characteristics and interactions (Bubolz & Whiren, 1984; Norlin, 1986). One of the primary difficulties associated with researching the complex relationship between sudden illness and family interactions is the impact of family health prior to the medical condition (Campbell, 1986). This study attempted to control for this important variable by requesting couples to provide perceptions of their pre-stroke relationship. Certainly, retrospective impressions of a relationship are influenced by events that have transpired since a stroke or any significant event and therefore suspect. However, the position can also be argued that individuals act and respond to a situation based on their current perceptions of the situation and their available resources. Bandura and Walters (1963) assert that the actions of individuals are based on what they perceive they did in the past and what they believe they can do in the present, rather than how they "actually" functioned yesterday, a month ago, or 10 years ago. It was found in this study that inclusion of pre-stroke impressions of marital dynamic (FAM1) was significantly associated with post-stroke impressions (FAM2). Inclusion of pre-stroke perceptions also helped to clarify the influence of other variables on marital strengths and weaknesses.

Administering questionnaires in person was very useful for clarification of any questions that arose concerning scoring of the items. A number of respondents had difficulty understanding the nature of negatively worded items, i.e., "My husband/wife and I aren't close to each other." A check for missed items and other errors could also be accomplished. This avoided invalidation of incomplete questionnaires which frequently occurs in group administered questionnaires and mail studies.

Interviewing the couples in their home afforded the couple the added assurance of confidentiality, avoided the hardship of travel for couples, and provided the opportunity for couples at great distance to also be involved. Observations of the couple's interactions and their comments about the relationship since the stroke could be recorded. Recommendations regarding specific concerns about the stroke or referrals for further services could also be provided.

Finally, the study provided data of both a structured and unstructured nature, i.e., questionnaire and interview, respectively. This proved to be beneficial in clarifying the nature of significant findings and providing support for those findings. For example, it was found that the level of functional

independence (Barthel Index) was significantly associated with caregiver's role performance score on the FAM. During the interview the most frequently reported strains by caregiver spouses were the additional chores and duties of the household since the stroke.

The largest drawback of the study was the absence of measures for response biasing. No controls were built into the study to assess socially desirable response patterns or defensiveness of the respondents. Skinner et al. (1983) noted that the FAM is designed to assess the family functioning at the time of assessment. Therefore, the emotional state and level of motivation of the respondents at the time of the interview, and/or the demand characteristics of the study may have influenced the accuracy of the self-report data. Controls for response biases would have increased confidence in the current findings.

Due to the limited number of research personnel, couples were interviewed together. It is likely that some spouses were influenced in their responding in such a way as to not upset their partner. Couples were encouraged to provide their own responses to questionnaire items and interview questions, however occasionally a spouse would ask their partner what he/she thought about an item. Ideally (in addition to couple

interviews), two researchers could have separated the couple to collect questionnaire data and provide spouses ample opportunity to describe their marital relationship more privately.

Since this study was conducted with a sample of primarily elder citizens, it was noted on frequent occasions that they were unfamiliar with formal measures of marital relationship and, specifically, with a Likert style of responding. Respondents reported that it would have been easier for them to answer "true or false" to FAM items and to have a response between agree and disagree, i.e., sometimes. The presence of the researcher helped to clarify instructions and to encourage them for their efforts to complete the measure. Also, the couple's socioeconomic was difficult to interpret since the authors did not provide a normative group or criteria to compare respondents, i.e., scores below 30 represent low SES.

Finally, the study required considerable travel and time to complete. A number of eligible couples lived in southern and northern Virginia which required extensive travel and coordination of interviews. Couples without telephones could not be reached to schedule appointments and did not respond to messages left with neighbors or family to contact the researcher. Research designs that

involve interviewing respondents in home setting require considerable expense but also provide valuable environmental and observational information that could not be obtained in any other fashion.

Future studies of stroke and the marital relationships should utilize follow-up questions of a checklist format in addition to a open-ended interview. This style of gathering information can provide more information in areas such as the strains couples experience and the coping resources they utilize post-stroke. Assessing the perceptions of other individuals, i.e., adult children, relatives, home care professional, etc., actively involved with the couple pre- and post-stroke can supply a rich description of the impact stroke has on couples that the couple cannot provide. It is advisable that a control sample be administered the research measures, particularly when the target sample, i.e., senior citizens, differ significantly from the normative group of the instruments. This study would have been strengthened had a group of older couples without stroke been administered the FAM. Future research should also assess the cognitive functioning of the stroke spouse. This data could be utilized to investigate the relationship between cognitive and functional deficits and their combined impact on the



marital relationship following a stroke. Finally, a longitudinal study that begins assessment of the couple's relationship soon after the stroke, monitors their adjustment during medical rehabilitation, and conducts periodic home follow-up would enhance our understanding of the stages of recovery couples experience. Stage related issues during the recovery process could be readily identified and addressed in a timely manner.

### Implications

It has been estimated that approximately 47% of all older persons suffer some limitation of activity as a result of chronic conditions, and that their primary source of help is a spouse (Guilford, 1986). The family ecological systems model serves as a useful tool for conceptualizing the impact chronic physical disabilities have on relationships (marital and otherwise). Specifically, stroke results in lesions of the brain which influences the efficient functioning of "brain systems" responsible for complex human activities, i.e., work, personal care, communication, emotions, memory, learning, etc. These deficits also influence others who associate with the stroke individual, particularly close family members. The daily activities of family

caregivers is also significantly affected by the stroke and, recovery of the stroke individual is influenced by the response of these family members. A sudden, unexpected change in the functional independence of a spouse disrupts the balance of the ecosystem (physical, psychological, and social) and calls for a response from all components of the ecosystem to adjust and cope with this intrusion. Within the "brain/body system" and the "interpersonal/social system" all the components of each system exert some type of mutual intra- and inter-system influence on one another. When the intensity of a physical condition exceeds the coping resources of a couple or family, other systems, i.e., medical rehabilitation, psychotherapists, social workers, insurance carriers, etc., enter the drama to assist in restoring stability to the situation.

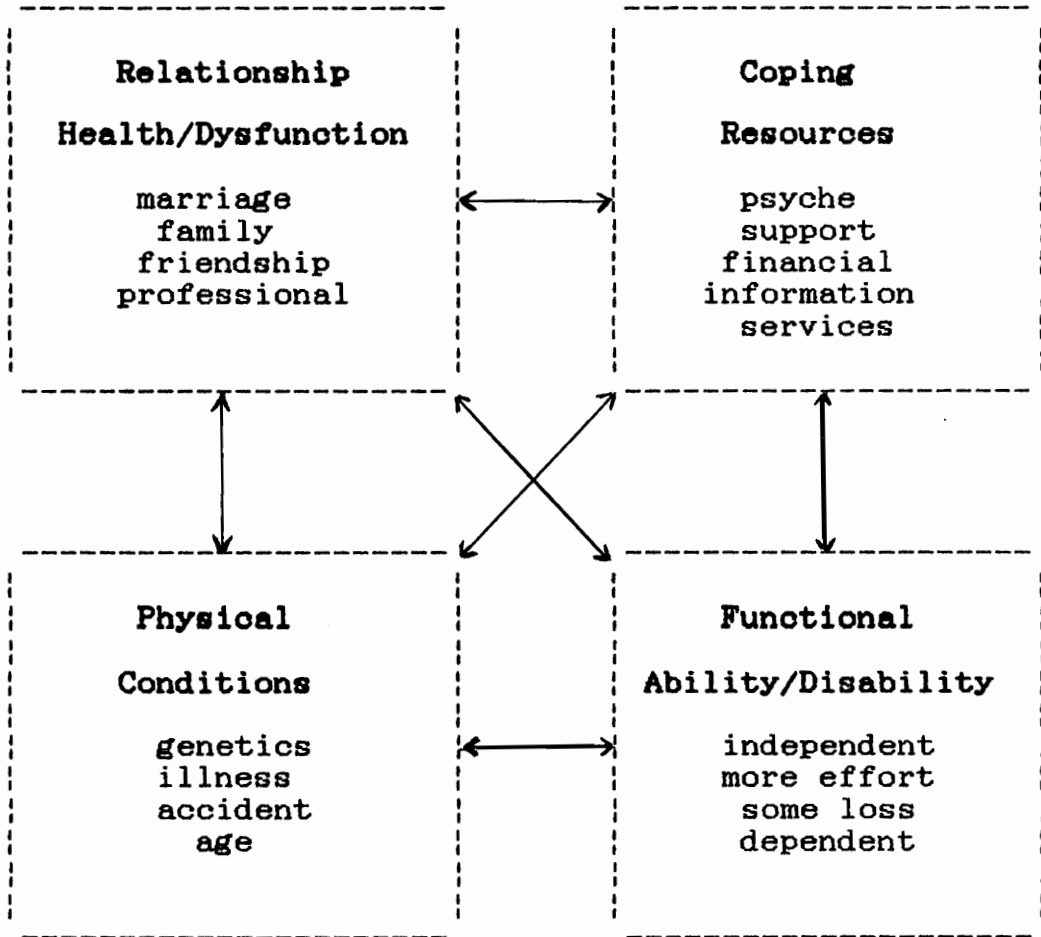
The results of this study indicate that the degree of physical disability and the gender of the stroke spouse provide important information regarding at risk groups and targets for intervention. Specifically, couples with male patients who have significant difficulty performing daily self-care activities are at greater risk for relationship dysfunction than couples with female patients who are functionally independent. Generally, higher degrees of physical disability are

associated with more relationship dysfunction and female caregivers experience more distress than male caregivers. Primary areas of difficulty for these wives are in the areas of task accomplishment, role performance, communication, and control.

Strong support and persuasive evidence exist for the assertion that social ties and support networks are major factors in the couples repertoire of coping resources. Stroke and caregiver spouses also indicate that spiritual beliefs, determination, and medical rehabilitation are important components of healthy adjustment to stroke. A position that views these resources as interactive components of the system's coping potential reinforces the importance of incorporating significant others, i.e., spouse, children, friends, treatment staff, etc., and the personal beliefs/values of the couple in the rehabilitation process.

When a spouse takes care of a partner released from an acute-care or rehabilitation hospital, the services that person renders tends to be more long lasting and comprehensive than care provided by a non-spouse (Troll, 1986). Acknowledgment of the key role caregiving spouses play in the patients recovery and early participation of them in formal rehabilitation should greatly enhance the

couples adjustment to stroke. Figure 3 presents a model of the recursive interaction among dimensions of a biopsychosocial approach to the assessment and treatment of stroke, in particular, and life-cycle disruptions, in general. It is truly time for biological, behavioral, and family scientists to open channels for professional dialogue and integrate their expertise for providing comprehensive health care to the individuals and families they serve.



**Figure 3** Biosychosocial model.

## REFERENCES

- Bandura, A., & Walters, R.H. (1963). Social learning and personality development. New York: Holt, Rinehart, & Winston.
- Benson, D.F. (1979). Aphasia, alexia, and agraphia. London: Chruchill-Livingstone.
- Benowitz, L.I., Bear, D.M., Rosenthal, R., Mesulam, M.M., Zaidel, E., & Sperry, R.W. (1983). Hemispheric specialization in nonverbal communication. Cortex, 19, 5-11.
- Binder, L.M. (1984). Emotional problems after stroke. Stroke, 15(1), 174-177.
- Bishop, D.S., Epstein, N.B., Keitner, G.I., Miller, I.W., & Srinivasan, S.V. (1986). Stroke: Morale, family functioning, health status, and functional capacity. Archives of Physical Medicine Rehabilitation, 67, 84-87.
- Borod, C., Koff, E., Lorch, M.P., & Nicholas, M. (1985). Channels of emotional expression of patients with unilateral brain damage. Archives of Neurology, 42, 345-348.

- Brocklehurst, J.C., Morris, P., & Andrews, K. (1981).  
Social effects of stroke. Social Science Medicine,  
15A, 35-39.
- Bubolz, M.M., & Whiren, A.P. (1984). The family of the  
handicapped: An ecological model for policy and  
practice. Family Relations, 33, 5-12.
- Campbell, T.L. (1986). Family's impact on health: A  
critical review. Family Systems Medicine, 4 (2 &  
3), 135-200.
- Carnwath, T.C.M., & Johnson, D.A.W. (1987). Psychiatric  
morbidity among spouses of patients with strokes.  
British Medical Journal, 294, 409-411.
- Cohen, D.D., Harbin, C., Collis, L., & Greenberger, J.S.  
(1986). Counseling the stroke patient and family.  
Journal of the Medical Association of Georgia, 75,  
93-97.
- DeJong, G., & Branch, L.G. (1982). Predicting the stroke  
patient's ability to live independently. Stroke,  
13(5), 648-654.
- DePompei, R., Zarski, J.J., & Hall, D.E. (1988).  
Cognitive communication impairments: A family-  
focused viewpoint. Journal of Head Trauma  
Rehabilitation, 3(2), 13-22.

- Doherty, W.J., & McCubbin, H.I. (1985). Families and health care: A emerging arena of theory, research, and clinical intervention. Family Relations, 34(1), 5-11.
- Donaldson, S.W., Wagner, C.C., & Gresham, G.E. (1973). A unified ADL evaluation form. Archives of Physical Medicine and Rehabilitation, 54, 175-179,185.
- Dudas, S. (1986). Nursing diagnoses and interventions for the rehabilitation of the stroke patient. Nursing Clinics of North America, 21(2), 345-357.
- Dunn, L.M., & Markwardt, F.C., Jr. (1970). Peabody Individual Achievement Test. Circle Pines, MN: American Guidance Service.
- Evans, R.L., Bishop, D.S., Matlock, A., Stranahan, S., Smith, G.G., & Halar, E.M. (1987). Family interaction and treatment adherence after stroke. Archives of Physical Medicine and Rehabilitation, 68, 513-517.
- Evans, R.L., & Miller, R.M. (1984). Psychosocial implications and treatment of stroke. Social Casework: The Journal of Contemporary Social Work, 65(4), 242-247.
- Field, D., Cordle, C.J., & Bowman, G.S. (1983). Coping with stroke at home. International Rehabilitation Medicine, 5, 96-100.



- Ford, A.B., & Katz, J. (1966). Prognosis after stroke. Part I: A critical review. Medicine, 45, 223-236.
- Gainotti, G. (1972). Emotional behavior and hemipheric side of lesion. Cortex, 8, 41-55.
- Goodkin, R. (1969). A procedure for training spouses to improve functional speech of aphasic patients. Procedures of 77th Annual Convention of the American Psychological Association, 4, 765-766.
- Goodstein, R.K. (1983). Overview: Cerebrovascular accident and the hospitalized elderly - A multidimensional clinical problem. American Journal of Psychiatry, 140(2), 141-147.
- Granger, C.V., Greer, D.S., Liset, E., Coulombe, J., & O'Brien, E. (1975). Measurement of outcomes of care for stroke patients. Stroke, 6, 34-41.
- Guilford, R. (1986). Marriage in later life. Generations, 10(4), 16-20.
- Hafstrom, J.L., & Schram, V.R. (1984). Chronic illness in couples: Selected characteristics, including wife's satisfaction with and perception of marital relationships. Family Relations, 33(1), 195-203.
- Hair, J.F.; Anderson, R.E.; Tatham, R.L., & Grablowsky, B.J. (1979). Multivariate data analysis with readings. Tulsa: Petroleum Publishing.

- Heilman, K.M., Bowers, D., Speedie, L., & Coslett, H.B. (1984). Comprehension of affective and nonaffective prosody. Neurology, 34, 917-921.
- Hintze, J.L. (1987). Number cruncher statistical system. Kaysville, UT: Hintze
- Jarmon, C.M.B. (1982). Living with stroke. Postgraduate Medical Journal, 58, 606-609.
- Karp, H. (1986). Acquired cerebrovascular disease. Journal of the Medical Association of Georgia, 75, 82-85.
- Katz, S., Ford, A.B., Moskowitz, R.W., Jackson, B.A., & Jaffe, M.W. (1963). Studies of illness in the aged. Journal of the American Medical Association, 185(12), 94-99.
- Klonoff, P.S., Costa, L.D., & Snow, W.G. (1985). Predictors and indicators of quality of life in patients with closed-head injury. Journal of Clinical and Experimental Neuropsychology, 8(5), 469-485.
- Langton-Hewer, R. (1982). Psychosocial aspects of stroke rehabilitation. In F.C. Rose (Ed.), Advances in stroke therapy. (pp. 313-317). New York: Raven Press.
- Mahoney, F.L., & Barthel, D.W. (1965). Functional evaluation: The Barthel Index. Maryland State Medical Journal, 14, 61-65.

- Metter, E.J. (1986). Medical aspects of stroke rehabilitation. In R. Chapey (Ed.), Language intervention strategies in adult aphasia (2nd ed.) (pp. 141-159). Baltimore: Williams & Williams.
- Miller, S.A. (1986). Conceptualizing interpersonal relationships. Generations, 10(4), 6-9.
- Molumphy, S.D., & Sporakowski, M.J. (1984). The family stress of hemodialysis. Family Relations, 33(1), 33-39.
- Montgomery, R.J.V., Gonyea, J.G., & Hooyman, N.R. (1985). Caregiving and experience of subjective and objective burden. Family Relations, 34(1), 19-29.
- Mumma, C.M. (1986). Perceived losses following stroke. Rehabilitation Nursing, 11(3), 19-24.
- Mykyta, L.J. (1976). Caring for relatives of stroke patients. Age and Aging, 5, 87-90.
- Myers, P.S. (1986). Right hemisphere communication impairment. In R. Chapey (Ed.), Language intervention strategies in adult aphasia (2nd ed.) (pp. 444-461). Baltimore: Williams & Williams.
- Niemi, M., Laaksonen, R., Kotila, M., & Waltimo, O. (1988). Quality of life four years after stroke. Stroke, 19(9), 1101-1107.

- Nock, S.L., & Rossi, P.H. (1979). Household types and social standing. Social Forces, 57(4), 1325-1345.
- Noelker, L.S., & Shaffer, G. (1986). Care networks: How they form and change. Generations, 10(4), 62-64.
- Norlin, P.F. (1986). Familiar faces, sudden strangers: Helping families cope with the crisis of aphasia. In R. Chapey (Ed.), Language Intervention strategies in adult aphasia (2nd ed.) (pp. 174-187). Baltimore: Williams and Williams.
- Parson, T., & Bales, R.F. (1955). Family, socialization, and interaction process. Glencoe, IL: The Free Press.
- Pedhazur, E.J. (1982). Multiple regression in behavioral research (2nd ed.). New York: Holt, Rinehart, & Winston.
- Pimental, P.A. (1986). Alteration in communication: Biopsychosocial aspects of aphasia, dysarthria, and right hemisphere syndromes in the stroke patient. Nursing Clinics of North America, 21(2), 321-337.
- Rollin, W.J. (1987). The psychology of communication disorders in individuals and their families. Englewood Cliffs, NJ: Prentice-Hall.

- Sackeim, H.A., Greenberg, M.S., Weiman, A.L., Gur, R.C., Hungerbuhler, J.P., & Geschwind, N. (1982). Hemipheric asymmetry in the expression of positive and negative emotions. Archives of Neurology, 39, 210-218.
- Sattler, J.M. (1982). Assessment of children's intelligence and special abilities (2nd ed.). Boston: Allyn and Bacon.
- Silliman, R.A., Fletcher, R.H., Earp, J.L., & Wagner, E.H. (1986). Families of elderly stroke patients: Effects of home care. Journal of the American Geriatric Society, 34, 643-648.
- Sjogren, K., & Fugl-Meyer, A.R. (1982). Adjustment to life after stroke with special reference to sexual intercourse and leisure. Journal of Psychosomatic Research, 26(4), 409-417.
- Skinner, H.A., Steinhauer, P.D., & Santa-Barbara, J. (1983). The Family Assessment Measure. Canadian Journal of Community Mental Health, 2(2), 91-105.
- Skinner, H.A. (1987). Self-report instruments for family assessment. In T. Jacob (Ed.), Family interaction and psychopathology (pp. 427-451). New York: Plenum Press.

- Speedie, L.J., Coslett, H.B., & Heilman, K.M. (1984).  
Repetition of affective prosody in mixed  
trancortical aphasia. Archives of Neurology, 41,  
268-270.
- Steidl, J.H., Finkelstein, F.O., Wexler, J.P.,  
Feigenbaum, H., Kitsen, J., Kliger, A.S. I Quinlan,  
D.M. (1980). Medical condition, adherence to  
treatment regimens, and family functioning: Their  
interaction in patients receiving long-term  
dialysis treatment. Archives of General  
Psychiatry, 38, 1025-1027.
- Sundet, K., Finset, A., & Reinvang, I. (1988).  
Neuropsychological predictors in stroke  
rehabilitation. Journal of Clinical and  
Experimental Neuropsychology, 10(4), 363-379.
- Terzian, H., & Ceccotto, C. (1959). Su un nuovo metodo  
per la determinazione e lo studio della dominanza  
emisferica. Georn Psichiat Neuropat, 87, 889-  
924.
- Thames, G., & McNeil, J.S. (1987). Independence levels  
and social adjustment of post-stroke patients.  
Health and Social Work, 12(2), 121-125.
- Troll, L.E. (Ed). (1986). Marriage. Family issues in  
current gerontology (pp. 1-13). New York:  
Springer.

- Viitanen, M., Fugl-Meyer, K.S., Bernspang, B., & Fugl-Myer, A.R. (1988). Life satisfaction in long-term survivors after stroke. Scandinavian Journal of Rehabilitation Medicine, 20, 17-24.
- Von Bertalanffy, L. (1968). General systems theory. New York: Braziller.
- Wade, D.T., Legh-Smith, J., & Hewer, R.L. (1986). Effects of living with and looking after survivors of a stroke. British Medical Journal, 293, 418-420.
- Watson, P.G. (1986). Stroke in the family: Theoretical considerations. Rehabilitation nursing, 11(5), 15-17.
- Weddell, R.A. (1987). Social, functional, and neuropsychological determinants of the psychiatric symptoms of stroke patients receiving rehabilitation and living at home. Scandinavian Journal of Rehabilitation Medicine, 19, 93-98.
- Whitney, F.W. (1987). Relationship of laterality of stroke to emotional and functional outcomes. Journal of Neuroscience Nursing, 19(3), 158-165.
- Williams, S.E., & Freer, C.A. (1986). Aphasia: Its effects on marital relationships. Archives of Physical Medicine and Rehabilitation, 67, 250-252.

Wylie, C.M. (1967). Measuring end results of rehabilitation of patients with stroke. Public Health Reports, 82(10), 893-898.

Zarski, J.J., DePompei, R., West, J.D., & Hall, D.E. (1988). Chronic illness: Stressors, the adjustment process, and family focused interventions. Journal of Mental Health Counseling, 10(2), 145-158.



## APPENDIX A

### Consent to Participate in a Study of Outcome after Stroke

We invite you to participate in a study of the outcome following stroke. We hope to learn if patients are experiencing problems during the recovery period which affect their lifestyle. You were invited to participate in this study because you/or a family member have sustained a stroke.

Participation in this study is strictly voluntary. Refusal to participate will not affect your medical care in any way. If you agree to participate in this study, you will be interviewed and asked questions concerning your previous medical history and your overall condition. You will be asked to take paper/pencil tests about your family relationship since the stroke. If you have any questions, we will be happy to answer them right now.

Research studies sometimes involve some risk. Since you will only be answering questions, the risks of this study are minimal. During the interview and testing if you feel that the questions are harmful or are interfering with your recovery, the study will be stopped. Through evaluation of your recovery we may be able to answer many of your questions concerning symptoms or concerns you may experience. This may prove to be beneficial in your overall recovery and adjustment. However, we cannot guarantee or promise that this study will enhance your outcome following stroke.

Often, follow-up of your condition would include documenting the problems you experience and how well you are able to perform daily activities, such as work, and family activities. Such information is useful to both health care personnel as well as to you in helping you understand your recovery. Any medical care required will be the same whether or not you participate in this study.

You will not receive any payment for participating in this study. There will be no charge to you for this service.

Any information that we learn about you that can be individually traced to you will be used responsibly and will be protected against release to unauthorized individuals. In addition to the members of the health care staff who usually have access to your file, your records are likely to be shown to the neuropsychologist who will be interviewing you as well. If you sign this form, you have given us permission to release information to these people. The results of this study may be published in the professional literature, but any publication will not contain information that will identify you.

Your decision whether or not to participate in this study will not hurt your future care at WWRC (or other facility). Even if you decide to participate, you may stop and withdraw from the study at any time without hurting your future care. Of course, we will gladly send you a summary of anything we learn from the study if you write your address on the bottom of this form.

You are making a decision whether or not you will participate in this study. If you sign this form, you have agreed that you will participate based upon reading and understanding this form. If you have any questions, you can ask us now, or if you have any questions later, please contact Mr. Robert Skelly or Dr. Thomas Ryan at (703) 332-7226.

You will receive an unsigned copy of this form.

---

Signature

---

Signature

---

Member of Research Team

---

Date

## APPENDIX B

### Lateral Dominance Examination

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

1. Show me your right hand\_\_\_\_; left ear\_\_\_\_; right eye\_\_\_\_
2. Show me how you:  
    throw a ball \_\_\_\_\_  
    hammer a nail \_\_\_\_\_  
    cut with a knife \_\_\_\_\_  
    turn a door knob \_\_\_\_\_  
    use sissors \_\_\_\_\_  
    use an eraser \_\_\_\_\_  
    write your name \_\_\_\_\_
3. Write your full name \_\_\_\_\_
4. Show me how you look through a telescope. \_\_\_\_\_ eye
5. Show me how you aim a gun. \_\_\_\_\_shoulder \_\_\_\_\_eye
6. Show me how you kick a football. \_\_\_\_\_ foot  
    step on a bug. \_\_\_\_\_ foot

## APPENDIX C

### Demographic and Open-ended Questions

- (1) Have you ever had any previous neurological difficulties (i.e., strokes, head injuries, seizures, etc)? yes/no
- (2) Have you ever been treated for depression, anxiety, alcohol abuse, and etc.? Survivor (yes/no)  
Caregiver (yes/no)
- (3) What is it since the stroke that put the most strain on your relationship?
- (4) What things can you not do now that you did before the stroke, i.e., employment, socializing, travel, recreation, hobbies, etc.?
- (5) How many hours a day do you spend at home caring for your spouse? \_\_\_\_\_ hours Others spend? \_\_\_\_\_ hours
- (6) What has helped you most to cope with the stroke, i.e. treatment, support of others, religious faith?
- (7) Any other recent stresses? Acute?
- (8) Any chronic illnesses before the stroke?
- (9) Your present ages: Survivor \_\_\_\_\_ years  
Caregiver \_\_\_\_\_ years
- (10) Years of education: Survivor \_\_\_\_\_ years  
Caregiver \_\_\_\_\_ years
- (11) Describe your most recent occupation.  
Survivor - Title: \_\_\_\_\_  
Kind of work: \_\_\_\_\_  
Kind of business: \_\_\_\_\_  
Caregiver - Title: \_\_\_\_\_  
Kind of work: \_\_\_\_\_  
Kind of business: \_\_\_\_\_

- (12) Approximate family income before the stroke? \$ \_\_\_\_\_
- (13) Approximate income since the stroke? \$ \_\_\_\_\_
- (14) Sources of income, i.e., salary, pension, social security, disability insurance, trust, savings, etc.?
- (15) Years of current marriage: \_\_\_\_\_ years
- (16) Age, education, and occupation of adult children:  
Age \_\_\_\_\_ ; Education \_\_\_\_\_ ; Occupation \_\_\_\_\_  
Age \_\_\_\_\_ ; Education \_\_\_\_\_ ; Occupation \_\_\_\_\_
- (17) Months since your stroke: \_\_\_\_\_ months
- (18) Months home since your stroke: \_\_\_\_\_ months

## APPENDIX D

### FAMILY ASSESSMENT MEASURE

The following statements are about your current relationship with your husband. Please read each statement and decide how well the statement generally describes your relationship with your spouse. Circle the number which best describes your opinion.

	STRONGLY AGREE 1	AGREE 2	DISAGREE 3	STRONGLY DISAGREE 4				
1.					SA	A	D	SD
					1	2	3	4
2.						2	3	4
3.						2	3	4
4.						2	3	4
5.						2	3	4
6.						2	3	4
7.						2	3	4
8.						2	3	4
9.						2	3	4
10.						2	3	4
11.						2	3	4
12.						2	3	4
13.						2	3	4
14.						2	3	4
15.						2	3	4
16.						2	3	4
17.						2	3	4
18.						2	3	4
19.						2	3	4

Please circle the number which best describe your current opinion.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	
	1	2	3	4	
20.	I never know how my husband will react when I make a mistake.....1				SA A 2 D 3 SD 4
21.	My husband is all wrong about the importance of religion.....1				2 3 4
22.	When there's a problem between us, my husband finds a new way of working it out.....1				2 3 4
23.	My husband often ruins things for me..1				2 3 4
24.	My husband is available when I want to talk to him.....1				2 3 4
25.	When my husband gets angry with me, he stays upset for days.....1				2 3 4
26.	My husband gets too involved in my affairs.....1				2 3 4
27.	My husband gives me a chance to explain when I make a mistake.....1				2 3 4
28.	My husband is right about the importance of education.....1				2 3 4
29.	When problems come up between us, my husband is all talk and no action.....1				2 3 4
30.	My husband expects too much of me.....1				2 3 4
31.	Even if my husband disagrees, he still listens to my point of view.....1				2 3 4
32.	My husband takes it out on me when he has had a bad day.....1				2 3 4
33.	My husband really trusts me.....1				2 3 4
34.	My husband is always on my back.....1				2 3 4
35.	There's a big difference between what my husband expects of me and how he behaves.....1				2 3 4
36.	I can count on my husband to help me in a crisis.....1				2 3 4
37.	My husband and I have the same views about who should do what in our family.....1				2 3 4
38.	I often don't know whether to believe what my husband says.....1				2 3 4
39.	When my husband is upset, he tries to get me to take sides.....1				2 3 4
40.	My husband worries too much about me..1				2 3 4
41.	I don't need to remind my husband to do his share.....1				2 3 4
42.	My husband is right about the importance of being successful.....1				2 3 4

The following statements are about your current relationship with your wife. Please read each statement and decide how well the statement generally describes your relationship with your spouse. Circle the number which best describes your opinion.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE				
	1	2	3	4				
1.					SA	A	D	SD
				1		2	3	4
2.								
				1		2	3	4
3.								
				1		2	3	4
4.								
				1		2	3	4
5.								
				1		2	3	4
6.								
				1		2	3	4
7.								
				1		2	3	4
8.								
				1		2	3	4
9.								
				1		2	3	4
10.								
				1		2	3	4
11.								
				1		2	3	4
12.								
				1		2	3	4
13.								
				1		2	3	4
14.								
				1		2	3	4
15.								
				1		2	3	4
16.								
				1		2	3	4
17.								
				1		2	3	4
18.								
				1		2	3	4
19.								
				1		2	3	4



Please circle the number which best describe your current opinion.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE				
	1	2	3	4				
20.					SA	A	D	SD
						2	3	4
21.								
						2	3	4
22.								
						2	3	4
23.						2	3	4
24.								
						2	3	4
25.								
						2	3	4
26.								
						2	3	4
27.								
						2	3	4
28.								
						2	3	4
29.								
						2	3	4
30.						2	3	4
31.								
						2	3	4
32.								
						2	3	4
33.						2	3	4
34.						2	3	4
35.								
						2	3	4
36.								
						2	3	4
37.								
						2	3	4
38.								
						2	3	4
39.								
						2	3	4
40.						2	3	4
41.								
						2	3	4
42.								
						2	3	4

The following statements are about your relationship with your husband prior to the stroke. Please read each statement and decide how well the statement generally describes your prior relationship with your spouse. Circle the number which best describes your opinion.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
	1	2	3	4
1. My husband and I never saw family problems the same way.....	1			
2. My husband accepted what I expected of him in the family.....	1			
3. I knew what my husband meant when he said something.....	1			
4. I could tell when my husband was upset.....	1			
5. My husband and I weren't close to each other.....	1			
6. My husband was reasonable when I made a mistake.....	1			
7. My husband and I had the same views about right and wrong.....	1			
8. My husband could never accept my answer to a problem.....	1			
9. My husband took his share of family responsibilities.....	1			
10. My husband took what I said the wrong way.....	1			
11. When I was upset, my husband usually knew why.....	1			
12. When I was upset, I knew my husband really cared.....	1			
13. Even when I admitted I was wrong, my husband didn't forgive me.....	1			
14. My husband and I argued about how we spent our spare time.....	1			
15. When I had a problem, my husband helped me with it.....	1			
16. My husband complained that I expected too much of him.....	1			
17. If my husband was angry with me, I heard about it from someone else.....	1			
18. My husband would let me know how he felt about me.....	1			
19. My husband still loved me when I argued with him.....	1			

Please circle the number which best describe your opinion prior to the stroke.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
	1	2	3	4
20. I never knew how my husband would react when I made a mistake.....1	SA	A	D	SD
21. My husband was all wrong about the importance of religion.....1	2	3	4	
22. When there was a problem between us, my husband found a new way of working it out.....1	2	3	4	
23. My husband often ruined things for me.1	2	3	4	
24. My husband was available when I wanted to talk to him.....1	2	3	4	
25. When my husband got angry with me, he stayed upset for days.....1	2	3	4	
26. My husband got too involved in my affairs.....1	2	3	4	
27. My husband gave me a chance to explain when I made a mistake.....1	2	3	4	
28. My husband was right about the importance of education.....1	2	3	4	
29. When problems came up between us, my husband was all talk and no action....1	2	3	4	
30. My husband expected too much of me....1	2	3	4	
31. Even if my husband disagreed, he still listened to my point of view....1	2	3	4	
32. My husband took it out on me when he had a bad day.....1	2	3	4	
33. My husband really trusted me.....1	2	3	4	
34. My husband was always on my back.....1	2	3	4	
35. There was a big difference between what my husband expected of me and how he behaved.....1	2	3	4	
36. I could count on my husband to help me in a crisis.....1	2	3	4	
37. My husband and I had the same views about who should do what in our family.....1	2	3	4	
38. I often didn't know whether to believe what my husband said.....1	2	3	4	
39. When my husband was upset, he tried to get me to take sides.....1	2	3	4	
40. My husband worried too much about me..1	2	3	4	
41. I didn't need to remind my husband to do his share.....1	2	3	4	
42. My husband was right about the importance of being successful.....1	2	3	4	

The following statements are about your relationship with your wife prior to the stroke. Please read each statement and decide how well the statement generally describes your prior relationship with your spouse. Circle the number which best describes your opinion.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
	1	2	3	4
1. My wife and I never saw family problems the same way.....	1			
2. My wife accepted what I expected of her in the family.....	1			
3. I knew what my wife meant when she said something.....	1			
4. I could tell when my wife was upset.....	1			
5. My wife and I weren't close to each other.....	1			
6. My wife was reasonable when I made a mistake.....	1			
7. My wife and I had the same views about right and wrong.....	1			
8. My wife could never accept my answer to a problem.....	1			
9. My wife took her share of family responsibilities.....	1			
10. My wife took what I said the wrong way.....	1			
11. When I was upset, my wife usually knew why.....	1			
12. When I was upset, I knew my wife really cared.....	1			
13. Even when I admitted I was wrong, my wife didn't forgive me.....	1			
14. My wife and I argued about how we spent our spare time.....	1			
15. When I had a problem, my wife helped me with it.....	1			
16. My wife complained that I expected too much of her.....	1			
17. If my wife was angry with me, I heard about it from someone else.....	1			
18. My wife would let me know how she felt about me.....	1			
19. My wife still loved me when I argued with her.....	1			

Please circle the number which best describe your opinion prior to the stroke.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
	1	2	3	4
20. I never knew how my wife would react when I made a mistake.....1	SA	A	D	SD
21. My wife was all wrong about the importance of religion.....1	2	3	4	
22. When there was a problem between us, my wife found a new way of working it out.....1	2	3	4	
23. My wife often ruined things for me....1	2	3	4	
24. My wife was available when I wanted to talk to her.....1	2	3	4	
25. When my wife got angry with me, she stayed upset for days.....1	2	3	4	
26. My wife got too involved in my affairs.....1	2	3	4	
27. My wife gave me a chance to explain when I made a mistake.....1	2	3	4	
28. My wife was right about the importance of education.....1	2	3	4	
29. When problems came up between us, my wife was all talk and no action.....1	2	3	4	
30. My wife expected too much of me.....1	2	3	4	
31. Even if my wife disagreed, she still listened to my point of view....1	2	3	4	
32. My wife took it out on me when she had a bad day.....1	2	3	4	
33. My wife really trusted me.....1	2	3	4	
34. My wife was always on my back.....1	2	3	4	
35. There was a big difference between what my wife expected of me and how she behaved.....1	2	3	4	
36. I could count on my wife to help me in a crisis.....1	2	3	4	
37. My wife and I had the same views about who should do what in our family.....1	2	3	4	
38. I often didn't know whether to believe what my wife said.....1	2	3	4	
39. When my wife was upset, she tried to get me to take sides.....1	2	3	4	
40. My wife worried too much about me....1	2	3	4	
41. I didn't need to remind my wife to do her share.....1	2	3	4	
42. My wife was right about the importance of being successful.....1	2	3	4	

## APPENDIX E

### Barthel Index

Points are assigned to each category depending upon whether the patient performs the function alone or with help. The worst score is 0, and the best score is 100. A patient scoring 100 Barthel Index is continent, feeds self, dresses self, gets out of bed and chair, bathes self, walks at least a block, and can ascend and descend stairs. This does not mean that he/she is able to live alone; he/she may not be able to cook, keep house, and meet the public, but he/she is able to get along without attendant care.

	INDEPENDENT	WITH HELP
1. Feeding (If food needs to be cut then "With Help")	10	5
2. Moving from wheelchair to be bed and return (Includes sitting up in bed)	15	10-5
3. Personal toilet (Wash face, comb hair, shave, clean teeth).	5	0
4. Getting on/off toilet (Handling clothes, wipe, flush).	10	5
5. Bathing self.	5	0
6. Walking on level surface (Or, if unable to walk, propel wheelchair) *Score only if unable to walk.	15 5*	10 0
7. Ascend and descend stairs.	10	5
8. Dressing (Includes tying shoes, fastening fasteners).	10	5
9. Controlling bowels.	10	5
10. Controlling bladder.	10	5

## APPENDIX F

### Socioeconomic Status

Regression equation for married couples with minor children:

$$Y = a + .434X1 + .704X2 + .025X3 + .391X4 + .497X5 + (-.002)X1X4$$

Regression equation for married couples with adult children:

$$Y = a + .482X1 + .253X2 + .045X3 + .367X4 + .451X5 + (-.004)X1X4 + .220X6 + .322X7$$

- Y = Predicted SES
- X1 = Husband's occupational prestige (see below)
- X2 = Husband's education (years)
- X3 = Husbands age (years)
- X4 = Wife's occupational prestige
- X5 = Wife's education
- X6 = Adult child's occupational prestige
- X7 = Adult child's education

## APPENDIX G

### Steps for Building Regression Models

**Step 1:** Conduct automatic variable selection procedure using Number Cruncher Statistical System.

Dependent Variable: TA2

IN	Variable	S-Est.	R2-Add	R2-Xs	t	p
Yes	TA1	.52	.244	.093	4.2	.0002
Yes	Gender	.29	.072	.129	2.3	.0267
Yes	Barthel	-.44	.17	.109	-3.5	.0011
Yes	Time	-.16	.025	.086	-1.4	.1842
No	Lateral		.001	.046	.3	.7554
No	SES		.008	.284	.8	.439

**Step 2:** Independent variable most correlated with criterion variable used in step-forward estimation procedure.

$$r = .56 \text{ (TA2, TA1)}$$

Variable	Seq. R2	Simple R2	beta	t	p
TA1	.318	.318	.524	4.25	.0001

**Step 3:** Independent variables with highest partial correlation with criterion in descending order entered into the model.

Variable	Partial r
TA1	.366
Barthel	-.421
Gender	.282
Time	-.124
SES	-.102
Location	.059



**Step 4:** Independent variables with significant standardized betas retained in the model.

Variable	Seq. R2	Simple R2	beta	t	p
TA1	.318	.318	.524	4.25	.0001
Barthel	.44	.084	-.391	-3.27	.002
Gender	.502	.124	.265	2.12	.041
Time	.527	.002	.135	-1.05	.3 ns
SES	.535	.1	.124	-.86	.08ns
Location	.539	.002	.062	.5	.62ns

Final model:  $TA2 = .524TA1 + -.391Barthel + .265Gender$   
 $R2 = .502$

## APPENDIX H

### Partial Correlation and Partial R-Squared

**Table H-1**

Summary of Partial Correlation and Partial R<sup>2</sup> for Cerebral Location of Stroke and Post-stroke FAM.

FAM Scale	Partial Correlation	Partial R <sup>2</sup>
Task Accomplishment	.059	.003
Role Performance	.082	.007
Communication	.118	.014
Affective Expression	.136	.019
Affective Involvement	.042	.002
Control	.022	.001
Values and Norms	-.037	.001
Total	.078	.006

Note. Dummy coding for location of stroke variable:  
Left = 1; Right = 0.

**Table H-2**  
Summary of Partial Correlation and Partial R2 for Time  
Since Stroke and Post-stroke FAM.

FAM Scale	Partial Correlation	Partial R2
Task Accomplishment	-.124	.016
Role Performance	.018	.0003
Communication	-.084	.007
Affective Expression	.055	.003
Affective Involvement	-.103	.011
Control	-.072	.005
Values and Norms	-.176	.031
Total	-.092	.009

APPENDIX I

Simple Regressions

Table I-1

Simple Regression of Gender on FAM Subscales

Criterion	Simple R2	beta	t	p
Task Accomplishment*	.124	.352	2.32	.03
Role Performance**	.155	.394	2.64	.01
Communication**	.195	.442	3.04	.004
Affective Expression*	.111	.333	2.17	.04
Affective Involvement	.041	.203	1.28	.21
Control*	.116	.341	2.24	.03
Values and Norms	.069	.263	1.68	.1
Total**	.162	.403	2.71	.01

\* p < .05      \*\* p < .01

Table I-2

Simple Regression of Barthel on FAM Subscales

Criterion	Simple R2	beta	t	p
Task Accomplishment	.084	-.29	-1.87	.07
Role Performance*	.14	-.374	-2.48	.02
Communication	.034	-.185	-1.16	.25
Affective Expression	.002	-.041	-0.25	.8
Affective Involvement	.035	-.186	-1.17	.25
Control*	.104	-.322	-2.1	.04
Values and Norms	.024	-.153	-0.96	.35
Total	.071	-.266	-1.7	.1

\* p &lt; .05

**Table I-3**Simple Regression of SES on FAM Subscales

Criterion	Simple R <sup>2</sup>	beta	t	p
Task Accomplishment*	.1	-.314	-2.04	.05
Role Performance*	.11	-.331	-2.16	.04
Communication*	.139	-.372	-2.47	.02
Affective Expression**	.301	-.549	-4.05	.001
Affective Involvement**	.164	-.405	-2.73	.01
Control**	.185	-.43	-2.94	.01
Values and Norms	.09	-.3	-1.94	.06
Total**	.209	-.457	-3.17	.003

\* p < .05      \*\* p < .01

APPENDIX J

Summary of Interview Questions

**Table J-1**  
Frequency and Percentage of Strains Reported by Respondents

Strain	Female Stroke Spouses n = 20		Male Stroke Spouses n = 20	
	n	%	n	%
Dependency	6	30	6	30
Employment	-	-	5	25
Caregivers health	-	-	4	20
More Irritable	1	5	2	10
Finances	1	5	2	10
Driving	-	-	3	15
Travel	-	-	2	10
Sleeping together	2	10	-	-
Depression	-	-	1	10
Can't be partner	1	5	-	-
No strain	2	10	-	-
	Female Caregivers n = 20		Male Caregivers n = 20	
Routine chores	9	45	5	25
Finances	6	30	8	40
Health patient	3	15	4	20
Communication	4	20	2	10
Homebound	2	10	3	15
Patient irritable	2	10	1	5
Patient home	2	10	-	-
Depression	2	10	-	-
Patient emotional	2	10	-	-
Physical demand	2	10	-	-
Miscellaneous	4	20	4	20
No strain	1	5	5	25

**Note.** Miscellaneous = stroke was unexpected, poor judgment of patient, patient away in hospital, patient doesn't want to see others, disappointments due to illness, getting accustomed to patient's illness, and uncertain future.

**Table J-2**  
**Frequency and Percentage of Things Can't Do Since Stroke**

Activities	Female Stroke Spouses n = 20		Male Stroke Spouses n = 20	
	n	%	n	%
Chores	9	45	5	25
Employment	4	20	7	35
Drive	4	20	6	30
Leisure activities	4	20	3	15
Eat out/socialize	3	15	2	10
Travel	1	5	4	20
Walking	1	5	3	15
Dress/combing hair	2	10	1	5
Use of weak side	2	10	2	10
Activity slow/hard	2	10	3	15
Miscellaneous	2	10	1	5

	Female Caregivers n = 20		Male Caregivers n = 20	
	n	%	n	%
Travel	5	25	6	30
Eat out/socialize	5	25	2	10
Hobbies/leisure	1	5	4	20
Go out alone	-	-	2	10
Activities together	2	20	-	-
Do things slower	2	20	-	-
Employment	-	-	1	5
Sex relations	1	5	-	-
Routines/lifestyle	1	5	1	5
Nothing	2	10	2	10

**Note.** Miscellaneous = spending money, routine activities, can't do much of anything.



**Table J-3**  
Frequency and Percentage of Coping Resources Reported by Respondents

Resources	Female Stroke Spouses n = 20		Male Stroke Spouses n = 20	
	n	%	n	%
Religion	9	45	3	15
Therapies (rehab)	6	30	3	15
Caregiver spouse	6	30	3	15
Family	7	35	1	5
Friends	5	25	5	25
Determination	7	35	1	5
Patient/accept/hope	8	40	3	15
Doing for myself	-	-	2	10
I can't cope	-	-	1	5
Miscellaneous*	3	15	6	30

Resources	Female Caregivers n = 20		Male Caregivers n = 20	
	n	%	n	%
Religion	3	15	12	60
Family support	6	30	5	25
Friends	6	30	6	30
Love for patient	1	5	5	25
Determination	1	5	5	25
Education	-	-	3	15
Patient + attitude	1	5	3	15
Miscellaneous@	7	35	9	45

**Note.** Miscellaneous@ = monetary gifts, staff in rehab, home care professionals, humor, patient walking, patience, hope, acceptance, helping patient, helping others, assurance future will be OK, patient helping themselves, taking life one day at a time, and facing it; Miscellaneous\* = patient home from hospital, stroke club, working together, helping others, can't go back, kindness of others, taking life one day at a time, don't brood over stroke, and walking again.

**Table J-4**  
**Frequency and Percentage of Recent Stressors**

Stressors	Stroke Spouses n = 40		Caregiver Spouses n = 40	
	n	%	n	%
Death relative	7	17.5	7	17.5
Illness family	5	12.5	5	12.5
Patient health	4	10	-	-
Caregiver health	-	-	4	10
Other	2	5	2	5
None	18	45	18	45

Note. Other = marital separation of a child, drug abuse of an adult child.

**Table J-5**  
Frequency and Percentage of Chronic Health Problems Prior to Stroke

Condition	Female Stroke Spouses n = 20		Male Stroke Spouses n = 20	
	n	%	n	%
Hypertension	14	70	9	45
Diabetes	3	15	3	15
Heart disease	-	-	2	10
Renal problems	2	10	-	-
Tuberculosis (renal)-	-	-	1	5
Emphysema	-	-	1	5
Back problems	-	-	1	5
NPH	1	5	-	-
Obesity	1	5	-	-
Leg amputation	-	-	1	5
None	6	30	8	40

Condition	Female Caregivers n = 20		Male Caregivers n = 20	
	n	%	n	%
Hypertension	3	15	4	20
Back problems	4	20	1	5
Heart attack	-	-	1	5
Emphysema	-	-	1	5
None	18	90	14	70

Note. Each condition of patients and caregivers with multiple health problems was individually reported, in all cases back problem of female caregivers was either subsequent to or exacerbated by the stroke; NPH = normal pressure hydrocephalus.

## VITA

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### Education

- 1986-present Virginia Tech, Blacksburg, Virginia.  
Currently enrolled in Doctor of  
Philosophy Program in Marriage and  
Family Therapy, Advisor: Michael  
Sporakowski, Ph.D.
- 1981-1983 Masters of Science in Clinical Psychology,  
Illinois State University, Normal, IL.
- 1977-1981 Bachelor of Arts in Psychology, The King's  
College, Briarcliff Manor, New York.

### Professional Work Experience

- 1990-present State Correctional Institution -  
Smithfield, Huntingdon, PA.  
Psychological Services Specialist.  
Conduct psychological evaluations and  
individual psychotherapy with inmates  
in a minimum to medium security prison.
- 1990-present Private practice, Chambersburg, PA.  
Perform psychological evaluations, and  
conduct individual, marital, and family  
psychotherapy.
- 1988-1989 Woodrow Wilson Rehabilitation Center,  
Fishersville, VA. Pre-doctoral  
internship in neuropsychology.  
Conducted neuropsychological  
evaluation, and conducted psychotherapy  
with stroke and head injured clients.
- 1987-1988 Center for Family Services, Virginia Tech,  
Blacksburg, VA. Clinical Practicum.  
Conducted individual, marital, and  
family psychotherapy in a university  
training clinic.

1983-1986 York County Mental Health Center, York, PA. Conducted individual, marital, and family psychotherapy; and administered psychological evaluations.

Professional Licensure

Licensed Psychologist. Commonwealth of Pennsylvania, Department of State Bureau of Professional and Occupational Affairs, Harrisburg, PA.

Professional Publications

Co-authored article entitled, "Understanding and Counseling Narcissistic Clients", with Michael Stevens, Ph.D. and Karen Pfost, Ph.D. Published in The Personnel and Guidance Journal (1984, March), 62, 383-387.

Professional Affiliations

American Association for Marriage and Family Therapy, student member.

American Psychological Association, associate member.

Christian Association for Psychological Studies, associate member

International Neuropsychological Society, associate member,

Honor Society

Omicron Nu, Beta Zeta Chapter

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Personal Data

Born May 7, 1952: raised and employed on a dairy farm in south-central Pennsylvania until age 25. Other work experiences include brief employments as a carpenter and plumber.

References (available upon request)