INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

**ASSESSMENT OF PATIENT HOPE AS A PREDICTOR OF STROKE
REHABILITATION OUTCOME**

by

Stephen Frederick Johnston B.A.

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfilment of
the requirements for the degree of

Master of Arts

Department of Psychology

Carleton University

Ottawa, Ontario

January, 1997

© copyright

1997, Stephen Johnston

National Library
of Canada

Acquisitions and
Bibliographic Services

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale
du Canada

Acquisitions et
services bibliographiques

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file *Votre référence*

Our file *Notre référence*

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-22085-0

The undersigned recommend to
the faculty of Graduate Studies and Research
acceptance of the thesis

**ASSESSMENT OF PATIENT HOPE AS A PREDICTOR OF STROKE
REHABILITATION OUTCOME**

submitted by **Stephen Frederick Johnston, B.A.**

in partial fulfillment of the requirements for

the degree of Master of Arts

Chair

PSYCHOLOGY
Department

Thesis Supervisor

CARLETON UNIVERSITY

Date JAN 16/97

Acknowledgements

I would like to thank Dr. Dan Harper for his guidance and support during this endeavour. Thanks also to Dr. Patricia A. O'Hara, whose advice and humour helped keep me on the right track.

A very special thank you goes to Nicole Diotte for wondering about hope and stroke in the first place, and for the time and care she took with the patients.

Needless to say, it couldn't have been done without you!

My family and friends were unwavering in their support. It made all the difference in the world, and I am deeply indebted to them. Thank you!

Tineke, I'm on my way!

Finally, I would like to dedicate this thesis to the patients from the Stroke Unit at Saint-Vincent Pavilion, SCOHS.

Abstract

Cerebrovascular accident (CVA) or stroke is one of the most prevalent causes of adult disability. Uncertainty remains, however, about which characteristics identify patients who achieve greater rehabilitary success (Falconer et al., 1994; Freidman, 1995). The rehabilitation model requires considerable effort on the part of the patient for treatment success. That success presumably relies in part on psychological factors of the patient. The relationship between these factors and stroke outcome remains poorly understood (Sisson, 1995).

Despite the uncertainty that stroke patients face, the clinical literature suggests that positive and hopeful attitudes are needed to maintain motivation, a key component of the rehabilitation process (Becker & Kaufman, 1995). Hope, once a poorly defined construct, has recently come to be seen as multidimensional (e.g., Fowler, 1995) and much work has been done to design and psychometrically test hope scales that operationally define and assess these various dimensions. The role of hope in functional recovery has been discussed in the rehabilitation literature, but to date there have been no studies examining the influence of hope on stroke rehabilitation.

The purpose of the present study was to determine if levels of hope on admission to a stroke rehabilitation program are positively associated with levels of functional independence (the major goal of therapy) on discharge from the program.

Hope was measured using the Herth Hope Scale (Herth, 1993) and rehabilitation outcome was measured using the Functional Independence Measure + the Functional Assessment Measure (Hall et al., 1993). Both measures have been the subject of considerable psychometric investigation and are considered the best available measures of the constructs they are purported to represent.

Subjects showed a significant improvement in function over the course of their stay. A significant relationship between hope and functional change was not found, although a relationship was revealed between certain aspects of hope and functional status at the time of admission and at the time of discharge.

The level of hope in this patient population was similar to the level of hope assessed by Herth (1988) in a sample of community-dwelling elderly suggesting that subjects in the present study had hope levels comparable with their peers in the community. Hope levels did not change significantly over the course of the rehabilitation process, suggesting that (a) hope levels were 'set' by the time patients had been admitted into the rehabilitation program or (b) hope may be a relatively stable construct rather than a malleable response to external forces.

Some of the individual items from the Herth Hope Scale were more predictive of functional status than others. This suggests that a hope scale specifically designed for a stroke or rehabilitation population may be a better predictor of functional ability.

Table of Contents

Abstract	i
List of Tables	viii
List of Figures	ix
 Introduction	 1
Hope	2
Early Conceptualizations of Hope	2
Hope and Other Related Constructs	5
Multidimensional Conceptualizations of Hope	9
Hope and Health	14
Hope in Clinical Settings	19
Hope and Rehabilitation	22
Hope and Stroke	24
Stroke	24
Stroke Rehabilitation	26
Psychosocial Factors and Stroke Rehabilitation	29
Hope and Stroke Rehabilitation	32

Methodological Issues	34
Hope Assessment Scales	34
The Herth Hope Scale	37
Issues in Hope and Hope Assessment with Older Adults	40
Stroke Rehabilitation Outcome Scales	42
The Functional Independence Measure + The Functional Assessment Measure (FIM + FAM)	44
Rationale for the Present Study	47
Guiding Questions	48
Method	50
Subjects	50
Apparatus	51
The Herth Hope Scale	51
The Functional Independence Measure + The Functional Assessment Measure (FIM + FAM)	52
Procedure	52

Results	57
Question 1: Do patients exhibit functional improvement in a rehabilitation setting?	57
Question 2: Are any specific demographic or diagnostic variables related to functional improvement in a rehabilitation setting?	61
Question 3a: Is hope related to functional improvement in a rehabilitation setting?	61
Question 3b: Is baseline functional status at admission related to the effect of hope on functional status at discharge?	66
Question 4: Is hope related to specific aspects of functional improvement in a rehabilitation setting?	67
Question 5: Are specific aspects of hope related to functional improvement in a rehabilitation setting?	68
Question 6: Are specific aspects of hope related to specific aspects of functional improvement in a rehabilitation setting?	72
Auxiliary Analyses	73
Changes in, and Determinants of, Hope Levels	73
Hope and Functional Status <i>Per Se</i>	75
Hope Scale Items and Functional Status	76
Hope and Aspects of Functional Status Upon Admission	78

Discussion	80
Functional Improvement	80
Demographic Variables and Functional Improvement	81
Hope at Admission	81
Hope and Functional Improvement	82
Changes in Hope	82
Psychosocial Variables, Hope, and Functional Improvement	84
Extreme Scores and Inaction	85
Hope and Functional Status <i>Per Se</i>	86
Statistical Issues	88
Conclusions	89
Future Research	91
References	92
APPENDIX A: Multidimensional Models of Hope	109
APPENDIX B: Hope Scales: Format and Known Psychometrics	111
APPENDIX C: Power Analysis	112
APPENDIX D: Consent To Participate In The Study	113
APPENDIX E: Stroke Rehabilitation Attitude Debriefing	115

APPENDIX F: Demographic Information	116
APPENDIX G: The Herth Hope Scale	117
APPENDIX H: The Herth Hope Scale Subscales	119
APPENDIX I: The Functional Independence Measure + The Functional Assessment Measure (FIM + FAM)	120
APPENDIX J: FIM + FAM Item, Subscale, and Total Means and Standard Deviations	121
APPENDIX K: Hope Item, Subscale, and Total Means and Standard Deviations	124

List of Tables

Table 1: Subject Demographic Information	54
Table 2: Subjects Secondary Medical Diagnoses	55
Table 3: Cerebrovascular Accident Information	56
Table 4: Herth Hope Score Distribution	62
Table 5: Admission Hope and Change in FIM + FAM Subscale Pearson Product-Moment Correlation Coefficients	68
Table 6: Admission Hope, Demographic Variables, and Admission, Discharge, and Change FIM + FAM Pearson Product-Moment Correlations	69
Table 7: Correlations Between Individual Hope Items and Admission, Discharge, and Change FIM + FAM Scores	70
Table 8: Total Mean Admission, Discharge, and Change Hope Score by Demographic Variables	74
Table 9: Admission Hope and Admission FIM + FAM Subscale Correlations . . .	76
Table 10: Discharge Hope and Discharge FIM + FAM Subscale Correlations . . .	79

List of Figures

Figure 1: FIM + FAM Items 1 Through 15 (Admission, Discharge and Change) .	58
Figure 2: FIM + FAM Items 16 Through 30 (Admission, Discharge and Change)	59
Figure 3: FIM + FAM Subscale Scores (Admission, Discharge and Change)	60
Figure 4: Herth Hope Scale Items 1 Through 15 (Admission and Discharge)	63
Figure 5: Herth Hope Scale Items 16 Through 30 (Admission and Discharge)	64
Figure 6: Herth Hope Subscale Mean Scores	65

**ASSESSMENT OF PATIENT HOPE AS A PREDICTOR OF STROKE
REHABILITATION OUTCOME**

The relationship between various psychosocial states and illness has long been an area of interest to researchers. The health psychology literature suggests that many variables influence the course of an illness and its treatment, such as the patient's physical pathology, social environment, and intrapsychic life (Green, 1985). The ways in which illnesses are interpreted by individuals can affect their attitudes toward symptoms, treatment, and the adjustments they are required to make in their daily lives (Becker & Kaufman, 1995). The effects of variables such as depression, anxiety, fear, frustration, helplessness, denial, stress, coping, etc., have all been studied in relation to illness in clinical settings (Green, 1985). There has also been an increasing interest in the effects that hope may have on the onset, duration, prognosis and recovery from illness (Obayuwana et al., 1982).

Nursing observations provide indications that hope has an influence on well-being and health, but it has been noted this putative relationship has been difficult to assess in a standardized and valid way (Nowotny, 1989). Part of the difficulty is technical: one scale attempting to measure hopelessness, for example, does not provide a measure of extreme hopefulness (McGee, 1984). On conceptual grounds, there has been a hesitancy to study hope, because, as a construct, hope was seen as belonging to

the realm of soft science -- a concept difficult to define and hard to measure (McGee, 1984; Farran, Salloway & Clark, 1990).

Researchers in the area of hope have argued that hope, like other psychological concepts, is operationally definable (e.g. Lynch, 1965). Herth (1991) points out that the early, narrow conceptualizations of hope in terms of goal attainment and instruments that were psychometrically unsound have made progress in the measurement of hope difficult. However, over the past three decades research has expanded and refined the concept of hope so that it is now seen as a multi-dimensional construct and a measurable quantity (Nowotny, 1989).

Hope

Early Conceptualizations of Hope

Hope, though often viewed as an elusive and abstract concept, has also been seen as essential to human life (e.g. Laney, 1969; Dubree & Vogelpohl, 1980). The concept of hope has its roots in philosophical, theological, sociological and psychological literature, as well as in clinical fields such as nursing and psychiatry. Overwhelming importance has been attributed by some writers to hope as an influence

in response to therapy and to quality and quantity of life in general (e.g. Frank, 1975; Pierce, 1981).

Most early concepts of hope were based on a goal achievement model. In this model, hope was construed as a rational thought process linked to goal achievement, based on the individual's perception of what was important and what would enable them to deliver themselves from an undesirable situation or condition (e.g. Marcel, 1962; Lynch, 1965). The temporal nature of hope was especially emphasized by Marcel (1962) in his metaphysical approach to defining hope. Linking it to philosophical constructs such as Hume's 'background' of temporal possibilities and the Hegelian approach of self-relation as mediated by others, Marcel described hope as a triangulation process between past, present, and future events (Marcel, 1962).

Lynch (1965) defined hope as an expectation greater than zero of achieving a goal. Hope was characterized by the belief that there was a way out, and that with help from others a person could take control over changes in their being. Hope was a sense of the possible, including the belief that help could be obtained from others. Lynch's model of hope operated on the assumption that it was able to mature as the individual grew, existing within a Lewinian "field" of time and goals. According to this model, hope was used to transcend the present, although the *time* and *context* components of the hope experience were stressed as more beneficial than the actual transcendence, which he assumed incorporated at least some form of denial (Lynch, 1965).

The above models are based primarily on philosophical or psychological speculation. Using data gathered from controlled laboratory experiments (both human and animal), schools, disaster areas, hospitals and concentration camps, Stotland (1969) examined hope from a psychodynamic perspective, defining it as an essential part of motivating action, movement, or achievement. An individual without hope was seen as having no goals or wishes. The potential amount of hope was seen as proportional to the perceived probability of achieving a given goal and the perceived importance of that goal. Hope, according to Stotland's model, surfaced when individual goals become important, and became a trait linking the individual to the future through open, active waiting (Stotland, 1969, Stoner, 1991).

These early conceptualizations of hope suggested that hope arose according to the specific needs of the individual as they were faced with imminent despair. Hope was seen as action-and-future oriented, involving a relatedness with others -- a mental state that was antagonistic to, and that allowed transcendence from, despair (Stotland, 1969; Lynch, 1965; Marcel, 1962; Bloch, 1970; Lazarus, 1977; Weisman, 1979; O'Malley & Menke, 1988).

These early authors proposed hope as a construct both unique and operationally definable. The definitions and descriptions of hope discussed in the early literature began to demonstrate that it was not as "soft" a construct as had been previously imagined. These early conceptualizations were not, however, based on solid clinical

evidence. Rather, they were often culled from personal experience, anecdotal evidence, philosophical speculation or from the exploration of previously conducted studies. Studies explicitly designed to assess hope in a formalized and systematic way were needed before hope could be seen as truly quantifiable and measurable, and thus appropriate subject matter for scientific investigation.

Hope and Other Related Constructs

Because the early literature described hope as a construct in its own right, the question naturally arose: how was hope to be differentiated from other related constructs or even what would appear to be its opposite -- hopelessness? The opposite of hope was often said to be hopelessness (e.g. Lynch, 1965). The state of hopelessness was described as a feeling that any goal attainment efforts would be unsuccessful (Shea & Hurley, 1964). Hopeful individuals were described as possessing positive expectations, while hopeless individuals were described as possessing negative expectations about the future (Stotland, 1969).

Lynch (1965) delineated five areas of human hopelessness, areas that were out of the individual's control: death, personal imperfections, imperfect emotional control, inability to trust all people, and personal areas of incompetence. That these areas were out of the individual's control had to be accepted in order to enable them to feel greater

hopefulness. Lazarus (1974) defined hopelessness as inaction when confronted with a perceived threat. Fromm (1968) suggested that while hope allowed for a feeling of well-being, hopelessness created a sense of intolerability and futility about the future. He identified four behavioural responses to a loss of hope: resigning oneself to fate, loss of the ability to see a future, isolation from others to avoid the hurt of unfulfilled hope, and self-destructiveness (Fromm, 1968).

Hope and hopelessness have more recently been considered as opposites on a continuum, with unjustifiable hopefulness on one end, creating feelings of invulnerability leading to immobility, and unrealistic hopelessness on the other end, leading to an individual who gives up (McGee, 1984).

Wake & Miller (1992) also contrasted the state of hopefulness to the state of hopelessness. These authors suggested that hopelessness could be defined as a state of despair marked by passivity and a sense of futility (including the inability to anticipate a future, transcend suffering, or find meaning in life or relationships) along with a perceived lack of coping resources and a readiness to give up. It should be noted that not all researchers position hope and hopelessness as qualitatively discrete. Dufault & Martocchio (1985), for example, believe that hope is always present to some degree.

Hope can be either beneficial or harmful, as has been suggested by the work of McGee (1984). Some researchers have distinguished between realistic hope and

magical hope. Realistic hope is integrative and operates from an internal locus of control and a connectedness with others. This is hope that one can control and personally affect. Magic hope, conversely, relies on an external locus of control requiring no action by the person, and is therefore more isolationist. Magic hope is a wishful expectation that a person, God, fate or time will magically change a situation without the individual having to do anything (Schachtel 1959, DuBree & Vogelpohl, 1980).

Hope has also been differentiated from other related constructs. For instance, while wishing is a passive state where the individual expends no effort to obtain a desired goal, hope is said to be a more active, process-oriented state. Wishes differ from hope in that they are not actually perceived to be in the realm of possibility in the present or in the future (Stoner, 1990; Miller (1989). While desire is focused on the present, hope incorporates past, present, and future. Optimism is described as a vague feeling in general terms, involving little of the self, whereas hope is often very specific and concrete, and is inextricably tied into the self (Stoner, 1990; Miller (1989).

Hope is also believed to play an important role in the coping process. Lazarus (1977) and Stotland (1969) both described hope as a prerequisite for coping. Korner (1970) suggested two different types: rational coping (problem-solving) and emotional coping. Positive emotion-focused coping includes hope, while negative emotion-focused coping includes wishing and denial. Herth (1989) suggested that a response to

a perceived threat involved an individual's coping resources and their level of hope. These were influenced by intrapersonal, environmental, and illness-related variables and resulted in an adequate or inadequate coping response. Hope has been described as an antecedent to coping, a coping strategy, and also an outcome of coping (Herth, 1989; Fowler, 1995).

Several authors have pointed out the obvious relationship between hope and stress (e.g. Nowotny, 1989; Obayuwana & Carter, 1982). Nowotny (1989) discussed this relationship in terms of Lazarus' stress theory. According to Lazarus' model, when an individual encounters a potentially threatening event or situation, the person cognitively appraises the situation in terms of its significance to the person's well-being. The major factors are the person's cognitive appraisals and feelings of control (Lazarus, 1974; Nowotny, 1989). When confronted with this stress, a person responds with a level of hope -- low or high. This degree of hope can change over time or in different situations. For instance, if options are available, hope will increase. This increased hope will then result in the formation of a new goal, strategy, or feeling of comfort called the hope experience (Nowotny, 1989). This hope, according to Nowotny, is future oriented, includes active involvement by the individual, comes from within a person and is related to trust. There is a feeling that that which is hoped for is possible. The hope relates to or involves other people or a higher being. Finally, it is crucial that the outcome of hope is important to the individual (Nowotny, 1989).

Investigators have stressed the idea that while hope may be related to other constructs, it is nevertheless a unique and operationally definable construct. But is the construct of hope fully explained by the early goal-attainment models? Recently, hope has begun to be seen as more complex and multi-dimensional.

Multidimensional Conceptualizations of Hope

The literature of the last two decades indicates that hope has come to be seen as multidimensional, an integral component of the individual's adaptational processes, and influenced by many variables. Using a survey technique employing word groupings and implied themes, Obayuwana et al. (1982) concluded that hope could be defined as a pentagram influenced by ego strength, perceived family support, religion, education, and economic assets. The authors were careful to point out, however, that because of the vagueness of some of the responses, the answers they received from their survey might or might not have reflected true indices of hope.

Many authors also define hope not only in terms of its influences, but also as an interactive process with dynamic features. McGee (1984), for example, described the state-trait component of hope in her probability approach, which is influenced by the earlier goal-attainment theories of hope. Stotland (1969) had previously suggested that the degree of hopefulness was proportional to the perceived probability of achieving a

goal and the perceived importance of that goal. Negative expectations regarding the future were seen as predominant in the cognitive schemas of the hopeless. McGee used this framework, but added multidimensional aspects such as expectancies, experience, and social cues.

According to this model, an individual's predisposition for hope is influenced by existing situational variables, as has been described in most other definitions of hope (e.g. Nowotny, 1989). Hope is seen as an action-oriented aspect of motivation that relies on calculated probabilities. According to this theory, a stimulus (problem, goal, unmet need) presents itself, and is responded to rationally. However, this rational process is also mediated by feelings, thoughts and expectancies based on the perceived importance of the goal, the perceived solution, and probabilities of successful action. These calculated probabilities are seen as a product of cognitive, social, and physiological factors (McGee, 1984).

According to McGee's model, individuals' predispositions can lead to a number of different scenarios. Unjustifiable or total hope may lead to immobility in times of crisis (e.g. unrealistic hope of divine intervention reducing the probability of seeking medical attention). Unjustified hopelessness may result in an individual who gives up during a crisis due to a perceived inevitability of events. Chronic fear is the term used to denote the state of a person in whom any slight change in symptoms or treatment

creates alarm reaction. Balance is achieved when the individual maintains a positive outlook while at the same time accepts areas of actual, realistic hopelessness.

This model also differentiates fragile coping, which results when an individual alternates between strong and weak hope (frequently recalculating probabilities) and realistic coping, which occurs when an individual accepts the hopeless areas in life, but is able to feel that hope exists in crisis situations (McGee, 1984). This is linked to the idea of locus of control. It is interesting to note that subjects scoring higher on internal locus of control exhibit lower scores on the Beck Hopelessness Scale (Norwicki & Duke, 1974).

McGee's model is based on a review of the literature, and has not been subjected to empirical investigation. Although several methods of testing the proposed model are suggested, none are pursued -- the model remains theoretical only.

Craig and Edwards (1983) suggested an adaptation model of hope, loosely based on Lynch's earlier model of transcendence (Lynch, 1965). In their conceptualization, hope was suggested to be the knowledge that, with help, alterations of internal and external forces could be managed through the belief that there is a 'way out'. Hope was seen to be a functional aspect of everyday adaptational processes, but especially vital in times of uncertainty (Craig & Edwards, 1983). Again, however, a

methodological approach is not provided, and the conceptualization remains grounded on an amalgamation of previous theories without the experimental evidence to support it.

An effort was made to expand the construct of hope into a multidimensional model by building on the work of Craig and Edwards (1983) and McGee (1984), using data collected over two 2-year periods from 47 terminally ill patients and 35 elderly cancer patients (Dufault & Martocchio, 1985). These investigators suggested a conceptual model that defined hope as a "multidimensional life force characterized by a confident yet uncertain expectation of achieving a future good, which to the hoping person is realistically possible and personally significant" (Dufault & Martocchio, 1985, p. 380). Subjects were observed in multiple settings (i.e. hospital or home) and factor analysis was used to delineate six separate 'dimensions' of hope (see Appendix A for a detailed listing of the dimensions relevant to this and the next four multidimensional models). This was the first truly multidimensional model of hope based on empirical data. The model suggested that hope is global and as time-specific, has many different manifestations, and involves past as well as present and future orientations (Dufault & Martocchio, 1985).

Miller & Powers (1988) reviewed the etymology of the concepts of hope along with theological, philosophical, psychological, socioanthropological, biological, and

nursing perspectives to create their multidimensional model. They characterize hope as an anticipation of a continued good or improved state. Hope is seen as the anticipation of a good future based on relationships with others, personal competence, ability to cope, psychological well-being, a purpose and meaning in life, and a sense of the possible.

Using a comprehensive review of the literature, the Miller & Powers (1988) describe hope as being comprised of ten critical elements, all of which are reflected in their own hope scale. Using data obtained from administering this hope scale on patients who had recently survived a critical illness, the authors then performed a factor analysis which yielded three separate 'dimensions' (Miller & Powers, 1988).

The idea that hope is a combination of internal and external forces has been expressed as "... an expectation about attaining some desired goal in the future, a necessary condition for action, a subjective state that can influence realities to come, and a knowledge that as human beings we can somehow manage our internal and external realities" by Farran et al. (1992, p. 130). These investigators used data from a critical analysis of hope instruments used in a research study of community-based adults (Farran et al., 1990). This analysis yielded four separate 'dimensions' of hope.

Fowler (1995) recently noted that the multidimensional aspect of hope was reflected in six themes found in the literature. Morse & Dobernek (1995) interviewed

heart transplant patients, spinal cord-injured patients, breast cancer survivors, and breastfeeding working mothers, and used concept analysis to delineate seven 'dimensions' of hope.

Thus hope, in the last two decades, has moved from a rather straightforward concept of future-oriented goal-attainment to one that is more complex and multidimensional, and one that is based on considerable empirical investigation. Most investigators agree, however, that hope is an integral part of human existence, and affects us not only psychically, but also physiologically (e.g. Frank, 1975, Fowler, 1995). Much work has been done recently in examining the relationship between hope and health.

Hope and Health

Hope has been described as essential to human life (Stotland, 1969) and linked to health and healing (Obayuwana, 1980). It has been suggested that hope may increase an individual's ability to cope with stress and promote health (Obayuwana et al., 1982), and even to achieve optimum health (Foote et al., 1990).

Hope applies to all practice settings and age groups and involves both the patient and the family, comprising all of the wellness-to-death continuum (Fowler, 1995). To

understand its role in the experience of illness, hope has been studied to identify its components, enhance or redirect hope in the clinical setting or to quantitatively measure it and link it to other concepts such as coping or social support. Nurses and other health care professionals have reported the relationship between loss of hope and the deterioration and death of patients with life-threatening illnesses (Stoner, 1988).

Changes in life-style, hospital environments, and health status can be threats to perceived hope (Dufault, 1981). Higher hope has been related to better health and higher socioeconomic status. It has been suggested that poorer physical health can result in more demanding financial concerns, which together with a lack of education may result in lowered hope (McGill & Paul, 1993).

It has also been suggested that optimism regarding one's health may affect biological processes, perhaps through psychosocial influences (Wilcox et al., 1996). Herth (1991) suggests that hope contributes to adaptive coping in times of illness and also has a positive influence on wellness in general.

A recent review of the literature (Fowler, 1995) shows that the majority of the studies on hope and health have been conducted with cancer patients or patients with other terminal illnesses (e.g. Herth, 1989; Nowotny, 1989), but that there have also been some studies involving other patient populations. These other populations include patients with multiple sclerosis (e.g. Foote et al., 1990), spinal cord injury (e.g.

Piazza et al., 1991), and congestive heart failure (e.g. Rideout & Montemuro, 1986). Still other studies have been conducted with adolescent patients (e.g. Hinds, 1988) and with the elderly (e.g. Dufault & Martocchio, 1985; Farran et al., 1990; & Herth, 1993). These studies suggest that hope can be related to psycho-social variables such as coping (Herth, 1989), self-esteem and social support (Foote et al., 1990) and morale and adaptation (Rideout & Montemuro, 1986), and that it can also be studied as a single variable (which most of the investigators have done) or in combination with related variables.

Some of the studies have investigated hope and its potential relationship with various physical and mental states. Raleigh (1980), for example, examined the relationship between hope and other psychosocial variables in cancer patients and in patients with non-life -threatening chronic illnesses. (No relationships were observed, but it should be noted that the investigator did not use a psychometrically validated instrument to measure hope levels.) Descriptive studies of hope have suggested its importance in grief resolution (Herth, 1990), adjustment in patients with multiple sclerosis (Foote et al, 1990), coping with cancer (Herth, 1989), finding meaning after cancer diagnosis (O'Connor et al., 1990), the mental health of the elderly (Farran & Popovich, 1990) and control in persons with cancer (Brockopp et al., 1989).

Obayuwana et al. (1982) were able to use hope levels as assessed by their Hope Index Scale to identify psychiatric patients and other persons with psycho-social crises

from the normal population. Gottschalk (1985) described a correlation between high hope scores and the use of denial as a coping mechanism. This study used the Erickson, Post and Paige Hope Scale, an older scale based on the narrow theoretical construct of goal attainment (Erickson, Post, and Paige, 1975).

O'Malley and Menke (1988) examined the relationship between the degree of perceived hope as assessed by the Beck Hopelessness Scale (Beck et al., 1974) in persons who had experienced a first myocardial infarction. The investigators suggested that subjects perceived themselves as having hope, but were unsure about future expectations. Similarly, Nowotny (1989) showed that hope was present in some degree in most cancer patients.

Hirth & Stewart (1985) explored whether social support and hope as assessed by the Miller Hope Scale (Miller & Powers, 1988) contributed to effective coping in adults waiting for cardiac transplantation. For the purposes of this study, effective coping was conceptualized as the prevention or mitigation of distress within a situation as perceived by the individual (Lazarus & Folkman, 1984). It was suggested that hope did contribute to effective coping, while social support did not. Another study investigated individuals' ability to cope with cancer (Mishel et al., 1984). Coping was assessed as psychosocial adjustment, and included attitude adjustment, immediate and extended family relationships, leisure activities and psychological distress. Using the Beck Hopelessness Scale (Beck et al., 1974), the author suggested that people who

coped best with cancer were identified as more hopeful. Similarly, Schulz (1994) identified hopefulness as a helping factor in a support group for persons with head injury.

Herth (1989) described a significant relationship between hope, as assessed using her Herth Hope Scale, and coping in cancer patients. That is, when the patient's coping level was high, their hope scores were also high. The same author also described, in a study of 75 elderly widow(er)s, a significant positive relationship between effective grief resolution and a high hope level (Herth, 1990).

In a descriptive study to determine if there was a relationship between hope as assessed using the Miller Hope Scale (Miller & Powers, 1988), self-esteem and social support, Foote et al. (1990), obtained significant positive correlations between hope and social support as well as between hope and self-esteem in multiple sclerosis patients. Individuals with a higher level of hope perceived a higher level of self-esteem and social support. Overall, the investigators described a moderately high level of hope among subjects.

Mayers & Gardner (1992) investigated the presence of hopefulness assessed using a structured interview in patients with Alzheimer's disease, schizophrenia, multi-infarct dementia, dementia secondary to alcohol and drug use, other organic brain

syndromes, and bipolar mood disorder. These authors noted that only a minority of subjects indicated a strong sense of hopelessness.

The literature described above suggests that hope is an important component of a person's experiences in clinical settings. There is increasing evidence that much can be done to encourage or, alternatively, discourage hope in these settings (e.g. Stoner, 1991), and thus to attempt to positively influence health status.

Hope in Clinical Settings

Most investigators in the area of hope research agree that much can be done to foster, encourage, and maintain hope in clinical settings (e.g. O'Malley & Menke, 1988; Nowotny, 1989; Wake & Miller, 1992). Many of these suggestions involve patient-care strategies that can be used by health care professionals.

From the earliest literature on the subject, a key component of hope has been that of intersubjectivity or mutuality -- hope as an inner source that depends in part upon interaction with others (e.g. Lynch, 1965; Marcel, 1967). This suggests that health care professionals are in a good position to inspire or decrease hope in their patients (Stoner, 1991; Miller, 1988), especially because they are daily witnesses to

patients' swings from hope to hopelessness and from hopelessness to hope (Dubree & Vogelpohl, 1980).

Several actions health care professionals can take to promote hope in patients under their care have been suggested in the literature. These actions include: recognizing that some patients may deny the seriousness of their injury; providing information so that uncertainty and fear of the unknown may be reduced; providing reassurance and emotional support; motivating the patient to view their health problems as an opportunity to grow and adapt; encouraging patient participation in their own care; encouraging the patient's active decision-making regarding their illness; fostering a sense of control; setting meaningful, concrete and limited goals (that reflect physical progress) to promote a sense of the future; rehearsing alternative outcomes to enable future planning; helping the patient find meaning in their illness; using humour; and finally, encouraging communication with family or a significant other (O'Malley & Menke, 1988; Nowotny, 1989; Dubree & Vogelpohl, 1980; Foote et al., 1990; Owen, 1989). Few of these strategies, however, have been empirically validated.

In a study examining the behaviour patterns of nurses identified as sources of hope versus those who were seen as a threat to hope, nurses who were identified as sources of hope were described as kind, sensitive and adaptable; able to offer realistic alternatives in care; openly supportive of patients' decisions; and openly conveying confidence in the treatments. Nurses who were seen as a threat to hope were described

as those that did not provide information, were late for procedures or medical administration, or who refused to alter procedures regardless of patient discomfort (Dufault, 1981).

Patients too have been asked about their hope-inspiring strategies as well as perceived threats to hope. The hope-inspiring strategies suggested have included cognitive strategies (thought processes used to change threatening perceptions to more favourable perceptions); determinism (a conviction that a positive outcome is possible); a world view (philosophical perspectives indicating a perception that life has purpose or meaning); spiritual strategies (encouraging the transcendence of suffering based on a relationship with God); a relationship with caregivers (i.e., health care workers conveying a constructive and positive outlook); family bonds (relationships that are sustaining and that allow the individual to share their suffering); personal control (the belief that one's action can affect the desired outcome); goals (desired activities and valued outcomes) and other miscellaneous strategies such as relaxation, distraction and humour (Miller, 1989; Herth, 1990).

Perceived threats to hope have included physical cues and evidence of setbacks (i.e., accumulating physical problems in a short time); the physical and emotional distancing of the self from others, being devalued as a person, uncontrollable pain, the feeling that nobody cares (family related); negative hospital experiences (negative attitudes of health care workers) and negative self-talk (Miller, 1989; Herth, 1990).

Thus, it has been determined that there is much that can be done to encourage and promote hope in patients with long-term, chronic, or terminal illnesses. Nursing staff and other health care professionals such as physicians and physical therapists are in a unique position to foster or, conversely, discourage hope. This may be especially true in rehabilitation settings (Wilcox et al., 1996).

Hope and Rehabilitation

The presence of hope has been related to recovery from life-threatening medical illnesses, and has been seen to increase physiological and psychological defences (Mayers & Gardner, 1992; McGee, 1984). Alternatively, the absence of hope has been linked to physical deterioration and disease (Gottschalk, 1985; Reker & Wong, 1985) and even death (Siegel, 1986).

McGill & Paul (1993) obtained a positive correlation between the physical health of elderly people with cancer and high hope as measured by the Miller Hope Scale (Miller, 1988). While age and gender did not contribute significantly, physical health was the functional status aspect that related significantly to hope in elderly patients. A decrease in physical health was associated with a lower hope level. One report suggested that patients who were more hopeful maintained their involvement in

life regardless of physical limitations imposed by heart failure (Rideout & Montemuro, 1986).

Wilcox et al. (1996) suggested that an individual's health perceptions can predict functional impairment and mortality, reinforcing the influence of these perceptions on recovery from illness and/or injury. Depression, for instance, has been associated with impaired recovery of function and higher mortality rates following hip fracture (Wilcox et al., 1996). In another study, hope had a positive influence on the rehabilitation behaviours of patients with severe burn injuries (Hamburg et al., 1953).

The literature described above suggests that psychosocial states such as hope may have an impact on the rehabilitation process. One area of rehabilitation that has been receiving interest in the hope literature recently is that of stroke rehabilitation (e.g., Foote et al., 1990).

Hope and Stroke

Stroke

In our society, old age is often thought to be made up of losses of many kinds -- physiological, personal, social and functional. Because they are assumed to be inevitable, functional losses in the older population are often more readily accepted by society than they are in younger populations (Becker & Kaufman, 1995). One of the most prevalent causes of adult disability and invalidity is the cerebrovascular accident, or stroke (Friedman, 1995; Belosoesky, 1995; Alexander, 1994). Stroke can be described as a disruption in the blood flow to the brain, resulting in various pathological processes (Becker & Kaufman, 1995). Stroke has been defined by WHO as "rapidly developing clinical symptoms and/or signs of focal, and at times global loss of cerebral function, with symptoms lasting more than 24 hours or leading to death, with no cause apparent other than that of vascular origin" (Gompertz, 1994, p. 933). Stroke is the diagnosis most commonly encountered in clinical settings, and is the largest impairment group found in rehabilitation facilities (Falconer et al., 1994; Brodie et al., 1994). Although cerebrovascular disease is the third most common cause of death in Western society after heart disease and cancer (Kyriazis, 1994), stroke survival rates are higher now than ever before (Colantonio et al., 1993).

Although a stroke is a specific physiological event, resulting impairments are often long term, involving not only physical but also cognitive, sensory, emotional, and motor functions (Becker & Kaufman, 1995). Two-thirds of stroke victims survive the initial accident (Falconer et al., 1994). It has been estimated that of these survivors, 10% are disability-free, 40% suffer from mild disabilities, 40% suffer from moderate to severe disabilities, and 10% require long-term care (Cifu & Lorish, 1994). Stroke can result in disorientation, difficulty in speaking, partial paralysis and memory loss. Resulting complications have been described as including pressure sores, pneumonia, pulmonary embolisms, dehydration, urinary retention or incontinence, pain in affected limbs, emotional lability, depression and anxiety (Kyriazis, 1994). The effects of stroke can be temporary or permanent, and they can range from slight to severe (Becker & Kaufman, 1995).

More specifically, right brain damage and left brain damage result in perceptual, motor, cognitive, and affective deficits that are unique to each location. Individuals with right brain damage tend to exhibit deficits in visuo-spatial processing, hemispatial neglect, poor insight and judgment, impulsive behaviour, left hemiplegia, and slowed reaction time due to perceptual-motor problems. Individuals suffering from left brain damage may show right hemiplegia, deficits in verbal areas (aphasia) and other communication impairments, and may also exhibit a higher incidence of depression (Egelko et al., 1989; Brodie et al., 1994).

While there are many factors that influence recovery from stroke, the fact is that physical rehabilitation is a reality for many stroke survivors.

Stroke Rehabilitation

Stroke victims usually become hospitalized during the acute phase of the illness (usually for a period of weeks) and are then referred to physical therapy specialists (Becker & Kaufman, 1995). While there often exists at least some degree of spontaneous recovery after a stroke, most individuals who survive a stroke undergo some form of therapy to try to restore function (Bach - Y - Rita & Bach - Y - Rita, 1992). When patients are asked to rate the different possible outcomes of stroke, they tend to rate physical impairment that results in dependence as significantly worse than general confusion, global aphasia, or even death (Solomon et al., 1994).

Rehabilitation is a process that is extremely important to the patient. The ultimate long-term goal of therapy is to enable the patient to return to their home setting (Brodie et al., 1994).

Aside from obvious humanitarian concerns, factors including rising health care costs, the increasing prevalence of managed care, and cost-containment initiatives indicate a growing need to examine the efficacy, value and worth of stroke rehabilitation (Grainger & Clark, 1994). It has been noted that one does not observe

actual rehabilitation outcomes, but rather improvements in different areas of patient skill and ability (Fuhrer, 1985). These changes are only seen as outcomes if we infer that these changes have occurred as a result of rehabilitation and not spontaneous recovery or any normal recovery that might occur. The influence of several factors has been noted: value systems can have an impact on how we view outcomes; outcome expectations can be constructed from different viewpoints such as logic, theory, or experience; outcomes can be examined from a short-term or long-term perspective; and rehabilitation may affect not only the recipient, but also the caretakers and community involved (Fuhrer, 1985).

While there is evidence that therapy benefits some patients, uncertainty remains about which specific characteristics identify these patients (Falconer et al., 1994). Pound et al. (1994) observed that physical therapy was associated with functional improvements in the first few months post-stroke. It has been demonstrated that functional gains, if achieved during rehabilitation, tend to last, and that these gains are even more pronounced if they are made within the context of a specialized inpatient rehabilitation facility as opposed to a general medical unit or an outpatient type of facility (Cifu & Lorish, 1994).

Beloosesky et al. (1995) described a link between prognosis for functional recovery and the severity of the paralysis, decreases in cognition, incontinence, sensory apraxia and hemianopsia. It was also noted that for those with cortical

infarction, there was a direct relationship between rehabilitation ability and the size of the infarction. The author also noted that when the stroke involves the deeper areas of the brain (such as lacunar infarctions), functional prognosis is usually better than for infarctions involving the cortex, due to relatively lower compensatory abilities and both cognitive and motor deficits. In another study, it was noted that elderly people who lived alone prior to stroke onset were most likely to return home if they had mild stroke deficits along with high function scores assessed one week post-stroke (Friedman, 1995). The patients' blood pressure, other pathology, the area of the lesion, the impairments of the individual, the quality and availability of staff and resources have all been suggested as factors that influence stroke recovery (Kyriazis, 1994; Brodie et al., 1994).

Age also plays a role. More than one study has noted that younger stroke patients (those under 75 years) seem to benefit more from the rehabilitation process than older patients (Kalra, 1994; Falconer et al., 1994). This result has sometimes been attributed to differences in the availability of multi-disciplinary input available outside the stroke unit as well as age (Kalra, 1994). Other age-associated factors identified in the literature include the cumulative effects of frailty and comorbid disease (Falconer et al. 1994).

Obviously, stroke recovery is linked to many factors. There is evidence to suggest that stroke recovery may be influenced not only by physiological factors, but also the psychological and social characteristics of the patient (Colantonio et al., 1993).

Psychosocial Factors and Stroke Rehabilitation

Although research on stroke outcome has increased during the last decade the psychological factors associated with stroke have been somewhat neglected, and the relationship between these factors and stroke outcome remains poorly understood (Sisson, 1995). The few studies that exist suggest that psychosocial factors do have an effect on stroke rehabilitation. The presence of depression or dementia, the motivational state and the social support system available to the patient have all been studied as factors that can influence stroke recovery (Kyriazis, 1994; Brodie et al., 1994).

Brodie et al. (1994) reported that when independent living is the criterion for discharge outcome, social factors may contribute as much as the severity of the disability toward a successful outcome. In an examination of premorbid psychosocial factors on physical function and institutionalization six weeks after hospital discharge, Colantonio et al. (1993) noted that larger social networks were associated with fewer physical function limitations along with lower risk for institutionalization.

Webb et al. (1995) described an association between greater family support and improved functional independence in patients with traumatic brain injury. Another study provided evidence that greater social networks can have an effect on compliance in rehabilitation programs and can also exert an influence on post-stroke functional ability (Colantonio et al., 1993). Sisson (1995), in a study involving right-hemisphere stroke patients, suggested that greater functional impairment was related to greater depression. Other investigators have commented that because depressed patients often suffer from fatigue and lowered motivation, decreases in learning and rehabilitation technique recall can result. These, in turn, may lead to lower functional gains (Zalewski et al., 1994).

Patients have been reported to attribute rehabilitation to their therapy (Falconer et al., 1994). Upon entering a stroke rehabilitation program, patients typically have expectations about the therapy they will receive. It is not clear on what these expectations are based. Are the interventions of proven effectiveness? Are the services they are receiving appropriate for their specific and unique needs? Are these services consistent with their preferences? Will the therapy be effective? Rogers & Holm (1994) have suggested that all of these questions may form the basis of patient expectations concerning rehabilitation.

Interviews with stroke patients and their physicians have suggested that when faced with an uncertain illness trajectory, uncertainty becomes a central feature of their

adaptation process (Becker & Kaufman, 1995). However, it has also been noted that the accurate diagnosis and treatment of patients' loss of function are seen as crucial if hospitalized individuals are to be able to reduce painful despair, mobilize the psychological energy required for healing, adapt to the illness, induce positive expectations for the future and prevent physical decline or death (e.g. Wake & Miller, 1992; Craig & Edwards, 1983; Rideout & Montemura, 1986; Byrne et al., 1994). Other investigators have pointed out that uncertainty can often result in a patient who is faced with incompatible coping strategies -- the acknowledgement of and mourning over losses, and the attempt to maintain hope that some function will be restored (Bach - Y - Rita & Bach - Y - Rita, 1990).

Rehabilitation is not a panacea -- there often exists an unpredictability concerning outcomes. As a result, patients are often faced with physicians who communicate their own uncertainty and give ambiguous explanations regarding the potential effectiveness of rehabilitation. Pound et al. (1994) noted that vague strategies of communication on the part of caregivers (due, in part to their own feelings of doubt) often led to increased uncertainty on the part of the patient.

Some researchers have suggested that because the professionals involved often give conservative estimates of rehabilitation potential (to avoid fostering expectations that are unrealistic), a self-fulfilling prophecy may occur. Low expectations from the rehabilitation professionals may affect the patient's expectations which may influence

the outcome of the rehabilitation. This in turn may reinforce the rehabilitation professionals' low expectations (Pound et al., 1994; Bach-Y-Rita & Bach-Y-Rita, 1990).

It is interesting to note that patients focusing on recovery usually assume that if they work hard enough, the recovery trajectory will be affected by their effort (Becker & Kaufman, 1995). Some attribution bias, however, may be occurring on the part of therapists. In one study therapists tended to ascribe positive outcomes to the effects of clinical intervention. Negative results, on the other hand, were typically described as being the result of patient characteristics (Macciocchi & Eaton, 1995).

The possibility that low expectations may influence recovery is important in light of the fact that motivation has commonly been described as a key issue at all stages of the stroke rehabilitation process (Becker & Kaufman, 1995; Bach - Y - Rita & Bach - Y - Rita, 1990; Zalewski et al., 1994).

Hope and Stroke Rehabilitation

Although it has been suggested that hope has an influence on stroke rehabilitation (Pound et al., 1994), the exact mechanism is unclear. It may be linked to the stress and coping model put forward by some researchers (e.g. Obayuwana et al.,

1982). It seems more likely that in the case of rehabilitation, it may be linked to motivation. It is contended that the patient must want to be an active participant in the rehabilitation process if the highest possible recovery of function is to be maintained (Bach - Y - Rita & Bach - Y - Rita, 1990). Some health care providers believe that patient motivation (implying a positive attitude toward the recovery process) is the most important factor in the determination of functional outcomes resulting from rehabilitation in older individuals (e.g. Becker & Kaufman, 1995).

Stroke patients are often faced with an unpredictable future. Despite this situation, or perhaps because of it, health care professionals should not assume that these patients lack hope (Foote et al., 1990). Stroke patients have described their therapists to be a source of hope for them, especially if they have lost the inner drive for functional recovery (Pound et al., 1994). Physicians have also described their role as, in part, a supportive one, providing hope in a time of uncertainty (Becker & Kaufman, 1995).

Even though stroke rehabilitation has been described in the literature as a process that alternates between hope and hopelessness, this same literature stresses the need to maintain attitudes that are positive and hopeful, echoing the literature concerning recovery from cancer (Becker & Kaufman, 1995). Because of this, it has been suggested that caregivers should respond positively and hopefully to the questions stroke patients may have about their functional recovery, while at the same time

realizing the limitations and disability that their illness has created (Bach-Y- Rita & Bach-Y-Rita, 1990; Pound et al., 1994).

The literature has stressed the need for research in the area of psychosocial processes and recovery (e.g. Wilcox et al., 1996). The role of hope and motivation in functional recovery has been discussed in the literature, but to date there have been no studies examining the influence of hope on stroke rehabilitation.

Methodological Issues

Hope Assessment Scales

The complex and multidimensional aspects of hope have both challenged and enabled researchers to make the construct quantifiable (Nowotny, 1989; Foote et al., 1990). Hope can be measured in various ways using various operational definitions.

Miller (1989), for example, used a one-item self-assessment scale to assess hope. Patients were asked to rate their level of hope numerically, a score of one indicating that they felt no hope and a score of ten indicating that they were full of hope. Another researcher used the analysis of speech samples to assess hope along with other psychosocial variables such as social alienation, personal disorganization,

cognitive impairment, anxiety and hostility (Gottschalk, 1985). Most hope measures, however, are Likert-type multiple item scales based on different theoretical conceptualizations of hope. For a description of the psychometrics of the scales reviewed in this section, see Appendix B.

The Hopefulness Scale (HFS) (Farran, Salloway & Clark, 1990) is an adaptation of the Beck Hopelessness Scale (BHS) (Beck et al., 1974) which was originally developed to measure negative expectancies concerning the future and the self among individuals with psychopathological conditions. While the BHS is a 20-item true/false questionnaire scored from 0 to 20, the HFS is a five-point Likert-type assessment tool with scores ranging from 0 to 100 - a higher score indicating greater hopefulness. The theoretical constructs on which this scale is based reflect the attributes of (1) suffering, trial, or captivity, (2) transcendence or faith, and (3) a rational process, but do not reflect the attribute of hope as an interactive process.

The Stoner Hope Scale (SHS) (Stoner, 1988) is based on Stotland's psychodynamic theory of hope (Stotland, 1969) as the probability and importance of goal attainment, and the ideas of Lynch (1965) and Marcel (1962) regarding hope as possessing an interior sense influenced by interaction with external resources. It has been suggested by Stoner (1988) after consultation with nurse clinicians that this scale can be divided into three subscales: intrapersonal hope (based on interior strengths and beliefs), interpersonal hope (dependent upon interactions with external resources), and

global hope (referring to the broader issues important to people in a general sense).

Scores can be obtained for each of the subscales, or can be added together to produce a total hope score (with a maximum high score of 480). Originally developed for cancer patients, it has also been used with community-based older adults.

The Miller Hope Scale (MHS) (Miller & Powers, 1988) was designed to measure hope in both well and acute/chronically ill adults. The scale is based on elements of hope discussed in the literature and also on an exploratory study with individuals who had survived a critical illness. Scores range from 39 to 234, with a higher score indicating higher levels of hope.

The Nowotny Hope Scale (Nowotny, 1989) is based on a review of the literature concerning qualitative studies on hope. Items were gathered from the literature, nurses, and the author's clinical experience. Based on factor analysis, the measure has been divided into six subscales: confidence, relatedness to others, future, spiritual beliefs, active involvement, and internal origin. It has been used with well adults and adults with cancer (aged 20-85 years).

The Hope Index Scale (Obayuwana et al., 1982) is a questionnaire designed to assess the cognitive, affective, and motor components of ego strength, family support, religion, education, and economic assets thought by the author to underlie hope. It is scored from 0 to 500 (ten questions are used to determine the possibly confounding

variable of social desirability). The scale appears to have no racial, sex, or economic bias.

The Herth Hope Scale

One scale that has been explicitly designed to incorporate the multidimensional concept of hope, and that has been chosen as the indicator for the study proposed here, is the Herth Hope Scale (HHS) (Herth, 1989, 1990, 1991, 1993). This scale is based on the multidimensional construct of hope suggested by Dufault & Martocchio (1985). The initial HHS (Herth, 1989) was a 40-item, true/false scale including 27 positive and 13 negative items, divided over the subscales of temporality and future, positive readiness and expectancy, and interconnectedness. Initial content validity was assessed by four judges with expertise in the area of hope, who reduced the number of items to 32.

This revised scale was administered to 20 cancer patients, which resulted in the elimination of five items with low item-to-total correlations, and the creation of five new items. This further revised scale was administered to 40 adult cancer patients (aged 22 to 79 years) and obtained a Cronbach's alpha of .75.

The HHS was next used with 120 adult cancer patients (Herth, 1989). A varimax rotation produced a three-factor solution, explaining 52% of the variance. These factors were called temporality and future, positive readiness and expectancy, and interconnectedness. Two items that correlated with all three factors were eliminated, resulting in a scale consisting of 30 questions.

Based on suggestions from subjects who have completed the scale, the HHS has been modified into a four-point Likert-type scale. Each item in the HHS is scored from 0 to 3 (never applies to often applies). Scores range from 0 to 90, with higher scores indicating higher hope. This final form of the HHS was administered to 200 adults (Herth, 1991), to obtain normative data. For this reason, people with health problems were eliminated from the study, resulting in a sample of 185. The mean score was 80 (range 60 to 90). A negative correlation was obtained with the Beck Hopelessness Scale ($r = -.74$) (Beck et al., 1974), and a three-week test-retest reliability of .90 was demonstrated.

The HHS has also been used with community-dwelling elderly (Herth, 1990). The author obtained a negative correlation with the BHS ($r = -.69$). The Cronbach's alpha in this sample was .94, and the three-week test-retest reliability for 20 randomly selected subjects was .89. When used with elderly widow(er)s ($N = 75$), a Cronbach's alpha of .95, and a three-week test-retest reliability of .91 ($N = 20$) was obtained (Herth, 1990). Mean hope score was 54 (SD 5.6), with a range of 29 to 83. The

previously identified three-factor solution was supported, and this solution explained 58% of the variance. The item means from these studies suggest that there are no floor or ceiling effects. These results to date indicate that this scale is appropriate for use with well adults, adults with cancer, and elderly adults.

The HHS complements and extends the MHS and the NHS and attempts to incorporate all the important hope elements found in other scales. The HHS also adds items evaluating the non-time-specific global aspects of hope, along with its past, present, and future dimensions. The Herth Hope Scale is, therefore, a potentially more valid measure of hope states in all individuals, especially critically or terminally ill patients (Herth, 1991). The HHS is shorter than the MHS, and one item longer than the revised NHS (which has not been psychometrically tested), so its length is appropriate. A shorter version of this scale is being prepared, but to date no psychometric data is available (Herth, 1993).

Psychometric evaluation, then, suggests that the Herth Hope Scale is appropriate with well adults; hospitalized, community based, and outpatient individuals with cancer; community-based elderly; and bereaved elderly. The tool has demonstrated content and construct validity. This scale was originally developed specifically for use with all adults, including acute, chronic, or terminally ill adults in a clinical setting.

Herth has been commended for her work in the evaluation of hope as a multidimensional construct. As one researcher has noted, "...of particular importance is her attempt to capture in an instrument the multidimensionality of hope. Her large sample size, representing diverse populations, and her attention to assessment of the psychometric properties of the Herth Hope Scale contribute to the potential to measure hope accurately." (Stoner, 1991, p. 53).

It has been suggested that the scale be used to investigate the relationship between chronic versus acute illness and hope. The scale could also be useful to examine the impact of hope on adaptation to illness, the effectiveness of treatment, and the quality of life for patients and/or families (Herth, 1990).

Issues in Hope and Hope Assessment with Older Adults

Mayers & Gardner (1992) note that there has been little work done in the area of hope assessment in geriatric populations. The studies that have been done suggest that there are certain crucial issues to take into account when examining the role hope plays in older populations.

Farran (1986) described the central attributes of hope as suffering and transcendence. This is especially apt for the older ill adult because of the various losses that can occur as individuals age. It is interesting, though, that there is evidence to

show that older adults tend to provide higher health ratings for themselves than would be expected when their various health indicators are taken into account, perhaps as a result of the belief that illness is a necessary and natural cross to bear as the aging process continues, or perhaps because of a belief that the individual has survived a threatening event (Wilcox et al., 1996).

Hope has been defined as a reaction to adversity or to a situation or predicament that is undesirable (Marcel, 1962). Older persons with chronic long-term suffering may use different hope strategies than persons with short-term suffering or younger persons. They are more likely to use strategies that help in the face of downward trajectories (Farran, Salloway & Clark, 1990).

Hope has also been defined as future oriented (Lynch, 1965). Most older adults acknowledge that they have less time left than in the past, and because of increasing age and fluctuating health, they may not easily project very far into the future. In fact, there has been some concern about various hope scales' abilities to reflect short-term goals, and future orientation in terms of days, not years (McGill & Paul, 1993). It has been suggested that some older adults may transform "the future" into the "hereafter" (Farran, Salloway & Clark, 1990). It has been suggested that hope involves a relatedness with others (Lynch, 1965). Older adults may have lost friends and spouses, and family members may be geographically distant. Health issues might make it difficult to make new social contacts (Farran, Salloway & Clark, 1990).

Hope was defined early in the literature in terms of goal attainment (Stotland, 1969). The older ill individual, however, may have cumulative losses or multiple health issues that interfere with a sense of accomplishment and success (Farran, Salloway & Clark, 1990; "Fostering Hope in Your Residents", 1994). Hope has also been related to a sense of personal control (Miller, 1989). Some issues (such as pain) may not be in an individual's control. Sometimes total control may be unrealistic for certain older adults (Farran, Salloway & Clark, 1990).

These issues, while not insurmountable, should be recognized by the investigator who proposes to administer and interpret hope scales using older populations.

Stroke Rehabilitation Outcome Scales

Because there are many factors influencing stroke recovery, it is important to be able to assess rehabilitation in a systematic and formalized way. While many rehabilitation outcome measures exist for various illness and physical impairments (Fuhrer, 1985), stroke rehabilitation is a specific rehabilitation area with its own outcome measurement requirements.

Stroke outcomes can be variously categorized. One important dimension refers

to a patient's level of independence (or dependence), another refers to a disabling or non-disabling event, and yet another uses functional scores (Solomon et al., 1994). Most rehabilitation scales use functional scores.

Many scales have been designed to measure functional ability in a rehabilitation setting, including the Expanded Disability Status Scale (Kurtzke, 1983), The Level of Rehabilitation Scale (Carey & Posavac, 1978), The Disability Rating Scale (Rappaport et al., 1982), and the Barthel Index (Mahoney & Barthel, 1965).

Recently, other scales have been proposed and studied. Kalra et al. (1994), for example, investigated the use of the Orpington Prognostic Score (a scale that includes assessments in motor deficits, proprioception, balance, and cognition) but noted that the scale indicated little change two-weeks post-stroke.

Falconer et al. (1994) describe a classification tree approach to rehabilitation assessment. Guy's Prognostic Score and its simplified version (the G-Score) have been described in the literature, but these scores are not the result of a standardized scale (Gompertz et al., 1994).

Gladman et al. (1993) have used the Extended Activities of Daily Living Scale to assess mobility, kitchen, domestic and leisure abilities. This measure is a postal self-report questionnaire, and is more suited to stroke survivors living at home.

The Barthel Index (Mahoney & Barthel, 1965) is often used to assess change in function. This scale was originally used as a measure of dependence. More recently it has been seen as an assessment tool for the Activities of Daily Living (Wellwood et al., 1995). The Barthel Index uses raters who assign a score of 0, 5, 10, or 15 to items on the scale, where 0 indicates total dependence and 15 indicates complete independence. These scores can be summed up to a maximum of 100 (Wellwood et al., 1995). It should be noted that the Barthel's floor and ceiling effects can result in an underestimation of patients disabilities in up to one-third of patients (Wellwood et al., 1995). A scale called the Functional Independence Measure has been found to be more sensitive than the Barthel Index for detecting important clinical change (Oczkowski & Barreca, 1993)

The Functional Independence Measure + The Functional Assessment Measure (FIM + FAM)

The FIM + FAM scale is a widely used measure designed for use with brain-injured and stroke patient populations (Hall et al., 1993). It is designed to assess the level of the patient's functional independence. This scale is a combination of the Functional Independence Measure and the Functional Assessment Measure.

The Functional Independence Measure (FIM) is an 18-item scale that has demonstrated good face and construct validity. It has shown high inter-rater reliability (.97) and high precision in detecting meaningful change in level of function during rehabilitation. This scale has been used effectively in acute care clinical settings as a tool for determining discharge status, and is widely used in rehabilitation facilities due to its easy scoring and reliability (Mauthe et al., 1996).

The Functional Assessment Measure (FAM) is designed to be added to the FIM, and to emphasize the cognitive and psychosocial aspects of rehabilitation. This scale shows good validity and reliability.

Together, the two scales comprise a 30-item scale representing six areas of rehabilitation (Self-Care, Sphincter Control, Mobility, Communication, Psycho-Social Adjustment and Cognitive Function) and representing both motor and cognitive functions. Each item is scored using a Likert-type scale ranging from 1 (Total Assistance) to 7 (Complete Independence).

While the ability of raw FIM+ FAM scores to predict outcome in a variety of circumstances suggests that FIM is a valid scale for use in rehabilitation (Long et al., 1994), it has been noted that these scores are ordinal and aren't necessarily additive or of equal interval scaling (Bunch & Dvorch, 1994). Because of this, the use of a scaling transformation technique called Rasch Analysis is being investigated by some

researchers, and may eventually prove in future to make the FIM + FAM even more sensitive to change (Long et al., 1994; Bunch & Dvorchak, 1994; Heinemann et al., 1994). Rasch transformation may allow data collected as "ordinal" to be analyzed as "interval."

Overall, the FIM + FAM is 'discipline-free', reliable, simple to use, and able to be completed within a short period of time. It maintains consistency with the disability terminology used by clinicians and stays sensitive to change over the course of a rehabilitation program (Hall et al., 1993). For these reasons, it appears to be the best available measure for assessing stroke rehabilitation.

Rationale for the Present Study

Hope is a construct that, although once thought to be hazy and unmeasurable, has come to be seen as one that can be specifically defined and assessed (e.g. Foote, 1990). The multidimensional nature of hope that has come out of the literature during the past two decades has greatly increased our understanding of what hope is and is not, and how it affects our lives and our health. The suggestion that hope is different from, but nevertheless intertwined with, other related constructs such as coping, expectation, and motivation has opened up a wealth of areas of potential study.

One area that seems particularly relevant in light of what we now know about hope is that of stroke rehabilitation. The stroke rehabilitation setting involves patients who have undergone a sudden change in their physical health. They are placed into a setting within which not only the actual rehabilitation exercises, but also the patients' individual psychosocial states have been suggested to play a role in successful recovery (e.g. Colantonio et al., 1993). One potentially important aspect of this dynamic is hope.

Although studies have been conducted investigating the role hope plays in various forms of illness and rehabilitation, no study to date has examined the role that hope plays in stroke rehabilitation. This study assesses levels of hope in patients undergoing rehabilitation following stroke at a long-term care facility in Ottawa, and relates these

hope levels to stroke functional outcomes (using psychometrically valid and reliable measures).

Guiding Questions

This study examines the following questions in order to better determine the relationship between hope and stroke rehabilitation.

Question 1

Do patients exhibit functional improvement in a rehabilitation setting?

Question 2

Are any demographic or diagnostic variables related to functional improvement in a rehabilitation setting?

Question 3

- 3a) Is hope related to functional improvement in a rehabilitation setting?
- 3b) Is baseline functional status at admission related to the effect of hope on functional status at discharge?

Question 4

Is hope related to specific aspects of functional improvement in a rehabilitation setting?

Question 5

Are specific aspects of hope related to functional improvement in a rehabilitation setting?

Question 6

Are specific aspects of hope related to specific aspects of functional improvement in a rehabilitation setting?

Method

Subjects

A sample of 23 patients was used in this study, one subject more than suggested by a power analysis for detecting a large effect size (Cohen, 1988, see Appendix C). Subjects were recruited by the unit social worker upon admission to the Stroke Rehabilitation Program at Saint-Vincent Pavilion, Sisters of Charity of Ottawa Health Services (SCOHS). Informed consent was obtained during the initial social work interview conducted not later than one-week post-admission (see Appendix D). Inclusionary criteria included admission to the rehabilitation unit for therapy due to stroke, and the acquisition of informed consent. Exclusionary criteria included language other than English or French, receptive or expressive aphasia (the task requires the ability to verbally communicate), cognitive impairment sufficient to call into question the patients' ability to complete the required tasks (as assessed by the unit social worker), early discharge or temporary relocation to an acute care setting while in the rehabilitation program, or failure to give consent. Before discharge, the participating subjects were debriefed (see Appendix E).

Demographic information and diagnostic profiles were gathered for participating subjects. The length of time since the stroke and its' location were recorded as part of the diagnostic profile (see Appendix F).

Apparatus

The Herth Hope Scale

As described above, the Herth Hope Scale (HHS) is a 30-item scale assessing the multidimensional aspects of hope (see Appendix G). It is structured in Likert-Scale format, with four possible answers: "Never applies to me," "Seldom Applies to me," "Sometimes applies to me," and "Often applies to me." Factor analysis has identified three subscales: 1 - "Temporality and Future," 2 - "Positive Readiness and Expectancy," and 3 - "Interconnectedness" (Herth, 1991). See Appendix H for a detailed listing of the questions that comprise each subscale.

The HHS is written at a grade six level as determined by the Flesch Readability Formula (Flesch, 1974) and is presented in larger than normal print. The scale contains randomly inserted negatively-worded items designed to reduce response set tendencies toward acquiescence. The HHS has demonstrated a significant positive relationship with effectiveness of coping as measured by the Jaloweic Coping Scale ($r = .80$), as well as a negative relationship with the Beck's Hopelessness Scale ($r = -.69$, Herth, 1991). Alpha reliability coefficients range from .75 to .94, indicating good inter-item consistency, and test-retest reliability has been reported to range from .89 to .91 (Herth, 1991).

The Functional Independence Measure + The Functional Assessment Measure (FIM + FAM)

As described above, the FIM + FAM scale (see Appendix I) is a widely used measure designed for use with brain-injured and stroke patient populations (Hall et al., 1993). It is designed to assess the level of the patient's functional independence. It is a 30-item scale divided into six sub-scales based on various components of the rehabilitation process (Self-Care, Sphincter Control, Mobility, Communication, Psycho-Social Adjustment and Cognitive Function) representing both motor and cognitive functions. Each item is scored using a Likert-type scale ranging from 1 ("Total Assistance") to 7 ("Complete Independence").

Procedure

Patients were asked to participate in a study examining attitudes and stroke rehabilitation. The Herth Hope Scale (total time to administer, approximately 5 -15 minutes) was administered to competent subjects as part of the regular battery of tests during the initial Social Work interview (within one week of admission), and before discharge (again, within one week). The Herth Hope Scale was administered in English (the language in which it was originally written and for which it has been psychometrically investigated). In one case, the social worker assisted a subject for

whom English was a second language to ensure that the meaning of the questions was clear. Participating subjects' admission and discharge FIM + FAM scores, as well as basic demographic (Table 1) and diagnostic information (Tables 2 and 3) were collected from the Stroke Unit records.

Table 1: Subject Demographic Information

Characteristic		N	%
Gender	Male	15	65.2 %
	Female	8	34.8 %
Marital Status	Single	5	21.7 %
	Married/Com. Law	10	43.5 %
	Separated/Divorced	4	17.4 %
	Widowed	4	17.4 %
Admitted From:	Home	3	13.0 %
	Hospital	19	82.6 %
	Residence	1	4.3 %
Discharged To:	Home	19	82.6 %
	Residence	4	17.4 %
Previous Rehabilitation	Yes	22	95.65 %
	No	1	4.35 %
		M	SD
Age		64.59	8.78
		Range: 45.13 to 81.01 years	
Length of Stay		2.63 months	.95
		Range: 1.3 to 5.27 months	

Table 2: Subjects' Secondary Medical Diagnoses

Secondary Medical Diagnoses	N	%
Cancer	2	8.70
Diabetes	5	21.74
Heart Disease	6	26.09%
Hypertension	1	4.35%
Lung Disease	4	17.39%
Peptic Ulcer	1	4.35%
Deep Vein Thrombosis (DVT)	1	4.35%

Table 3: Cerebrovascular Accident Information

Cerebrovascular-Accident (CVA) Information		N	%
CVA Type	Right	11	47.8%
	Left	7	30.4%
	Subcortical	5	21.7%
Previous CVA	Yes	3	13.0%
	No	20	87.0%
		M	SD
Length of time since CVA		1.70 months	.89
		Range: .37 to 4.17 months	

Results

Question 1: Do patients exhibit functional improvement in a rehabilitation setting?

A t-test for paired samples between admission and discharge total FIM + FAM scores showed a significant increase in functional independence between admission and discharge ($t(21) = -9.56, p = .001$). All individual item means and subscale means from the FIM + FAM scale increased from admission to discharge, indicating improvement (see Figures 1, 2, and 3). Six of the thirty FIM + FAM items failed to demonstrate a significant increase: items nine (Bowel Management), eighteen (Verbal/Non-Verbal Expression), nineteen (Reading), twenty-two (Social Interaction), twenty-three (Emotional Status), and twenty-seven (Memory). The only FIM + FAM subscale not to show significant improvement between admission and discharge was subscale four (Communication). For individual item, subscale, and total means and standard deviations please see Appendix J.

Figure 1

FIM + FAM Item Titles (1 Through 15)

1 Feeding	6 Toileting
2 Grooming	7 Swallowing
3 Bathing	8 Bladder Management
4 Dressing (Upper Body)	9 Bowel Management
5 Dressing (Lower Body)	10 Bed/Chair/WChair (Transfer)
11 Toilet (Transfer)	
12 Tub or Shower (Transfer)	
13 Car (Transfer)	
14 Walking/WChair (Locomotion)	
15 Stairs (Locomotion)	

Figure 2

FIM + FAM Item Titles (16 Through 30)

16 Community Mobility (Locomotion)	21 Speech Intelligibility
17 Comprehension	22 Social Interaction
18 Expression	23 Emotional Status
19 Reading	24 Adjust. To Limitations
20 Writing	25 Employability
26 Problem Solving	
27 Memory	
28 Orientation	
29 Attention	
30 Safety Judgment	

Figure 3

Question 2: Are any specific demographic or diagnostic variables related to functional improvement in a rehabilitation setting?

Independent samples t-tests were performed on change in total FIM + FAM scores with specific demographic variables as independent variables ("Gender," "Marital Status," and "Side of CVA"). Only "Side of CVA" (i.e. "Right" vs "Left") produced a significant result -- subjects entering the rehabilitation program with a left CVA showed greater functional improvement as assessed by total FIM + FAM change scores ($M = 36.8$) than subjects with a right CVA ($M = 20.5$) ($t(15) = 2.72, p = .02$). "Gender" and "Marital Status" did not produce significant results (Gender: $t(20) = .28, p = .78$; Marital Status: $t(20) = 1.05, p = .31$).

Question 3a: Is hope related to functional improvement in a rehabilitation setting?

Admission hope scores ranged from 33 to 90 out of a possible 90, with a mean of 72.3 and a standard deviation of 15.3. (See Table 4 for the distribution of hope scores. See Figures 4, 5, and 6 for mean admission and discharge Hope Scores. See Appendix K for individual item means and standard deviations).

Table 4: Herth Hope Score Distribution

	Cases	Hope Change Score	Admission Hope Score	Discharge Hope Score
Hope Loss	1	-67	79	12
	2	-22	70	48
	3	-8	88	80
	3	-8	84	76
	5	-6	47	41
	6	-4	63	59
	7	-3	83	80
	8	-2	71	69
	9	-2	81	79
	10	-2	88	86
No Change	11	0	90	90
	12	0	83	83
	13	N/A	56	N/A
Hope Gain	14	+2	83	85
	15	+3	86	89
	16	+4	86	90
	17	+5	74	79
	18	+6	78	84
	19	+9	33	42
	20	+10	59	69
	21	+13	61	74
	22	+16	69	85
	23	+24	51	75

Figure 4

Herth Hope Scale Items (1 Through 15)

1 I am looking forward to the future	6 I feel scared about my future*
2 I sense the presence of loved ones	7 I keep going even when I hurt
3 I have deep inner strength	8 I have faith that gives me comfort
4 I have plans for the future	9 I believe that good is always possible
5 I have inner positive energy	10 I feel at a loss, nowhere to turn*
11 I feel time heals	
12 I have support from those close to me	
13 I feel overwhelmed and trapped*	
14 I can recall happy times	
15 I just know there is hope	

*Because of their negative wording, these items are subject to reverse scoring.

Figure 5

Herth Hope Scale Items (16 Through 30)

16 I can seek and receive help	21 I am committed to finding my way
17 I am immobilized by fears and doubts*	22 I feel all alone*
18 I know my life has meaning and purpose	23 I have coped well in the past
19 I see the positive in most situations	24 I feel loved and needed
20 I have goals for the next 3-6 months	25 I believe that each day has potential
26 I can't bring about positive change*	
27 I can see a light even in a tunnel	
28 I have hope even when plans go astray	
29 I believe my outlook affects my life	
30 I have plans for today and next week	

*Because of their negative wording, these items are subject to reverse scoring.

Figure 6

Question 3a (Continued): Is hope related to functional improvement in a rehabilitation setting?

A Pearson product-moment correlation coefficient was computed using total hope score at admission and change in total FIM + FAM scores. The result was not significant.

A regression analysis was performed with "Admission Total Hope Scores," "Age," "Length of Stay," and "Length of Time Since CVA" as predictor variables and change scores on the FIM + FAM as the outcome variable. This analysis failed to identify hope or any of the other variables as significant predictors of FIM + FAM change scores.

Question 3b: Is baseline functional status at admission related to the effect of hope on functional status at discharge?

Because baseline admission FIM + FAM scores might determine, in part, functional change scores, an analysis of covariance was conducted using discharge FIM + FAM total scores as the dependent variable, admission hope total scores as the predictor, and admission FIM + FAM total scores as the covariate. Using the initial baseline functional status as the covariate, the main effect of hope at admission was not

significantly related to discharge functional status ($E(3, 21) = 1.30, p = .47$).

Question 4: Is hope related to specific aspects of functional improvement in a rehabilitation setting?

Pearson Product-Moment Correlation Coefficients were computed on total hope scores at admission and change in FIM + FAM subscales ("Self-Care," "Sphincter Control," "Mobility," "Communication," "Psychosocial Adjustment," and "Cognitive Function"). This analysis identified a single significant correlation, that between total hope at admission and changes in the functional subscale "Sphincter Control" ($r = -.53, p = .01$). (See Table 5 for a complete list of the correlations).

Table 5: Admission Hope and Change in FIM + FAM Subscale Pearson Product-Moment Correlation Coefficients

ADMISSION HOPE	FIM + FAM SUBSCALES (CHANGE)					
	Self-care	Sphincter Control	Mobility	Communication	Psycho-Social Adjustment	Cognitive Function
Total Hope Score	.09	-.53**	.27	-.11	-.03	-.25
Subscale 1*	.04	-.57**	.30	-.03	-.03	-.22
Subscale 2	.06	-.59**	.35	-.15	.04	-.27
Subscale 3	.17	-.34	.11	-.15	-.11	-.21

*Hope Subscales: 1 = Temporality and Future, 2 = Positive Readiness and Expectancy, 3 = Interconnectedness

** Significant at $p < .01$

Question 5: Are specific aspects of hope related to functional improvement in a rehabilitation setting?

Pearson Product-Moment Correlation Coefficients were computed between the subscale scores from the Herth Hope Scale ("Temporality and Future," "Positive Readiness and Expectancy," and "Interconnectedness") and change in FIM + FAM total scores. None of the results were significant (see Table 6). Pearson Product-Moment Correlation Coefficients were also computed between the individual items from the Herth Hope Scale and change in FIM + FAM total scores (see Table 7). There were no significant correlations.

Table 6: Admission Hope, Demographic Variables, and Admission, Discharge, and Change FIM + FAM Pearson Product-Moment Correlations

ADMISSION VARIABLES	FIM + FAM (TOTAL)		
	Admission	Discharge	Change
Hope Subscale 1 *	.28	.29	.00
Hope Subscale 2	.44*	.44*	.01
Hope Subscale 3	.06	.03	.05
Total Hope Score	.29	.28	.02
Time Since CVA	-.15	-.02	.21
Age	.03	.03	-.01

* Hope Subscale 1 = Temporality and Future, Hope Subscale 2 = Positive Readiness and Expectancy, Hope Subscale 3 = Interconnectedness.

* Significant at $p = .05$.

Table 7: Correlations Between Individual Hope Items and Admission, Discharge, and Change FIM + FAM Scores

HOPE ITEMS ^a	FIM + FAM (TOTAL)		
	Admission	Discharge	Change
Q 1	.27	.29	.08
Q2	.03	-.09	-.13
Q3	.28	.40	.19
Q4	.20	.17	-.06
Q5	.49*	.54*	.05
Q6	.23	.28	.11
Q7	.16	.28	.12
Q8	-.22	-.30	-.11
Q9	.17	.01	-.24
Q10	.13	.18	.11
Q11	.28	.31	.10
Q12	-.40	-.26	.27
Q13	.50*	.74**	.44
Q14	-.13	-.16	.22
Q15	.17	-.06	-.29

^a See Appendix G for Hope Scale item details.* Significant at $p = .05$.** Significant at $p < .01$

Table 7 (Continued): Correlations Between Individual Hope Items and Admission, Discharge, and Change FIM + FAM Scores

HOPE ITEMS *	FIM + FAM (TOTAL)		
	Admission	Discharge	Change
Q16	-.06	-.13	-.09
Q17	.19	.35	.36
Q18	-.01	-.07	-.17
Q19	.37	.25	-.08
Q20	.35	.26	-.17
Q21	.41*	.31	-.26
Q22	.17	.18	-.01
Q23	.15	.09	-.01
Q24	.18	.10	-.04
Q25	.06	.15	.18
Q26	.26	.37	.14
Q 27	.17	.16	.02
Q 28	.00	.11	.22
Q 29	.16	.24	.15
Q 30	.26	.31	.14

* See Appendix G for Hope Scale item details.

* Significant at $p = .05$.** Significant at $p < .01$

Question 6: Are specific aspects of hope related to specific aspects of functional improvement in a rehabilitation setting?

Pearson Product-Moment Correlation Coefficients were computed between the subscale scores from the Herth Hope Scale ("Temporality and Future," "Positive Readiness and Expectancy," and "Interconnectedness") and subscales from the FIM + FAM ("Self-Care," "Sphincter Control," "Mobility," "Communication," "Psychosocial Adjustment," and "Cognitive Function"). The FIM + FAM subscale change score "Sphincter Control" correlated significantly and negatively with two of the subscales from the Herth Hope Scale: "Temporality and Future" ($r = -.57$, $p = .005$) and "Positive Readiness and Expectancy" ($r = -.59$, $p = .003$).

In addition, correlations between individual items from the Herth Hope Scale and FIM + FAM subscale scores were computed and found not to be statistically significant.

Auxiliary Analyses

Examination of the data indicated that, with a few exceptions, hope levels on admission to the stroke program were not related to functional change over the course of rehabilitation. There were, however, some important issues suggested by the primary data analysis relating to hope levels during the rehabilitation process and the relationship between hope and functional status *per se*. The following section addresses these auxiliary issues.

Changes in, and Determinants of, Hope Levels

To answer the question of whether overall hope levels changed over the course of rehabilitation, a t-test for paired samples was computed between total hope scores at admission ($M = 73.1$) and discharge ($M = 71.6$). The difference was not found to be statistically significant ($t(21) = .39$, $p = .70$).

To answer the question of whether specific aspects of hope changed over the course of rehabilitation, t-tests for paired samples were computed between hope subscale scores at admission ("Temporality and Future": $M = 24$; "Positive Readiness and Expectancy": $M = 24.1$; "Interconnectedness": $M = 25$) and discharge ("Temporality and Future": $M = 24$; "Positive Readiness and Expectancy": $M = 23.3$;

"Interconnectedness": $M = 24.3$). All three analyses failed to reach significance (Temporality and Future: $t(21) = .00$, $p = 1.0$; Positive Readiness and Expectancy: $t(21) = .72$, $p = .48$; Interconnectedness: $t(21) = .56$, $p = .58$).

To answer the question of whether subjects with specific demographic backgrounds differed in their levels of hope, t-tests for independent samples were conducted on admission, discharge and change total hope scores for "Gender," "Marital Status" (i.e. "Single" or "Not Single") and "Side of CVA" (i.e. "Left" or "Right"). None of these variables were significantly related to total hope levels, although upon admission there was a very strong trend for married subjects to be more hopeful ($t(21) = -2.06$, $p = .052$). (See Table 8 for means).

Table 8: Total Mean Admission, Discharge, and Change Hope Score by Demographic Variables

DEMOGRAPHIC VARIABLE	TOTAL HOPE SCORE (MEAN)		
	ADMISSION	DISCHARGE	CHANGE
Male	74.5	74.0	-.50
Female	68.3	67.4	-.88
Single	66.9	65.3	-1.6
Married	79.3	79.1	-.2
Left CVA	72.9	72.4	-.55
Right CVA	67.0	62.6	-4.43

Hope and Functional Status *Per Se*

The results indicated that hope was not correlated with functional change. It may, however, have been related to functional status *per se*. Pearson Product-Moment correlation coefficients were computed between Herth Hope Scale total scores at admission and FIM + FAM admission total scores (see Table 6) . This analysis yielded a non-significant correlation ($r = .29$, $p = .19$). However, when Pearson Product-Moment Correlation Coefficients were computed between admission scores on the three Herth Hope Scale subscales and total FIM + FAM admission scores, (see Table 6) the subscale "Positive Readiness and Expectancy" was significantly correlated with total FIM + FAM scores ($r = .44$, $p = .04$).

Further analyses revealed significant correlations between admission scores from this subscale and admission scores from the FIM + FAM subscales "Sphincter Control" ($r = .67$, $p = .001$), "Psycho-Social Adjustment" ($r = .45$, $p = .03$), and "Cognitive Function" ($r = .49$, $p = .02$). (See Table 9 for a complete listing of correlations).

Table 9: Admission Hope and Admission FIM + FAM Subscale Correlations

	ADMISSION FIM + FAM SUBSCALES					
ADMISSION HOPE SCORES	Self-Care	Sphincter Control	Mobility	Communication	Psycho-Social Adjustment	Cognitive Function
Total Hope Score	.16	.60**	.14	-.13	.39	.36
Subscale 1	.20	.64**	.15	-.21	.37	.30
Subscale 2	.28	.67**	.23	-.02	.45*	.49*
Subscale 3	-.07	.36	-.02	-.13	.27	.21

Hope Scale Items and Functional Status

It was suspected that some of the items from the Herth Hope Scale might be more predictive than others within the context of a rehabilitation setting. This led to two related questions: (a) Are questions from the Herth Hope Scale that show significant correlations with total functional status at admission and/or discharge predictive of functional improvement? and (b) Are questions with good face validity in relation to their appropriateness within the context of a rehabilitation setting more predictive of functional improvement?

A Herth Hope Scale item analysis showed that total FIM + FAM admission scores were correlated with the Herth Hope Scale items five -- "I have inner positive

energy" -- ($r = .49$, $p = .02$), thirteen -- "I feel trapped and overwhelmed" -- ($r = .50$, $p = .02$), and twenty-one -- "I am committed to finding my way" -- ($r = .41$, $p = .05$). Total FIM + FAM discharge scores were also correlated with two of these three items: item five ($r = .54$, $p = .02$) and item thirteen ($r = .74$, $p = .001$).

To determine if these three items were predictive of total functional change, they were entered along with relevant demographic variables such as "Marital Status," "Length of Stay," and "Side of CVA" as predictors into a regression analysis with FIM + FAM total change scores as the dependent variable. Only "Side of CVA" emerged as a significant predictor of functional change ($r^2(1,19) = .29$).

To explore the possibility that specific hope items might be more sensitive than others in predicting progress in a stroke rehabilitation setting, three "judges" independently rated each individual hope scale item. Judges were instructed to score each item on a Likert-type scale ranging from 1 "Irrelevant" to 5 "Highly Relevant" to potential rehabilitation outcome. Items scored either "4" or "5" by all three judges were considered a subscale labelled "Rehabilitation Hope". Subjects were then categorized as exhibiting "Gain" or "No Gain" in these "Rehabilitation Hope" scores between admission and discharge.

A t-test for independent samples was performed on FIM + FAM total change scores, with "Gain" and "No Gain" in "Rehabilitation Hope" scores as the grouping variable. The results of this analysis were not-significant ($t(19) = .89, p = .38$). The same grouping variable was used to examine change in FIM + FAM subscale scores, again with no significant results (Self-Care: $t(20) = 1.24, p = .23$; Sphincter Control: $t(20) = -.77, p = .45$; Mobility: $t(19) = .27, p = .79$; Communication: $t(20) = -.09, p = .93$; Psycho-Social Adjustment: $t(19) = 1.44, p = .17$; Cognitive Function: $t(19) = -.73, p = .47$).

Hope and Aspects of Functional Status Upon Admission

Is overall hope related to specific aspects of functional status at admission?

Pearson Product-Moment correlation coefficients were computed between Herth Hope Scale total scores at admission and FIM + FAM admission subscale scores (see Table 9) . This analysis identified a significant correlation between total hope score at admission and the admission FIM + FAM subscale "Sphincter Control" ($r = .60, p = .01$). Further analysis (Pearson Product-Moment Correlation Coefficients between admission Herth Hope subscales and admission FIM + FAM subscales) produced significant correlations between the hope subscale "Temporality and Future" and scores from the admission FIM + FAM subscale "Sphincter Control" ($r = .64, p = .001$), and between the Herth Hope subscale "Positive Readiness and

Expectancy" and the FIM + FAM subscales "Sphincter Control" ($r = .67, p = .001$), "Psycho-Social Adjustment" ($r = .45, p = .03$), and "Cognitive Function" ($r = .49, p = .02$). No significant correlations between the two sets of subscales at discharge were found (see Table 10).

Table 10: Discharge Hope and Discharge FIM + FAM Subscale Correlations

	Discharge FIM + FAM Subscale Scores					
Discharge Hope Scores	Self-Care	Sphincter Control	Mobility	Communication	Psycho-Social Adjustment	Cognitive Function
Total Hope Score	.04	.24	.07	-.13	.08	.09
Subscale 1	-.05	.25	.01	-.07	.06	.02
Subscale 2	.11	.30	.14	-.13	.10	.19
Subscale 3	.05	.14	.05	-.18	.07	.08

Discussion

The results of this study indicate that hope (as assessed by the Herth Hope Scale) does not seem to mediate the amount of functional change (as assessed by FIM + FAM) that patients achieve in a stroke rehabilitation setting. Hope may, however, be related to functional status *per se*.

Functional Improvement

Subjects in this study showed a significant increase in functional ability over the duration of their stay in the Saint-Vincent stroke rehabilitation program. All mean item, subscale, and total FIM + FAM scores increased between admission and discharge. Overall, the subscale "Mobility" showed the largest increase in scores between admission and discharge (M change = 8.35, SD = 5.96) while the subscale "Sphincter Control" showed the smallest increase (M change = 1.00, SD = 1.98).

These results are consistent with other studies in the field of stroke rehabilitation, in which functional gains are reported to be associated with stroke rehabilitation programs (e.g. Cifu & Lorish, 1994).

Demographic Variables and Functional Improvement

The only demographic variable to show a relationship with functional outcome was “Side of CVA”. Subjects entering the program with a left CVA achieved greater functional gains over the course of rehabilitation, despite the fact that there was no significant difference in function between the two groups at admission. This may be due to the finding that patients with left-brain CVA’s are more likely to retain their ability to learn from demonstration and experience than patients with right-brain CVA’s. Specifically, this is consistent with previous research using the FIM, where right-brain CVA patients showed lower functional gains than did left-brain CVA patients (Brodie et al., 1994; Alexander, 1994).

Hope at Admission

The mean admission hope score for this sample was 72.3, with a standard deviation of 15.3. This mean is slightly lower than the mean of 80 obtained in a sample of well adults (Herth, 1988), and is almost identical to the mean of 72 obtained in a sample of community-dwelling elderly. It is somewhat higher, however, than the mean of 54 obtained in another sample of bereaved elderly (Herth, 1988; Herth, 1990). Although the mean age of the sample in the present study ($M = 64.6$) was lower than in Herth's sample of community dwelling elderly ($M = 72.2$) this result nevertheless suggests that the subjects in this study had hope levels comparable with their age peers in the community.

Hope and Functional Improvement

A regression analysis failed to identify admission hope levels as a significant predictor of FIM + FAM change scores. This indicates that hope levels upon admission to this stroke rehabilitation program are not predictive of the progress that patients can be expected to achieve in their functional status. In fact, even when the patients' baseline scores concerning functional status was "removed" by covariance techniques, hope scores were still not predictive of functional status at discharge.

The only functional item that was reliably related to overall hope was the FIM + FAM subscale "Sphincter Control." This finding can be explained by the fact that "Sphincter Control" shows very little variability between admission and discharge, like hope which remained stable over the course of the study period. This may also explain the correlations discovered between "Sphincter Control" and the Herth Hope subscales "Temporality and Future" and "Positive Readiness and Expectancy."

Changes in Hope

Although there were some extreme cases, most subjects' discharge hope scores remained within 10 points of their original admission levels ($n = 17$). This 'stability' of hope over time resulted in total and subscale levels of hope that did not differ significantly in the study group between admission and discharge. Interestingly, none of the

demographic variables were able to predict admission, discharge, or change hope levels, although a very strong trend did exist for married subjects to be more hopeful at admission.

The finding that levels of hope did not change significantly over the course of rehabilitation suggests several things. First, levels of hope as assessed at admission may reflect an already established level that has been adjusted according to their admission to the hospital and the challenges posed by their illness and upcoming rehabilitation program. For instance, subjects who have been selected for admission and who have already spent a brief period of time on the stroke unit may have already changed their levels of hope in accordance to their surroundings. The hope scale, therefore, may be assessing a hope 'set' that may not change greatly over the course of the stroke program. It should be noted, however, that the mean hope level at admission in this sample was almost identical to the mean in a sample of elderly community-dwelling adults. This indicates that the subjects may not have changed their levels of hope because of the specific situation in which they found themselves.

Another possible reason for a lack of change in hope may be that while the Herth Hope Scale shows good test-retest qualities (Herth, 1991), it may not be sensitive to change. The scale may be better suited for the assessment of hope as a stable trait-like quality.

Another issue arises due to the fact that some selection bias has occurred in this study. Because of the nature of the task required by the subjects, only those patients who were willing to participate and who were cognitively able were assessed. Also, severity of stroke information was not collected during the course of the assessments. It is possible that a wider range of stroke severity may have altered the nature of the hope score distribution, both at admission and discharge.

Psychosocial Variables, Hope, and Functional Improvement

Certain psychosocial variables such as social support have been associated with positive stroke rehabilitation outcomes in previous studies, while psychosocial variables such as depression have been associated with less positive outcomes (e.g. Webb et al., 1995; Sisson, 1995). In the present study, hope was not associated with positive stroke rehabilitation outcomes. There are several possible reasons for this.

It is possible that hope as assessed by the measure used in this study does not capture the qualities of hope pertinent to the rehabilitation process. The lack of correlation between the total, subscale, and individual hope items and functional improvement suggests that hope is not related to functional change. The correlation that was found between certain individual hope subscales and items and functional status per se at admission and discharge on the other hand, suggests that this hope measure contains in part the material needed to build a more stroke or rehabilitation-specific assessment tool.

It is also possible that hope as assessed by the measure used in this study may be reflective of a more stable, trait-like quality than a malleable response to external forces. Support for this viewpoint is suggested by studies in which levels of hope have been shown to be related to relatively stable psychosocial variables such as coping styles (e.g. Herth, 1989).

If this is the case, one might not expect hope as measured here to change greatly over the course of rehabilitation. It may be that hope acts as a general 'state' without exerting a direct effect upon actual physical outcomes. In this way, it may maintain its relationship with other psychosocial variables such as social support, as suggested by the strong trend for married subjects to have higher hope at admission. Hope may retain this relationship to psychosocial variables without specifically mediating the results of rehabilitation therapy.

Extreme Scores and Inaction

The possibility exists that extremely high and extremely low hope score outliers might reflect unrealistic hopefulness or unjustifiable hopelessness, respectively, and that this might result in similar functional progress. More specifically, because both unrealistic hopefulness and unjustifiable hopelessness could theoretically lead to inaction (McGee, 1984), it was hypothesized that these individuals might achieve similarly low functional gains. An informal look at the data provides no support for this hypothesis.

The lowest hope score at admission was 33 while the highest was 90 (out of a possible 90), and the respective functional gains (as assessed by change scores on the FIM + FAM) were 40 and 25. Both subjects achieved positive functional change, therefore, that was within one standard deviation of the mean ($\bar{M} = 28.3$, $SD = 13.85$). This suggests that: (a) inaction was not related to levels of hope at admission, and (b) even if extremely low or extremely high hope *was* related to inaction, this inaction was not related to functional change.

Hope and Functional Status *Per Se*

Although hope was not significantly correlated with functional change, the finding that the admission hope subscale “Positive Readiness and Expectancy” was significantly and positively correlated with overall admission functional status, as well as with the FIM + FAM subscales “Sphincter Control,” “Psycho-Social Adjustment” and “Cognitive Function” at admission, is interesting. This seems to suggest that patients who have a retained a certain amount of functional ability may be more likely to be hopeful than those with more limited functional ability at admission. The fact that this correlation does not show up at discharge may be because of a ceiling effect of the functional measure-- the scores from the FIM + FAM at discharge are reflective of increased functional gain and are therefore more likely to be gathered at the upper ranges of function, with smaller standard deviations.

Three individual items from the hope subscale “Positive Readiness and Expectancy” were also predictive of total admission FIM + FAM scores. These items were item #5 -- “I have inner positive energy,” item #13 -- “I feel trapped and overwhelmed,” and item #21 -- “I am committed to finding my way.” Total FIM + FAM discharge scores were also correlated with two of these three items -- item #5 and item #13. It should be noted that although item #13 is negatively worded, the scoring was reversed for data entry, so that a high score indicates that the statement “never” or “seldom” applies.

These items have face validity with respect to a process that demands a certain amount of personal commitment and energy. Despite this finding, a regression analysis did not reveal any of these items (assessed at admission) as a significant predictor of functional change.

Because the Herth Hope Scale is a measure that purports to assess hope in a general, overall sense, and stroke rehabilitation is a specific, goal-directed process, it was of interest to examine certain individual items that seemed to have face validity within the context of a rehabilitation setting. Items judged to be relevant to the rehabilitation process by three independent raters were grouped together as a new subscale, and subjects were coded as exhibiting “Gain in Hope” or “No Gain in Hope” on this subscale. “Gain in Hope” and “No Gain in Hope” groups did not differ in their functional change scores (as assessed by FIM + FAM), despite the hypothesized relevance of this categorization.

Statistical Issues

Because hope as assessed by the Herth Hope Scale was not predictive of functional improvement in this study, much of the resulting analyses were exploratory in nature. As a result, the data set was subject to many statistical tests that were not explicitly planned *a priori*.

Even though relatively few of the statistical analyses resulted in significance, the fact that many comparisons were made using the same means has increased the chances of making Type 1 errors, or of rejecting the null hypothesis when the null hypothesis is true. It should be noted that alpha levels were not adjusted (i.e. using a Bonferroni test to adjust the observed significance level) while performing these analyses.

The justification for this is that the purpose was to discover suggestive leads at the expense of being relatively certain of significant findings. This aspect of the study was exploratory rather than formal hypothesis testing in nature.

Conclusions

Functional gains were achieved by the subjects in this study, although hope, as assessed by the Herth Hope Scale was not predictive of functional improvement in this stroke rehabilitation setting. A relationship *was* suggested between hope and functional status *per se*, and overall hope levels in this sample were consistent with levels of hope found in a previous sample of community-dwelling elderly (Herth, 1988)

Although it is generally recognized as the most empirically sound measure in the area of hope assessment, it may be that the Herth Hope Scale does not fully capture the areas of hope pertinent to the stroke rehabilitation process. That is, as a measure of general levels of hope, this particular assessment tool may not be suitable 'as is' for use within the context of a specific physical rehabilitation program. The correlations between hope and functional status *per se*, however, suggest that there are areas of hope as assessed by this tool that are relevant within this particular context.

Perhaps surprisingly, hope itself was unlikely to change significantly over the course of rehabilitation, suggesting that it is a somewhat stable construct, and one that may be more reflective of a certain 'coping style' than a reaction to specific external events or demands such as the rehabilitation process, or even the course of recovery itself. That is, patients may have brought their levels of hope with them, and used them as coping strategies during the course of their stay. A sample with a presumable wider range of

stroke severity and the use of a hope scale that is more 'rehabilitation-specific' may result in findings that bring the influence of hope beyond functional status *per se*, and into the area of functional change.

Future Research

The absence of significant relationships found between hope and functional gains in this study may be due to the fact that the hope questionnaire was a measure of overall 'general' hope' while the functional status measure was more specific. This was understandable at this stage of the research process because of the lack of an empirically validated "stroke-specific" or 'rehabilitation-specific" hope scale.

A relationship between hope and functional status *per se* is suggested by the results of this study. It may be, however, that a measure comprising more concrete and motivation-oriented questions directly related to the stroke rehabilitation experience is needed to find a relationship between hope and functional change. Future research should explore the specificity issues involved within the context of stroke rehabilitation.

Because the subjects in this study were selected on the basis of their ability to perform the required tasks, some selection bias restriction was present. It may be that hope levels among the sample were higher and more homogeneous than would have been the case if all potential subjects had been assessed. More research with measures designed specifically to meet the challenges of those patients with severe stroke disability should address this issue.

References

Alexander, M. P. (1994). Stroke rehabilitation outcome: A potential use of predictive variables to establish levels of care. *Stroke*, 25(1), 128-134.

Bach-Y-Rita, P., & Bach-Y-Rita, E. (1990). Hope and active patient participation in the rehabilitation environment. *Archives of Physical and medical Rehabilitation*, 71, 1084-1085.

Bach-Y-Rita, P., & Bach-Y-Rita, E. (1992). Psychosocial and environmental factors in recovery of function following brain damage: Possible neural mechanisms. *Ann Readaptation Med Phys*, 35, 315-319.

Baker, L. J. (1988). Relationship of hope, self-esteem and stress of hemodialysis in persons with end-stage renal disease. *Proceedings of the 12th Annual Midwest Nursing Research Society Meeting*, 62.

Beck, A. J., Weissman, A., Lester, D., & Trexler, L. (1974). The measurements of pessimism. *Journal of Consulting and Clinical Psychology*, 42(6), 861-865.

Becker, G., & Kaufman, S. R. (1995). Managing an uncertain illness trajectory in old age: Patients' and physicians' views of stroke. *Medical Anthropology Quarterly*, 9(2), 165-187.

Beloosesky, Y., Streifler, J. Y., Burstin, A., & Grinblat, J. (1995). The importance of brain infarct size and location in predicting outcome after stroke. *Age and Aging*, 24, 515-518.

Bloch, E. (1970). Man as possibility. In W. H. Capps (Ed.), *The future of hope*, 50-67, Philadelphia: Fortress Press.

Brockopp, D. Y., Hayko, D., Davenport, W., & Winscott, C. (1989). Personal control and the needs for hope and information among persons diagnosed with cancer. *Cancer Nursing*, 12, 112-116.

Brodie, J., Holm, M. B., & Tomlin, G. S. (1994). Cerebrovascular accident: Relationship of demographic, diagnostic, and occupational therapy antecedents to rehabilitation outcomes. *The American Journal of Occupational Therapy*, 48(10), 906-913.

Bunch, W. H., & Dvonch, V. M. (1994). The value of functional independence measure scores. American Journal of Physical Medicine and Rehabilitation, 73(1), 40-43.

Byrne, C. M., Woodside, H., Landeen, J., Kirkpatrick, H., Bernardo, A., & Pawlick, J. (1994). The importance of relationships in fostering hope. Journal of Psychosocial Nursing, 32(9), 31-34.

Carey, R. G., & Posavac, E. J. (1978). Program evaluation of a physical medicine and rehabilitation unit: A new approach. Archives of Physical medicine and rehabilitation, 59, 330-337.

Cifu, D. X., & Lorish, T. R. (1994). Stroke rehabilitation. 5. Stroke outcome. The Archives of Physical and Medical Rehabilitation, 75, S56-S68.

Cohen, J. (1988). Statistical power analysis for the behavioural sciences(Second Edition). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Colantonio, A., Stanislav, V. K., Ostfeld, A. M., & Berkman, L. F. (1993). Psychosocial predictors of stroke outcomes in an elderly population. Journal of Gerontology, 48(5), S261-S268.

Craig, H. M., & Edwards, J. E. (1983). Adaptation in chronic illness: An eclectic model for nurses. Journal of Advanced Nursing, 8, 397-404.

Dubree, M., & Vogelpohl, R. (1980). When hope dies - so might the patient. American Journal of Nursing, Nov., 2046-2049.

Dufault, K. (1981). Hope of elderly persons with cancer. Dissertation Abstracts International. (University Microfilms)

Dufault, K., & Martocchio, B. (1985). Hope: Its spheres and dimensions. Nursing Clinics of North America, 20, 379-391.

Egelko, S., Simon, D., Riley, E., Gordon, W., Ruckdeschel-Hibbard, M., & Diller, L. (1989). First year after stroke: Tracking cognitive and affective deficits. Archives of Physical and Medical Rehabilitation, 70, 297-302.

Erickson, R. C., Post, R. D., & Paige, A. B. (1975). Hope as a psychiatric variable. Journal of Clinical Psychology, 31, 324-330.

Falconer, J. A., Naughton, B. J., Dunlop, D. E., Roth, E. J., Strasser, D. C., & Sinacore, J. M. (1994). Predicting stroke inpatient rehabilitation outcome using a classification tree approach. Archives of Physical and Medical Rehabilitation, 75, 619-625.

Falconer, J. A., Naughton, B. J., Strasser, D. C., & Sinacore, J. M. (1994). Stroke inpatient rehabilitation: A comparison across age groups. Journal of the American Geriatrics Society, 42, 39-44.

Farran, C., & Popovich, J. (1990). Hope: A relevant concept for geriatric psychiatry. Archives of Psychiatric nursing, 3, 272-276.

Farran, C. J., Salloway, J. C., & Clark, D. C. (1990). Measurement of hope in a community-based older population. Western Journal of Nursing Research, 12(1), 42-59.

Farran, C. J., Wilken, C., & Popovich, J. M. (1992). Clinical assessment of hope. Issues in Mental Health Nursing, 13, 129-138.

Foote, A. W., Piazza, D., Holcombe, J., Paul, P., & Daffin, P. (1990). Hope, self-esteem and social support in persons with multiple sclerosis. Journal of neuroscience nursing, 22(3), 155-159.

Fostering hope in your residents. (1994). *Geriatric Care*, 26(10), 1.

Fowler, S. B. (1995). Hope: Implications for neuroscience nursing. *Journal of Neuroscience Nursing*, 27(5), 298-304.

Friedman, P. J. (1995). Stroke outcome in elderly people living alone. *Disability and Rehabilitation*, 17(2), 90-93.

Fromm, E. (1968). *The revolution of Hope: Toward a humanized technology*. New York, NY: Harper & Row, pp. 1-25.

Fuhrer, M. J. (1987). Overview of outcome analysis in rehabilitation. In M. J. Fuhrer (Ed.) *Rehabilitation outcomes: Analysis and measurement*. Baltimore: Paul Brooks Publishing Company

Gladman, J. R. F., Lincoln, N. B., & Adams, S. A. (1993). Use of the extended ADL Scale with stroke patients. *Age and Aging*, 22, 419-424.

Gompertz, P., Pound, P., & Ebrahim, S. (1994). Predicting stroke outcome: Guy's prognostic score in practice. *Journal of Neurological and Neurosurgical Psychiatry*, 57, 932-935.

Gottschalk, L. A. (1985). Hope and other deterrents to illness. American Journal of Psychotherapy, 39(4), 515-524.

Grainger, C. V., & Clark, G. S. (1994). Functional status and outcomes of stroke rehabilitation. Topics in Geriatric Rehabilitation, 9(3) , 72-84.

Green, S. A. (1985). Mind and Body: The Psychology of Physical Illness. Washington, DC: American Psychiatric Press, Inc.

Hall, K. M., Hamilton, B. B., Gordon, W. A., & Zasler, N. D. (1993). Characteristics and comparisons of functional assessment indices: Disability Rating Scale, Functional Independence Measure, and Functional Assessment measure. Journal of Head Trauma Rehabilitation, 8(2), 60-74.

Hamburg, D., Hamburg, B., & deGoza. (1953). Adaptive problems and mechanisms in severely burned patients. Psychiatry, 16(1), 1-20.

Herth, K. (1989). The relationship between level of hope and level of coping response with other variables in patients with cancer. Oncology Nursing Forum, 16, 67-72.

Herth, K. (1990). Relationship of hope, coping styles, concurrent losses, and setting to grief resolution in the elderly widow(er). Research in Nursing and Health, 13, 109-117.

Heinemann, A. W., Linacre, J. M., Wright, B. D., Hamilton, B. B., & Grainger, C. (1994). Prediction of rehabilitation outcomes with disability measures. Archives of Physical Medical Rehabilitation, 75, 133-143.

Herth, K. (1991). Development and refinement of an instrument to measure hope. Scholarly Inquiry for Nursing Practice: An International Journal, 5(1), 39-51.

Herth, K. (1993). Hope in the family caregiver of terminally ill people. Journal of Advanced Nursing, 18, 538-548.

Hinds, P. S. (1984). Inducing a definition of hope through the use of grounded theory methodology. Journal of Advanced Nursing, 9, 357-362.

Hinds, P. S. (1988). The relationship of nurses' caring behaviours with hopefulness and health care outcome in adolescents. Archives of Psychiatric Nursing, 2(1), 21-29.

Hirth, A. M., & Stewart, M. J. (1991). Hope and social support as coping resources for adults waiting for cardiac transplantation. Canadian Journal of Nursing Research, 26(3), 31-48.

Kalra, L. (1994). Does age affect benefits of stroke rehabilitation. Stroke, 25(2), 346-351.

Kalra, L., Dale, P., & Crome, P. (1994). Evaluation of a clinical score for prognostic stratification of elderly stroke patients. Age and Ageing, 23, 492-498.

Korner, J. N. (1970). Hope as a method of coping. Journal of Consulting and Clinical Psychiatry, 34, 134-139.

Kurtzke, J. F. (1983). Rating neurological impairment in multiple sclerosis: An expanded disability status scale. Neurology, 33, 1444-1452.

Kyriazis, M. (1994). Developments in the treatment of stroke patients. Nursing Times, 90(29), 30-32.

Lazarus, R. S. (1974). Psychological stress and coping in adaptation and illness. International Journal of Psychiatry and medicine, 5(4), 321-333.

Lazarus R. S. (1977). Cognitive and coping processes in emotion. In A. Monat & R. Lazarus (Eds.): Stress and coping: An anthology. New York, NY: Columbia University Press, 145-158.

Lazarus, R. S., & Folkman, S. (1984). Appraisal, coping, and adaptational outcomes. In R.S. Lazarus & S. Folkman (Eds.), Stress, appraisal and coping, New York, NY: Springer Publishing Company, pp. 181-225.

Long, W. B., Sacco, W. J., Coombes, S. S., Copes, W. S., Bullock, A., & Melville, J. K. (1994). Determining normative standards for functional independence measure transitions in rehabilitation. Archives of Physical Medical Rehabilitation, 75, 144-148.

Lynch, W. F. (1965). Images of hope: Imagination as healer of the hopeless. Baltimore, MD: Helicon.

Macciocchi, S. N., & Eaton, B. (1995). Decision and attribution bias in neurorehabilitation. Archives of Physical and Medical Rehabilitation, 76, 521-524.

Mahoney, F., & Barthel, D. (1965). Functional Evaluation: The Barthel Index. Maryland State Medical Journal, 14, 61-65.

Marcel, G. (1962). Sketch of a phenomenology and a metaphysic of hope. In E. Craufard (Translator) Homo viator. New York: Harper & Brothers.

Mauthe, R. W., Haaf, D. C., Hayn, P., & Krall, J. m. (1996). Predicting discharge destination of stroke patients using a mathematical model based on six items from the Functional Independence Measure. Archives of Physical and Medical Rehabilitation, 77, 10-13.

Mayers, K. S., & Gardner, J. (1992). Hope in a geriatric psychiatric state hospital population: Results of a structured interview. The American Journal of Alzheimer's Care and Related Disorders and Research, Nov/Dec, 3-8.

McGee, R. F. (1984). Hope: A factor influencing crisis resolution. Advances in Nursing Science, July, 34-44.

McGill, J. S., & Paul, P. B. (1993). Functional status and hope in elderly people with and without cancer. Oncology Nursing Forum, 20(8), 1207-1213.

Miller, J. F. (1989). Hope-inspiring strategies of the critically ill. Applied Nursing Research, 2(1), 23-29.

Miller, J. F., & Powers, M. J. (1988). Development of an instrument to measure hope. Nursing Research, 37(1), 6-10.

Mishel, M. H., Hostetter, T., King, B., & Graham, V. (1984). Predictors of psychosocial adjustment in patients newly diagnosed with gynecological cancer. Cancer Nursing, 7, 291-299.

Morse, J. M., & Doberneck, B. (1995). Delineating the concept of hope. Journal of Nursing Scholarship, 27(4), 277-285.

Norwicki, S., & Duke, M. I. (1974). A locus of control scale for non-college as well as college adults. Journal of Personality Assessment, 38(2), 136-137.

Nowotny, M. L. (1989). Assessment of hope in patients with cancer: Development of an instrument. Oncology Nursing Forum, 16(1), 57-61.

Obayuwana, A. O. (1980). Hope: a panacea unrecognized. Journal of the American Medical Association, 242, 67-69.

Obayuwana, A. O., & Carter, A. L. (1982). The anatomy of hope. Journal of the National Medical Association, 74, 229-234.

Obayuwana, A. O., Collins, J. L., Carter, A. L., Rao, M. S., Mathura, C. C., & Wilson, S. B. (1982). Hope Index Scale: An instrument for the objective assessment of hope. Journal of the National Medical Association, 74(8), 761-765.

O'Connor, A. P., Wicker, C. A., & Germino, B. B. (1990). Understanding the cancer patient's search for meaning. Cancer Nursing, 13, 167-175.

Oczkowski, W. J., & Barreca, S. (1993). The Functional Independence Measure: Its use to identify rehabilitation needs in stroke survivors. Archives of Physical and Medical Rehabilitation, 74, 1291-1294.

O'Malley, P. A., & Menke, E. (1988). Relationship of hope and stress after myocardial infarction. Heart and Lung, 17(2), 184-190.

Owen, D. (1989). Nurses' perspectives on the meaning of hope in patients with cancer: A qualitative study. Oncology Nursing Forum, 16, 75-79.

Piazza, D., Holcombe, J., Foote, A., Paul, P., Love, S., & Daffin, P. (1991). Hope, social support and self-esteem of patients with spinal cord injuries. Journal of Neuroscience Nursing, 23(4), 224-230.

Pound, P., Bury, M., Gompertz, P., & Ebrahim, S. (1994). Views of survivors of stroke on benefits of physiotherapy. Quality in Health Care, 3, 69-74.

Predicting patient outcome after a stroke. (1995). Professional Nurse, 10(4), 207.

Raleigh, E. D. (1980). An investigation of hope as manifested in the physically ill adult. Dissertation Abstracts International, 41(4), 1313B-1314B.

Rappaport, M., Hall, K. M., Hopkins, K., Belleza, T., & Cope, D. N. (1982). Disability rating scale for severe head trauma: Coma to community. Archives of Physical medicine and Rehabilitation, 63, 118-123.

Reker, G. T., & Wong, P. T. P. (1985). Personal optimism, physical and mental health. In J. E. Birren & J. Livingston (Eds.), Cognition, stress, and aging, (pp. 134-173). Englewood Cliffs, NJ: Prentice-Hall.

Rideout, E., & Montemuro, M. (1986). Hope, morale and adaptation in patients with chronic heart failure. Journal of Advanced Nursing, 11, 429-438.

Rogers, J. C., & Holm, M. B. (1994). Accepting the challenge of outcome research: Examining the effectiveness of occupational practice. The American Journal of Occupational Therapy, 48(10), 871-876.

Schachtel, E. (1959). Metamorphosis: On the development of affect, perception, attention and memory. New York, NY: Basic Books.

Schulz, C. H. (1994). Helping factors in a peer-developed support group for persons with head injury part 2: Survivor interview perspective. The American Journal of Occupational Therapy, 48(4), 305-309.

Shea, F., & Hurley, E. (1964). Hopelessness and helplessness. Perspectives in Psychiatric Care, 2(1), 32-38.

Siegel, G. S. (1986). Love, medicine, and miracles. New York: Harper & Row.

Sisson, R. A. (1995). Cognitive status as a predictor of right hemisphere stroke outcomes. Journal of Neuroscience Nursing, 27(3), 152-156.

Solomon, N. A., Glick, H. A., Russo, C. J., Lee, J., & Schulman, K. A. (1994). Patient preferences for stroke outcomes. Stroke, 25(9), 1721-1725.

Stoner, M. H. (1988). Measuring hope. In M. Stromborg (Ed.) Instruments for Assessing Health and Function, Norwalk, Ct: Appleton & Lange.

Stoner, M. H. (1991). Response to "Development and refinement of an instrument to measure hope." Scholarly Inquiry for Nursing Practice: An International Journal, 5(1), 53-56.

Stotland, E. (1969). The Psychology of Hope. San Francisco: Jossey-Bass.

Wake, M. M., & Miller, J. F. (1992). Treating hopelessness: Nursing strategies from six countries. Clinical Nursing Research, 1(4), 347-365.

Webb, C. R., Wrigley, M., Yoels, W., & Fine, P. R. (1995). Explaining quality of life for persons with traumatic brain injuries 2 years after injury. Archives of Physical and Medical Rehabilitation, 76, 1113-1119.

Weisman, A. D. (1979). Coping with Cancer, New York: McGraw-Hill.

Wellwood, I., Dennis, M. S., & Warlow, C. P. (1995). A comparison of the Barthel Index and the OPCS Disability Instrument used to measure outcome after stroke. Age and Aging, 24, 54-57.

Wilcox, V. L., Kasl, S., V., & Idler, E. L. (1996). Self-rated health and physical disability in elderly survivors of a major medical event. *Journal of Gerontology*, 51B(2), S96-S104.

Wright, B. A., & Shontz, F. C. (1968). Process and tasks in hoping. *Rehabilitation Literature*, 29(11), 322-331.

Zalewski, C., Keller, B., Bowers, C., Miske, P., & Gradman, T. (1994). Depressive symptomatology and post-stroke rehabilitation outcome. *Clinical Gerontologist*, 14(4), 62-67.

APPENDIX A

Multidimensional Models of Hope

AUTHORS	DIMENSIONS
Dufault & Martocchio (1985)	<p style="text-align: center;">Two Related Spheres:</p> <p><i>Generalized Hope</i> (positive overall viewpoint transcending time limitations)</p> <p><i>Particularized Hope</i> (a specific time-oriented outcome).</p> <p style="text-align: center;">Six Dimensions:</p> <p><i>Affective</i> (feelings of expectancy) <i>Cognitive</i> (positive perceptions of self and others) <i>Behavioural</i> (action affecting outcome in psychological, physical, social, and religious areas) <i>Affiliative</i> (mutuality of hopes) <i>Temporal</i> (the experience of time on hopes and hoping) <i>Contextual</i> (life situations influencing hope).</p>
Miller & Powers (1988)	<p style="text-align: center;">Three Dimensions</p> <p><i>Satisfaction With Self</i> <i>Avoidance of Hope Threats</i> <i>Anticipation of a Future</i></p> <p style="text-align: center;">Ten Critical Elements</p> <p><i>Mutuality-Affiliation</i> (interpersonal relationships) <i>Sense of the Possible</i> (avoiding negative attitudes of futility and despair) <i>Avoidance of Absolutizing</i> (avoiding all-or-none scenarios) <i>Anticipation</i> <i>Goal Achievement</i> <i>Psychological Well-Being and Coping</i> <i>Purpose and Meaning in Life</i> <i>Freedom</i> <i>Reality-Surveillance Optimism</i> (searching for clues indicating the feasibility of hope maintenance) <i>Mental and Physical Activation</i></p>

APPENDIX A (Continued)**Multidimensional Models of Hope**

AUTHORS	DIMENSIONS
Farran, Wilken, & Popovich (1992)	<p>Four Dimensions</p> <p><i>Health</i> (which may challenge hope) <i>Others</i> (hope as a relational process) <i>Purpose</i> (life purpose or spiritual orientation) <i>Engaging Process</i> (goal attainment)</p>
Fowler (1995)	<p>Six Dimensions</p> <p><i>Energizing Life Force</i> <i>Inner Cognitive Aspect of Being</i> <i>Expectation</i> <i>Achievement of a Desired Goal or State</i> <i>Future Orientation</i> <i>Personally Important Outcome</i></p>
Morse & Dobernek (1995)	<p>Seven Dimensions</p> <p><i>Realistic Threat Assessment</i> <i>Goal setting</i> <i>Preparing for Possible Negative Outcomes</i> <i>Realistic Assessment of Resources</i> (personal and external) <i>Solicitation of Mutually Supportive Relationships</i> <i>Searching for Goal-Reinforcing Signs</i> <i>Determination to Endure</i></p>

APPENDIX B

Hope Scales: Format and Known Psychometrics

SCALE	# ITEMS	FORMAT	INTERNAL CONSISTENCY CORRELATIONS	TEST-RETEST CORRELATIONS	CORRELATIONS W/BECK HOPELESSNESS SCALE
Hopefulness Scale ¹	20	Likert-Type	Not Available	Not Available	$r = -.74$
Stoner Hope Scale ²	30	Likert-Type	$r = .93$	Not Available	$r = -.47$
Miller Hope Scale ³	39	Likert-Type	$r = .88$ to $.93$	$r = .82$ to $.85$	$r = -.54$
Nowotny Hope Scale (Long Form) ⁴	47	Likert-Type	$r = .90$	Not Available	$r = -.47$
Nowotny Hope Scale (Short Form) ⁵	29	Likert-Type	Not Available	Not Available	Not Available
Hope Index ⁶ Scale	60	Yes/No	Not Available	Not Available	$r = -.88$
Herth Hope Scale	30	Likert-Type	$r = .78$ to $.94$	$r = .89$ to $.91$	$r = -.69$

¹ Farran et al., 1990² Stoner, 1988³ Herth, 1993⁴ Miller & Powers, 1988⁵ Nowotny, 1989⁶ Nowotny, 1989⁷ Obayuwana et al., 1982

APPENDIX C

Power Analysis

The critical analysis in this study is a Pearson product-moment correlation between overall hope level at admission (as assessed by the Herth Hope Scale) and functional change (as assessed by the FIM + FAM). This statistic is an index of the linear relationship between two variables. Because each variable is standardized to the same variability by this technique, it is an ideal measure to use when comparing measures that are based on different scales.

Setting an alpha level at 0.05 and setting power at 0.80, the sample size needed to detect a 'large' effect size ($r = 0.50$) is 22 subjects (Cohen, 1988).

APPENDIX D

**CONSENT TO PARTICIPATE IN THE STUDY:
ATTITUDES OF PATIENTS ENTERING THE
STROKE REHABILITATION UNIT**

The investigators (Nicole Diotte and Stephen Johnston) wish to insure that you understand the purpose of this study and the nature of your possible involvement. The following information will help you to decide whether you wish to participate in our investigation.

The Stroke Program, the Social Work Department and the Research Department at Saint-Vincent Hospital are conducting a study examining the relationships between attitudes and stroke rehabilitation. Participation in this study will involve completing a short questionnaire today and again just before discharge. This questionnaire is designed to measure how hopeful you are. The total time required to complete this questionnaire will not be more than fifteen to twenty minutes. If you need help completing the questionnaire, we would be glad to help.

During the course of this study, we will be obtaining information about your rehabilitation from the Stroke Department. We will also be obtaining some basic medical and demographic information from your chart.

You can ask questions at any time. All results will be kept confidential. Participation in this study will not affect any aspect of your treatment.

By signing below, you are indicating that you understand the nature of this research and that you agree to participate. Thank you for your time, and for your consideration of this worthwhile project.

APPENDIX D (CONTINUED)

PARTICIPANT'S NAME: _____

PARTICIPANT'S SIGNATURE: _____

RESEARCHER'S NAME: _____

RESEARCHER'S SIGNATURE: _____

DATE: _____

WITNESSED: _____

DATE: _____

The following people are involved in this study and may be contacted at the Saint-Vincent Hospital Research Department:

Stephen Johnston (Research Assistant, Principal Investigator, 233-4041, ext. 2159).

Nicole Diotte (Social Worker, 233-4041, ext. 2110)

Dr. Dan W. Harper (Director of Research, SVP and Faculty Advisor, Carleton University, 233-4041, ext. 2159)

If you have any other questions or concerns, please feel free to contact the Research Ethics Board of the SCOHS. The chair of this board is Dr. Pierre Soucie. He can be reached at 562-6343.

APPENDIX E

STROKE REHABILITATION ATTITUDE DEBRIEFING

As mentioned when you were recruited, the purpose of the study in which you participated was to investigate the relationship between attitudes and stroke rehabilitation.

More specifically, we were interested in whether people who entered and left the program with different levels of "hope" had different rehabilitation experiences.

The questionnaire that you filled out was designed to measure how "hopeful" you were feeling at the start and at the end of the stroke rehabilitation program.

If you wish to learn more about this study, results will be made available at your request. Stephen Johnston can be reached at 233-4041 (extension 3945). Nicole Diotte can be reached at 233-4041 (extension 2110).

We realize that some of the questions you answered during the course of your participation were of a personal nature. If you would like to talk to anybody about this, a staff psychologist is always available to meet with you.

If you have any other questions or concerns, please feel free to contact the Research Ethics Board of the SCOHS. The chair of this board is Dr. Pierre Soucie. He can be reached at 562-6343.

We would like to thank you very much for participating in this research. Your time and efforts are greatly appreciated!

APPENDIX F

**HOPE AND REHABILITATION OUTCOME STUDY - DEMOGRAPHIC
INFORMATION**

DATE (Year-Month-Day) _____ CHART NUMBER _____

DATE OF BIRTH (Year-Month-Day) _____ GENDER M ☐ F ☐

MARITAL STATUS (Check one): ☐ 1. SINGLE ☐ 2. _____
MARRIED/Common Law ☐ 3. SEPARATED ☐ 4. DIVORCED
☐ 5. WIDOWED

INITIALLY ADMITTED TO HOSPITAL (Year-Month-Day) _____

ADMITTED FROM (CHECK one): ☐ 1. HOME ☐ 2. NURSING HOME
☐ 3. HOSPITAL ☐ 4. RESIDENCE
☐ 5. OTHER (Please specify) _____

SIDE AND TYPE OF CVA: _____

LENGTH OF TIME SINCE CVA: _____

PREVIOUS
REHABILITATION? _____

OTHER
DIAGNOSES: _____

APPENDIX G

HERTH HOPE SCALE

	Never Applies To Me	Seldom Applies To Me	Some- times Applies To Me	Often Applies To Me
1. I am looking forward to the future.				
2. I sense the presence of loved ones.				
3. I have deep inner strength.				
4. I have plans for the future.				
5. I have inner positive energy.				
6. I feel scared about my future.				
7. I keep going even when I hurt.				
8. I have faith that gives me comfort.				
9. I believe that good is always possible.				
10. I feel at a loss, no where to turn.				
11. I feel time hezis.				
12. I have support from those close to me.				
13. I feel overwhelmed and trapped.				

APPENDIX G (CONTINUED)

	Never Applies To Me	Seldom Applies To Me	Some- Times Applies To Me	Often Applies To Me
14. I can recall happy times.				
15. I just know there is hope.				
16. I can seek and receive help.				
17. I am immobilized by fears and doubts.				
18. I know my life has meaning and purpose.				
19. I see the positive in most situations.				
20. I have goals for the next 3-6 months.				
21. I am committed to finding my way.				
22. I feel all alone.				
23. I have coped well in the past.				
24. I feel loved and needed.				
25. I believe that each day has potential.				
26. I can't bring about positive change.				
27. I can see a light even in a tunnel.				
28. I have hope even when plans go astray.				
29. I believe my outlook affects my life.				
30. I have plans for today and next week.				

APPENDIX H

Herth Hope Scale Subscales

Factor 1 – Temporality and Future

- I am looking forward to the future. (1)
- I have plans for the future. (4)
- I feel scared about my future. (6)
- I feel time heals. (11)
- I have hope even when plans go astray. (28)
- I have goals for the next 3-6 months. (20)
- I have coped well in the past. (23)
- I can see a light even in a tunnel. (27)
- I have plans for today and next week. (30)
- I believe that each day has potential. (25)

Factor 2 -- Positive Readiness and Expectancy

- I have inner positive energy. (5)
- I keep going even when I hurt. (7)
- I believe that good is always possible. (9)
- I feel overwhelmed and trapped. (13)
- I just know there is hope. (15)
- I am immobilized by fears and doubts. (17)
- I see the positive in most situations. (19)
- I am committed to finding my way. (21)
- I believe my outlook affects my life. (29)
- I can't bring about positive change. (26)

Factor 3 -- Interconnectedness

- I sense the presence of loved ones. (2)
- I have deep inner strength. (3)
- I have a faith that gives me comfort. (8)
- I feel at a loss, nowhere to turn. (10)
- I have support from those close to me. (12)
- I can seek and receive help. (16)
- I know my life has meaning and purpose. (18)
- I feel all alone. (22)
- I feel loved and needed. (24)
- I can recall happy times. (14)

APPENDIX I**The Functional Independence Measure + The Functional Assessment Measure
(FIM + FAM)****SELF CARE ITEMS**

1. Feeding - OT, RN	Adm _____	Goal _____	D/C _____	F/U _____
2. Grooming - OT, (RN)	Adm _____	Goal _____	D/C _____	F/U _____
3. Bathing - OT, (RN) technique _____	Adm _____	Goal _____	D/C _____	F/U _____
4. Dressing Upper Body - OT, (RN)	Adm _____	Goal _____	D/C _____	F/U _____
5. Dressing Lower Body - OT, (RN)	Adm _____	Goal _____	D/C _____	F/U _____
6. Toileting - OT, (RN)	Adm _____	Goal _____	D/C _____	F/U _____
7. Swallowing - ST, (RN)	Adm _____	Goal _____	D/C _____	F/U _____

SPHINCTER CONTROL

8. Bladder Management - RN	Adm _____	Goal _____	D/C _____	F/U _____
9. Bowel Management - RN	Adm _____	Goal _____	D/C _____	F/U _____

MOBILITY ITEMS**Transfers technique _____**

10. Bed, Chair, Wheelchair - OT (RN, PT)	Adm _____	Goal _____	D/C _____	F/U _____
11. Toilet - OT (RN)	Adm _____	Goal _____	D/C _____	F/U _____
12. Tub or Shower - OT (RN)	Adm _____	Goal _____	D/C _____	F/U _____
13. Car Transfers - OT	Adm _____	Goal _____	D/C _____	F/U _____

Locomotion

14. Walking/Wheelchair (Circle) - PT, OT (RN)	Adm _____	Goal _____	D/C _____	F/U _____
15. Stairs - PT	Adm _____	Goal _____	D/C _____	F/U _____
16. Community Mobility - OT, Rec.	Adm _____	Goal _____	D/C _____	F/U _____

COMMUNICATION ITEMS

17. Comprehension - Aud/Vis ST, Psych, (RN)	Adm _____	Goal _____	D/C _____	F/U _____
18. Expression Verbal/Non-verbal - ST (RN)	Adm _____	Goal _____	D/C _____	F/U _____
19. Reading - ST (OT, Psych)	Adm _____	Goal _____	D/C _____	F/U _____
20. Writing - ST (OT, Psych)	Adm _____	Goal _____	D/C _____	F/U _____
21. Speech intelligibility - ST (RN)	Adm _____	Goal _____	D/C _____	F/U _____

PSYCHOSOCIAL ADJUSTMENT ITEMS

22. Social Interaction - RN (Psych, SS, Rec.)	Adm _____	Goal _____	D/C _____	F/U _____
23. Emotional Status - RN (Psych, SS, RN, PT, OT, ST, Rec)	Adm _____	Goal _____	D/C _____	F/U _____
24. Adjustment to Limitations - RN (Psych, SS, PT, OT, ST, Rec)	Adm _____	Goal _____	D/C _____	F/U _____
25. Employability - OT (Psych, SS)	Adm _____	Goal _____	D/C _____	F/U _____

COGNITIVE FUNCTION

26. Problem Solving - OT, ST (Psych)	Adm _____	Goal _____	D/C _____	F/U _____
27. Memory - OT, ST (Psych)	Adm _____	Goal _____	D/C _____	F/U _____
28. Orientation - OT, ST (Psych)	Adm _____	Goal _____	D/C _____	F/U _____
29. Attention - OT, ST (Psych)	Adm _____	Goal _____	D/C _____	F/U _____
30. Safety Judgement - RN, OT (PT, ST, Psych)	Adm _____	Goal _____	D/C _____	F/U _____

APPENDIX J**FIM + FAM Item, Subscale, and Total Means and Standard Deviations**

Question # ^a	Admission		Discharge	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
1	6.35	.93	6.70*	.70
2	5.48	1.62	6.61*	.78
3	4	1.68	5.91*	1.62
4	5.17	1.70	6.43*	1.16
5	4.09	1.90	6.00*	1.83
6	4.65	1.85	5.96*	1.89
7	6.22	1.28	6.70*	.70
8	5.91	1.90	6.65*	.98
9	6.26	1.39	6.52	.90
10	4.17	1.23	6.05*	1.13
11	4.26	1.42	6.00*	1.11
12	3.05	1.76	4.91*	1.57
13	3.43	1.33	5.05*	1.73
14	4.28	1.15	5.60*	1.40
15	2.60	1.43	4.68*	1.89

^a See Appendix I for FIM + FAM items* Significant change at $p < .05$

APPENDIX J (CONTINUED)**FIM + FAM Item, Subscale, and Total Means and Standard Deviations**

Question	Admission		Discharge	
#	M	SD	M	SD
16	3.32	1.39	5.00*	1.35
17	6.39	1.37	6.74*	.86
18	6.35	1.15	6.61	.72
19	6.48	.73	6.50	.67
20	5.35	1.87	5.82*	1.47
21	6.05	1.33	6.68*	.57
22	6.35	.88	6.36	.90
23	5.35	.98	5.50	.74
24	4.87	1.14	5.32*	.99
25	2.43	.66	3.73*	1.08
26	4.52	1.20	5.14*	1.25
27	5.61	1.41	5.73	1.20
28	6.35	1.23	6.82*	.66
29	5.26	1.36	5.82*	1.18
30	4.22	.95	5.59*	.96

* See Appendix I for FIM + FAM items

* Significant change at $p < .05$

APPENDIX J (CONTINUED)**FIM + FAM Item, Subscale, and Total Means and Standard Deviations**

Question	Admission		Discharge	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Subscales and Total				
Self-Care	35.96	8.54	44.30*	7.01
Sphincter	12.17	2.76	13.17*	1.27
Mobility	24.24	7.37	37.28*	8.98
Communication	30.35	4.82	31.52	3.84
Psych-Soc Adj.	19	2.84	20.91*	3.16
Cogn. Funct.	25.96	4.82	29.09*	4.32
Total Score	147.67	21.68	175.94*	21.72

* See Appendix I for FIM + FAM items

* Significant change at $p < .05$

APPENDIX K**Hope Item, Subscale, and Total Means and Standard Deviations**

Question # ^a	Admission		Discharge	
	M	SD	M	SD
1	2.35	.98	2.45	.96
2	2.65	.57	2.45	1.06
3	2.39	.89	2.23	1.07
4	2.43	.84	2.27	1.03
5	2.39	1.08	2.05	1.21
6	1.48	1.12	1.95	1.05
7	2.70	.47	2.48	.93
8	2.52	.73	2.45	.96
9	2.61	.66	2.55	.91
10	2.17	.89	2.14	1.04
11	2.48	.59	2.27	.94
12	2.91	.29	2.59	.91
13	1.96	1.07	2.14	1.08
14	2.65	.57	2.68	.78
15	2.70	.56	2.64	.73

^a See Appendix G for Hope items

APPENDIX K (CONTINUED)**Hope Item, Subscale, and Total Means and Standard Deviations**

Question	Admission		Discharge	
#^a	M	SD	M	SD
16	2.43	.73	2.50	.96
17	2.00	.95	2.05	1.05
18	2.52	.73	2.45	.86
19	2.39	.78	2.64	.79
20	2.61	.72	2.55	.91
21	2.57	.66	2.64	.73
22	1.87	1.10	2.14	.94
23	2.57	.59	2.62	.74
24	2.48	.67	2.68	.72
25	2.57	.66	2.68	.78
26	1.91	1.00	1.64	1.22
27	2.39	.84	2.41	.85
28	2.43	.79	2.36	.95
29	2.70	.56	2.59	.80
30	2.48	.90	2.55	.91
Hope Subscales and Total	M	SD	M	SD
Subscale 1	23.78	5.74	24	7.26
Subscale 2	23.91	5.60	23.27	6.40
Subscale 3	24.61	4.78	24.32	6.78
Total Score	72.30	15.27	71.59	19.77

^a See Appendix G for Hope items and Appendix H for Subscales