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Coping with Incurable Disease: Multiple Sclerosis

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COPING WITH INCURABLE DISEASE: MULTIPLE SCLEROSIS

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An Abstract Presented to the Faculty of the Graduate
School of Lindenwood College in Partial
Fulfillment of the Requirements for the
Degree of Master of Art

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Abstract

Research was conducted to determine if there was a correlation between the ability of persons with multiple sclerosis (MS) to cope with their disease and several other variables which could be related to coping skills. More than two-thirds of the 98 subjects in the sample regularly attended MS support groups. The ability to cope was measured by a scale developed by Brooks & Matson (1982). The independent variables were: self-esteem factors, vulnerability to stress, depression, severity of disability, general health factors, length of illness and age. Data was statistically analyzed for the total sample and separately by female and male. Although several of the variables were statistically significant, the predictive changes from the regression equations were small. There was also a statistical difference between the female and male means. Results of this research indicate several factors which could be responsible for helping MS persons cope with their disease; however, no single factor or factors were clearly superior. The potential difference between females and males indicates more research could be directed in this area.

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Dedication

To my husband Conrad for his patience, support and statistical guidance.

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Chapter 1

Introduction

Multiple sclerosis (MS) is a chronic debilitating disease. It is the most common demyelinating disease of the central nervous system (CNS). It most frequently strikes young adults between the ages of twenty and forty. These are the significant, productive years when one is beginning a career, establishing intimate relationships and starting a family. Most of these persons will live more than half of their lives with the disease of MS (Slater and Yearwood, 1980).

There is no cure for MS, nor is there any consensus among physicians and the medical field in general, of how the disease begins or any definite causative factor. The most popular theory today is that a virus, which is already present in the victim's body, begins to attack the myelin sheath of the CNS. This causes a kind of short circuit in the nerve impulses controlled by the diseased portion of the CNS (Slater and Yearwood, 1980).

MS varies tremendously from person to person in its symptoms, severity, and course of the disease. For many, it involves a series of attacks. These are referred to as exacerbations or relapses, and partial or complete relief of symptoms is referred to as a remission. Others have a chronic, progressive course of illness with no remissions (Multiple Sclerosis Society, 1984).

Symptoms vary according to the area of the CNS affected by the disease. Those most commonly reported include: weakness, tingling, numbness, impaired sensation, lack of coordination, disturbances in equilibrium, cloudy or blurred vision, involuntary or rapid movement of the eyes, slurred speech, tremors, stiffness or spasticity, weakness of the limbs, impaired bladder and bowel function, impaired sexual function and in severe cases, complete paralysis of the extremities (Slater and Yearwood, 1980).

Many of these symptoms can also be signs of other illnesses and it usually requires a series of symptoms for a diagnosis of MS to be given. Previously, the most common method of diagnosis has been the spinal tap where the virus was identified in the CNS fluid. Today, an accurate diagnosis can usually be made by the Magnetic Resonance Imaging (MRI) scan, which shows where the scleroses or scars have occurred in the brain and/or the spinal cord. This test is not painful, but does require the patient to lie perfectly still for periods up to 15 minutes at a time (Shaw, 1990). During the period of time after the symptoms have first manifested themselves and a positive diagnosis of MS is made, the person wonders what is wrong with their body. Occasionally, a diagnosis of "too much stress" or even "hysterical conversion reaction" is given, and the person is sent for psychiatric or counseling intervention. It may be years later, after repeated series of symptoms, that the diagnosis of MS is made (National Multiple Sclerosis Society, 1981).

Palliative treatments have proven helpful for some victims of MS. Sometimes a steroid, such as cortisone is used to reduce inflammation in the myelin sheath, or oncology drugs such as Mefoxin, to halt the progress of the errant cells. Treatment is experimental and for every person who experiences a remission with a certain drug, there are others who receive no such relief. A remission may be achieved at one time during the course of the illness with a specific treatment, but this does not necessarily mean that the same treatment will be successful when a relapse occurs again for the same person (Brown, 1981).

Stress has been identified as something which causes MS symptoms to be worsened, but there is no evidence to indicate that stress causes MS (Warren, Greenhill and Warren, 1982). Persons who suffer from MS are cautioned to avoid stress as much as possible so as not to induce an exacerbation when they are in remission. This may prove difficult for the highly motivated MS person who wishes to live their life as fully as possible. Living one's life with an undiagnosed cause for these neurological symptoms is also stressful. Coping is what the MS person learns to do to get by. This research will explore some of the coping mechanisms used by MS persons as they live with their disease.

This research is focused on the search for a common variable among those MS persons who cope successfully and lead productive lives. Variables under consideration are: age, sex, length of illness, severity of illness, vulnerability to stress, self concept and depression. More specifically, the hypothesis tested in this research project is that there is a common variable or variables among these persons.

Chapter 2

Literature Review

Research on MS has been going on since the disease was identified. The MS Society is constantly conducting research in clinics around the world. Their focus is frequently on search for a treatment, but in some later cases, researchers have explored more effective ways to live with the disease. The focus of the present research project is on the literature dealing with the psychological aspects of Multiple Sclerosis.

Baldwin (1952) studied the psychological aspects of MS. She used the Minnesota Multiphasic Personality Inventory (MMPI), the Hunt-Minnesota Test for Organic Brain Damage, the Shipley-Hartford Retreat Scale and the Thematic Apperception Test. These tests were given to 85 persons with MS in both hospital and home settings. Each person was interviewed individually up to three times in order to finish all the tests. For the extremely handicapped, who scored poorly on the Hunt Test, Weigl-Goldstein-Scheerer Color-Form Sorting Test was given. The only significant psychological pathology identified in this study was depression, in greater or lesser degrees, and there was no identifiable pattern according to severity of illness, length of disease or gender.

Baretz and Stephenson (1981) conducted their study on the emotional responses to multiple sclerosis. They studied 40 hospitalized patients using the Beck Depression Inventory (BDI) and the Zung Self-Rating Scale. They concluded that the majority of patients evidenced concealed depression while overt depression was the second most predominant reaction. Euphoria, as described by other researchers, was not identified, but with progression of the disease, overt depression tended to increase and denial seemed to decrease. The researchers suggested that a major therapeutic goal for helping MS patients would be to help them deal with their depression.

Brooks and Matson (1982) concentrated their study on MS patients adjustment to multiple sclerosis. One hundred and three MS persons were studied over a seven year period. Questionnaires were mailed to the 103 persons from the South Central and Western Kansas Chapters of the National Multiple Sclerosis Society. A non-MS group was used to compare the self-concept scores of people in the general population. The majority of subjects showed a positive adjustment by maintaining a positive self-concept. Females were more likely than males to show this positive maintenance of self-concept. Those who said they were coping through acceptance of the disease showed improvement in self-concept. Those reporting religion or family as their major coping strategy showed decreased self-concept.

Brooks and Matson (1982) replicated their 1977 study using 174 MS persons and utilized the Matson and Brooks Adjustment Scale. The scale consists of four stages: denial, resistance, affirmation and integration. These stages were based on the Kubler-Ross model for Death and Dying (1969), and are applied to the stages of coping with a chronic illness. This adjustment scale has been used in this present research on coping with multiple sclerosis.

Dalos, Rabins, Brooks and O'Donnel (1983) studied 64 MS patients. The 28-item General Health Questionnaire (GHQ) and the Kurtzke Disability Scale (KDS) were the instruments used. Twenty-three spinal cord injured patients from the Good Samaritan Hospital in Baltimore were used as control subjects. This study was completed in 1983 and was to determine the prevalence and nature of emotional disturbance in MS patients. Results indicated that the presence of emotional disturbance was not related to age, sex, duration of disease, severity of symptoms or the degree of disability. The MS group, who were in remission, exhibited more somatic complaints, anxiety and social dysfunction than depression. The spinal cord injured controls, who were more functionally disabled than their MS counterparts, showed less emotional disturbance. This may suggest that emotional disturbance in MS is not just a reaction to sensorimotor deficits. The GHQ scores of MS patients, who were experiencing an increase in disease activity at the time of testing, were markedly abnormal.

Devins and Seland (1987) compared the research findings of others. Five studies were compared concerning the emotional impact of MS and five studies on depression in MS. Their critique finds fault with many of the measurement instruments used in these studies that produced "positive results" for depression and emotional impact. Specifically, the MMPI, GHQ and BDI, all contain questions/items which are routine symptoms of MS and are interpreted as symptoms of hysteria, depression or personality disorder. These authors do not feel that there is proof that disease activity and functional loss appear to contribute to the emotional impact of MS. They also disagree that stress precipitates the onset, or that depression is a direct symptom of the disease process of MS. They suggest further research on the psychosocial impact of chronic disabling illness in general and the ways in which people respond to chronic illness.

Duval (1984) presented a paper discussing how chronic illness is viewed culturally. A case study on one female patient with MS was used. It was felt that her obsession in buying shoes after her diagnosis of MS represents her unconsciously reassuring herself that she will stay ambulatory.

Frames (1988) discussed emotional changes MS individuals may experience and how they may alleviate some of these symptoms. It was concluded that 80% of all MS persons experience some psychological problems and learn to cope by changing some things and getting on with their lives. Of those who have more difficulty, 40% suffer from depression and required some counseling.

Halligan and Reznikoff (1985) studied 60 MS outpatients to assess body image, depression and locus of control in relation to age, duration of disease and degree of disability. Their battery of tests included the Kurtzke Disability Scale to determine the degree of disability, the Rotter Internal-External Scale, The Holtlzmann Inkblots, cards using the Fisher and Cleveland criteria for barrier and penetration responses, and a 26-item multiple-choice version of the Psychiatric Epidemiology Research Interview Demoralization Scale which measures reactive depression characteristics of patients adjusting to physical illness. Their results indicated that internal locus of control was negatively related to depression but was uncorrelated with disease duration or disability. Body image anxieties, on the other hand, were higher in the early stages of the disease when impairment was least severe but were unrelated to depression.

Herndon and Rudick (1981) discussed problems of fatigue for the MS person. Since fatigue cannot be measured like paralysis, tremors or incoordination, it is too often regarded as laziness. Muscular fatigue from overdoing, fatigue from depression or nerve fiber fatigue are all present in the disease of MS. Herndon and Rudick suggest that MS persons need to learn to pace themselves, recognize their signs of fatigue, and rest whenever necessary. These writers confirm that 90% of all MS persons suffer symptoms of fatigue.

McIvor, Riklan and Reznikoff (1984) suggested that depression in multiple sclerosis had to do with length and severity of disease, age, number of remissions and perceived social support for the patient. The older, more disabled, and those with little support from families or friends, were found to be the most depressed. The research was carried out on 120 non-hospitalized patients with the spinal cord form of MS specifically selected to avoid the possibility of brain lesion involvement. No separate control group was used. The researchers felt that the higher and lower ranked groups of patients on the variables examined served as controls for each other.

Power (1985) looking for key variables to indicate why some families assist a disabled person to reach appropriate rehabilitation goals, while others do not, studied 49 families with a MS member. It was determined that early intervention by helping providers, with coping mechanisms as denial, the appropriate use of information outward-directed activities, and positive expectations for the patient improved the family's ability to deal constructively with the illness. This in turn, facilitated the patient's adjustment and willingness to seek rehabilitation goals. Other contributing variables were identified as the behavior of the patient, the availability of financial resources, previous experiences with family stress, individual resources available to cope with a difficult situation, the strength of the family's religious convictions, and the nature of the marital relationship prior to the onset of multiple sclerosis.

Slater (1980) give a full description of the disease of MS as to signs and symptoms, etiology, epidemiology, clinical course of disease, prognosis, diagnostic procedures and treatment. They suggest that a positive, affirmative mental attitude can have a beneficial influence on the biological response to stress. Slater challenged the nursing profession and other professionals involved in the treatment of MS persons to create an atmosphere in which this strong belief in and expectation of a positive attitude can occur.

Warren, Greenhill and Warren (1982) studied 100 MS patients and compared them to hospital controls for life stress prior to onset of illness. While neither group differed on the happiness of their childhood environment, their pre-onset reaction to life's problems, or their tendency to seek professional help with an emotional problem, they found that significantly more MS patients than the controls reported that they were under unusual stress in the two year period prior to the onset. The MS patients also described a greater number of stressful life situations or single events than the controls. This research was completed in Edmonton, Canada and the conclusion was that stress is a contributing factor in the onset of MS.

Welch (1987) described his research in South Africa where he used a social work intervention program aimed at stress reduction and increased self-acceptance for members of a MS self-help group. He used a pre-test, post-test method. His group was small with only five female and two male individuals tested. The group met weekly. Intervention included daily monitoring of stress levels, relaxation training, cognitive restructuring, modelling and covert rehearsal during the group process. Test results revealed two clients showed no difference, two showed a difference, but not statistically significant using a t-test. Three showed significant reduction in stress scores on the post-test. All clients reported satisfaction with the five-week process regardless of their test scores.

Whitlock and Sisking (1980) studied 30 MS patients and 30 patients suffering from other chronic neurological diseases, using the Beck Depression Inventory. They report that patients with MS had experienced more episodes of severe depression both before and after the onset of neurological symptoms and conclude that a serious affective disorder may be a presenting or complicating feature of the disease of multiple sclerosis.

Zeldow and Pavlou (1984) studied 81 outpatients with diagnosed multiple sclerosis in an effort to examine the relative contributions of physical health status, life stress, duration of illness, age, sex, marital status, and social class on various aspects of personal and interpersonal functioning. Tests given to participants included the Social Readjustment Rating Scale, Physical Dimension Score, The Sickness Impact Profile, The Interpersonal Dependency Inventory, The California Psychological Inventory, and social class scores from Duncan's Index of Occupation Prestige. Step wise multiple regression analyses were performed to identify the most significant discriminators of the seven psychosocial measures. Physical health status exerted the broadest influence, affecting personal efficiency and well-being, capacity for independent thought and action, self-confidence, self-reliance and the number of meaningful social contacts. Life stress was associated with lowered personal efficiency and sense of well-being. Durations of illness and the demographic variables had few or no effects on psychosocial adjustment. These findings contrast with those of Matson & Brooks (1977), who found a majority of subjects showed a positive adjustment to MS by maintaining a positive self-concept. Baldwin (1952) and Baretz and Stephenson (1981) identified depression in MS persons but neither study was able to determine a pattern in relation to severity of illness, length of disease or gender. Devins and Seland (1987) disputed that depression was a symptom of MS and found fault with the measurement instruments. Halligan and Resznikoff (1985) found body image anxiety to be related to early stages of the disease. Herndon and Rudick (1981) found fatigue present in 90% of all MS persons studied. McIvor, Riklan and Reznikoff (1984) found depression more prominent in MS. Power (1985) also found support of family as one factor that had a positive influence on the MS person's ability to cope with the disease.

Chapter 3

Methods

Subjects

Study subjects were 98 individuals with a confirmed diagnosis of multiple sclerosis. Most of the subjects were associated with the Gateway Chapter of the National Multiple Sclerosis Society, St. Louis, MO. A request for research subjects was published in the chapter newsletter. Thirty subjects responded to this request. Sixty-eight subjects were obtained either from support group meetings where the researcher attended the meetings and handed out questionnaire packets or were contacted by phone and packets were mailed to the willing subjects. A total of 98 subjects participated in this study.

Ages of the subjects ranged from 24 to 78 years old with a mean age of 47.84 years. Fifty-nine of the subjects were able to ambulate independently while 39 required some kind of aid even if just a cane. The length of illness, counted from the time the subject received the diagnosis of multiple sclerosis, varied from less than 1 year to 42 years. Twenty-one subjects had the disease more than 20 years. Nineteen had the disease from 10 to 20 years, 24 subjects had the disease from 5 to 10 years, 34 had the disease less than 5 years and of this latter group, 15 had been diagnosed within the past year.

Sixty-eight of the subjects reported that they regularly attended a support group, and considering most of the subjects were recruited from support groups, one might expect this number to be higher.

Instruments

Each of the packets sent out to the research subjects contained a demographic questionnaire compiled by the researcher which asked such questions as age, gender, length of illness since diagnosis and if the subject attended their support group regularly.

A brief explanation of the research was included and each subject was asked to sign a consent form prior to completing the rest of the questionnaires. A sample packet is provided in APPENDIX A.

Included in the packet is a Vulnerability to Stress Test (VST), which was developed by Miller and Smith (1983). The scale consists of 20 questions relating to stressors or coping with stress and is scored on a 5-point Likert scale. The total points are added up and a score greater than 50 is considered "vulnerable to stress". The primary validity study presented is the comparison of scores for students just prior to final exams and six weeks later. All scales show significant t-test differences in the expected direction, but the changes are small. The scale would appear to be of value in a clinical setting to obtain information on stressors and reactions to stressors along with other interview information.

Some researchers have stated that stress is a factor in the exacerbation, if not the actual cause, of MS. Therefore, a test on stressors was include in this research. This test in particular was chosen for its ease in administration and scoring.

The Kurtzke Disability Scale (KDS) was developed by Kurtzke (1955) specifically to evaluate the stage of disability in MS patients. The scale consists of 10 progressive steps or classes. It was developed while studying changes in 300 hospitalized patients and proved satisfactory for this purpose. It has been widely used since its inception in MS research and by neurologists in clinical settings.

The Rosenberg Self-Esteem Scale (RSE), Rosenberg (1965), measures the self-acceptance components of self-esteem and basic feeling of self-worth. Although the scale was originally designed and tested for use in high school students, it has been used in a variety of samples since 1965. The original test was a 10-item Guttman scale. Many researchers have used it as a 10-item Likert scale (Hensley and Roberts, 1977; Dobson et al, 1979). This present research scores the 10 items on a 5-step Likert framework.

The Beck Depression Inventory (BDI) (Beck et al 1970) is a 21 item test presented in multiple choice format designed to measure the presence and degree of depression in adolescents and adults. Each choice is given a weight of zero to three points. Since it is self-administered, it assumes the subject is motivated to accurately reflect their emotional status. The results of reliability and validity studies support the BDI as a useful measure for assessing depression. The test-retest reliability was over .90. BDI survey questions demonstrated a high positive correlation among themselves and the total score. Against the Minnesota Multiphasic Personality Inventory's Depression Scale, there was a correlation of .75. The Beck Depression Inventory has become the inventory of choice for researchers in selecting depressed subjects from a large population.

A 28-item scaled version of the General Health Questionnaire (GHQ) used in this study was developed by Goldberg and Hillier (1979). It is a self-administered instrument, designed to detect changes in emotional states of individuals. The questionnaire provides additional information in that it is divided into four sub-scales. These sub-scales are: A, Somatic symptoms; B, Anxiety and insomnia; C, Social dysfunction; and D, Severe depression. The four sub-scales provide the investigator with different but inter-related symptoms. In the Goldberg and Hillier studies the following correlations were found between the four sub-scales and the total score: Sub-scale A, r=+0.79; B, +0.90; C, +0.75; and D, +0.69. Scoring is on a Likert scale from 0 to 3. Rabins and Brooks (1981) found the GHQ ideal for measuring changes in the emotional state of MS patients because it had a sub-scale which measured somatic disturbance.

Matson and Brooks (1977) developed an adjustment scale as they studied the social and psychological adjustment of MS patients. Twenty statements, five from each of the four stages of adjustment, are presented to the subject to either affirm or deny as representing their concept of self. Stage one is denial, stage two is resistance, stage three is affirmation and stage four is integration. These stages are based on the Kubler-Ross (1969) stages of Death and Dying and the assumption is made that one would go through a similar process in adjusting to a chronic illness. In developing the scale, the authors compared their scale with one by Suchman (1965). As patients adapt from illness to recovery, Suchman describes his scale as: 1. Assuming the sick role, 2. Medical care contact, 3. Dependent patient role, and 4. Recovery and rehabilitation. The adjustment scale developed by Matson and Brooks suggests that adjusting to chronic illness would require an alteration in self-concept when the physical self is altered. As one regains a positive concept of self, one works through the stages of adjustment toward integration. For the MS person, this adaptation may re-occur with each exacerbation of the illness. In developing the test, the authors determined that the majority of patients with MS manifest a positive self-concept and did not differ significantly from a small non-MS control group in the face of physical adversity. It must be noted that the test itself does not ask the question of whether the MS person was in remission or experiencing a new exacerbation.

The Matson & Brooks scale was used as a basis for determining the adjustment status of the 98 MS persons in the research of this author.

Procedures

A total of 170 packets were prepared by the researcher. Each packet contained a letter of introduction, a consent-to-serve as a research subject form, a demographic questionnaire, a Vulnerability to Stress Test, the Rosenberg Self Esteem Scale, the Beck Depression Inventory, the 28-item General Health Questionnaire and the Matson & Brooks Adjustment Scale. The Kurtzke Disability Scale was not part of the packet. The level of disability was determined by the researcher from answers given in the demographic data.

Packets were handed out to willing subjects found in MS support groups when visited personally by the researcher in the St. Louis area. Other support groups were contacted by phone and packets mailed to group leaders to hand out. Written instructions and purpose was included.

The subjects completed each of the instruments and mailed the packets back to the researcher in self-addressed, pre-stamped envelopes. One subject was blind and had her spouse record her answers. Five of the subjects called the researcher for additional instructions before completing the questionnaire packet.

Of the 101 packets returned, only 98 were complete and therefore usable to the study. Numbers were assigned to each participant to maintain anonymity.

Chapter 4

Results

The instruments were manually scored and all data then transferred to a computer file for analysis. Data analysis included simple, non-linear, and multiple regression using the total sample. A comparison was also made between the responses of male and female subjects. Raw data scores from male and female subjects are displayed in APPENDICES B and C respectively.

Total sample

The measure of adjustment to multiple sclerosis (MS), the dependent variable, was determined by the answers given to 20 statements on a questionnaire developed by Matson & Brooks (1977).

Several independent variables, which could be related to positive adjustments to MS, were analyzed. Table 1, of the next page, displays these variables and their linear relationship to the dependent variable. Displayed on the table are the correlation coefficients, r, the coefficients of determination, r squared, and the slope of the linear regression lines, b. Against the hypothesis that the correlation was 0.00, the relationships indicated with an "*" were statistically significant at an alpha level of 0.05.

Table 1

Total Sample: Linear Relationship Parameters

Variable	r	r sq	b
Social dysfunction	-0.32*	10.3%	-0.04
Beck depression	-0.31*	9.5%	-0.01
Anxiety	-0.29*	8.6%	-0.03
Negative self-esteem	-0.27*	7.0%	-0.02
Depression	-0.24*	5.8%	-0.02
Positive self-esteem	0.20*	4.2%	0.02
Length of illness	0.20	3.9%	0.01
Vulnerability to stress	-0.18	3.2%	-0.01
Age	0.11	1.2%	0.00
Somatic	-0.09	0.8%	-0.01
Severity of disability	0.08	0.6%	0.02

Notes.

r = correction coefficient

r sq = coefficient of determination

b = slope of linear regression line

* = Significant at an alpha level of 0.05.

The coefficient of determination, r squared, is the ratio of the variation of the dependent variable explained by the independent variable to the total variation of the dependent variable; e.g., 10.3% of the total variation of Adjustment can be explained by the independent variable Social dysfunction. The slope of the regression line measures a predictive change in the dependent variable for a corresponding change in the independent variable.

As expected, the variables which would be counter to positive adjustment to the disease of MS have an inverse linear relationship, as shown by a negative correlation. A positive correlation (direct relationship) is expected for positive self-esteem, because a higher score on this scale indicates better coping skills. The possible neutral factors, i.e., length of illness, age and severity of disability, were not statistically different from the hypothesis of zero correlation.

Although a statistically significant relationship existed for several independent variables, the predictive relationship is weak. Because the slope is so shallow, i.e., close to 0.0, a change in the independent variable has little predictive change on the dependent variable. E.g., if the Anxiety score improved by 10 points (this is a decreased anxiety score of -10), the estimated change in Adjustment would only be 0.3.

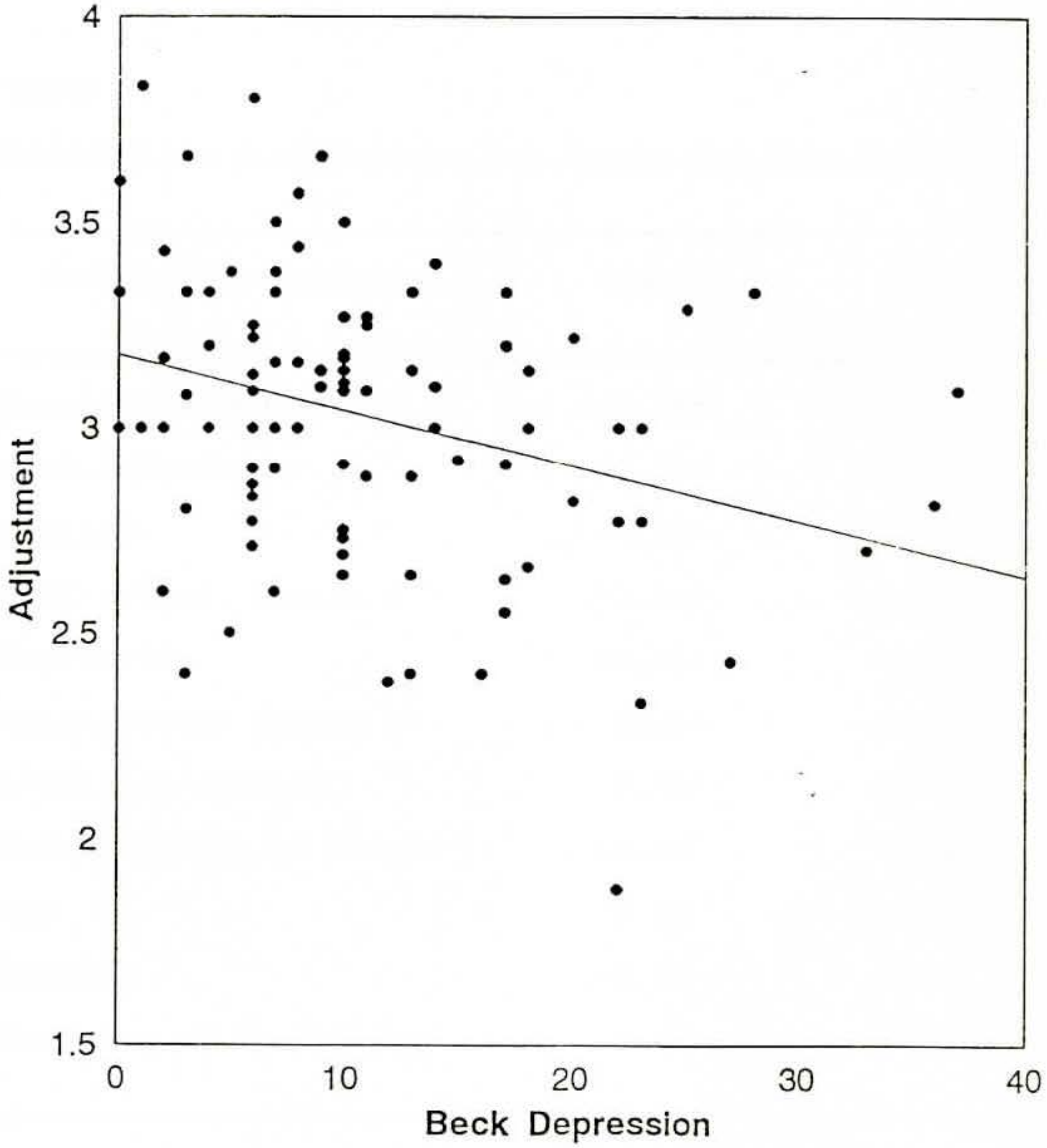
To check the assumption that linear regressions were appropriate, scatter diagrams of the dependent and independent variables were examined. The scatter diagram of Adjustment vis-a-vis Beck depression, displayed on the next page, was a typical result. The regression line is also shown on the graph. The scatter points appear random around this line and do not indicate a non-linear relationship.

Multiple linear regression analysis was also examined. The best two independent variable fit was Adjustment as a function of Social dysfunction and Anxiety. The r, r sq, b(1) and b(2) values were -0.37, 13.5%, -0.03 and -0.02 respectively. The multiple correlation was statistically different from 0.0 at the 0.05 alpha confidence level and the explained variation was 13.5% (against the best single variable r sq of 10.3%). However, the slopes of the regression equation were so shallow that the predictive changes resulting from changes in the independent variables would be small.

Figure 1

Sample Scatter Graph

As described page 26 showing Adjustment vis-a-vis Beck Depression from raw data scores displayed in APPENDICES B and C.



Correlations: Female and Male Samples

The results of separate linear regression analysis for the female and male sample data is displayed on Table 2 below. Those r values followed with and "*" have a correlation statistically different from 0.0 at the alpha 0.05 confidence level.

Table 2

Correlation Coefficients for Female and Male Samples

Independent Variable	Female	Male
Social dysfunction	-0.31*	-0.37
Beck depression	-0.36*	-0.09
Anxiety	-0.31*	-0.23
Self-esteem, factor 1	-0.30*	-0.06
Depression	-0.29*	-0.00
Self-esteem, factor 2	0.25*	-0.06
Length of illness	0.23*	-0.07
Vulnerability to stress	-0.20	0.06
Age	0.12	-0.07
Somatic	-0.08	-0.17
Severity of disability	0.06	0.35

Note. An "*" denotes r significant at alpha = 0.5.

The sample size for female/male was 84/14 persons. The independent variables for the female sample whose r values were statistically different from 0.0, at the alpha 0.05 level, closely match that for the total sample. Since the female portion of the total sample was 86%, this could be anticipated. The regression slopes for both samples were small with values ranged from -0.04 to 0.02. Because of this weak relationship and the small sample size, none of the male variables were statistically significant.

Female versus male sample means

The Table 3, on the next page, displays the mean values for the variables for both sexes. Utilizing the t test at an alpha level of 0.05, an "*" denotes where there is a statistical difference between the means.

Table 3

Female and Male Sample Means

Adjustment	3.05	2.94	0.10	
Social dysfunction	8.35	9.21	-0.87	
Beck depression	10.49	13.14	-2.65	*
Anxiety	5.65	5.71	-0.06	
Negative Self-esteem	9.23	10.71	-1.49	*
Depression	2.60	5.50	-2.90	*
Positive Self-esteem	19.29	17.93	1.36	*
Length of illness	11.10	9.86	1.24	
Vulnerability to stress	44.05	45.93	-1.88	*
Age	48.37	44.64	3.73	*
Somatic	6.64	6.00	0.64	
Severity of disability	3.83	4.79	-0.95	*

Note. An "*" denotes a mean difference statistically different at the alpha level of 0.05.

Chapter 5

Discussion

This research sought to find a common variable among MS persons who are successfully coping with their disease and are able to lead productive lives. Six of the variables considered (Social dysfunction, Beck depression, anxiety, negative and positive self-esteem statements, and depression) had a correlation to the adjustment score that was statistically different than the hypothesis of zero correlation (0.05 alpha level).

The five remaining variables examined (length of illness, vulnerability to stress, age, somatic symptoms, and severity of disability) were not statistically different from a zero correlation. It is interesting that the three variables which individuals have little control, i.e., length of illness, age, and severity of disability, were included in this latter group. This corresponds with the finding of Baldwin (1952) and Dalos et al (1983).

The coefficient of determination, r squared, is the ratio of variation explained by the regression equation to the total variation of the dependent variable, which in this study is the measure of adjustment to the disease of multiple sclerosis. For the independent variables found to be statistically different from zero, the coefficient of determination ranged from a high of only 10.3% explained to a low of 4.2%.

To check the possibility that the relationships maybe non-linear, scatter diagrams were constructed. The scatter graph displayed on page 27 is typical of that observed and indicates that a linear relationship is a reasonable assumption.

Multiple regression was also investigated. The highest correlation of two independent variables, social dysfunction and anxiety, only explained 13.5% of the relationship. This contrasts with Warren, Greenhill, and Warren (1982) who found stress and anxiety to be contributing factors in MS. The addition of more variables resulted in little improvement.

The usefulness of a regression equation is in its predictive value. However, for those variables found to have a statistical relationship different than zero, the regression slopes were very shallow. The slope of the independent variable with the highest correction, social dysfunction, was only -0.04. In other words, a one unit change in this variable only results in a predictive change in the ability to cope of four hundredth of a unit.

Limitations:

The sample size of 98 would seem to be sufficient, but since most were recruited from support groups, it could be possible that these persons were more outgoing and well-adjusted, therefore skewing the results toward higher adjustment scores. The ratio of male to female bears out the national trend of more females being diagnosed with the disease of multiple sclerosis.

This was not a random sample since all subjects chose to volunteer and consent to the study. All tests were self-administered and the reliability of the person to be completely truthful, had to be assumed. One might wonder how the persons who chose not to return the packets or those who chose not to accept a packet would have answered the questions. Would these have been less well-adjusted individuals who chose not to disclose their discomfort? No follow up was made to the support groups not returning all the packets.

It was interesting to find differences between the male and female subjects. Minimal research has been done on this aspect, therefore, further research is this area might be in order.

Since psychosocial factors are extremely difficult to describe numerically and human beings are individually such complex entities, the results of this study are not a complete surprise. Studies of our species and its ability to cope with its fate and surroundings could go on forever.

APPENDIX A

Dear MS person,

Please read the material in the enclosed packet. If you agree to participate as a research subject, please sign the consent form and proceed to answer all the questions on the tests/questionnaires enclosed in the order in which they are presented.

After you have completed all the tests/questionnaires, please return them promptly to the researcher in the enclosed self-addressed, stamped envelope.

Prompt reply is necessary so that your data/answers can be included in the research. This is a monumental project and the time allotted is short.

If you wish a response regarding the final outcome of the research, please supply the researcher with a self-addressed, stamped envelope. A general report will be given to the MS support group from which your name was submitted.

If you have difficulty with any of the questions, or do not understand what is expected, you may contact the researcher by telephone, (314) 278-6274, or write to Frieda R. Faber, 9 Tori Ann Drive, St. Peters, MO 63376-1226.

Thank you very much for your cooperation and help in this research project.

Sincerely,

Frieda R. Faber

Frieda R. Faber
MA Candidate in Professional Psychology
Lindenwood College
St. Charles, Missouri

CONSENT TO SERVE AS A SUBJECT IN RESEARCH

I formally consent to serve as a subject in the research investigation as described below:

1. The purpose of this research is to identify persons with the disease of Multiple Sclerosis who may have difficulty coping with their disease.

2. The procedures to be followed in the investigation are to complete a series of questionnaires, including demographic information, during the Summer trimester (1991).

3. The expected benefits are to help professionals in the field to be more aware of problems encountered by persons with Multiple Sclerosis and therefore be better prepared to be helpful in assisting with coping skills.

4. The expected risks are none; and every effort is being made to protect the identity of subjects through the use of a number code.

If at any time during the research project I have questions or concerns about any procedure, I understand that I may contact the project researcher. (314) 278-6274

I understand, too, that my anonymity is being protected through the use of a number code.

Signed________________________

Date ______________

Thank you! Your cooperation is greatly appreciated.

Frieda R. Faber
MA Candidate in Professional Psychology
Lindenwood College
St. Charles, Missouri

Patrick J. Openlander, Ph.D.
Thesis Supervisor

Personal Data Profile

Please fill in blanks or circle your choice where multiple answers are available.

1. Age: _____

2. Sex: M F

3. Marital status: Married Single Divorced Separated Widowed

4. Month and year when you were first diagnosed with MS?

____

5. Month and year when you first experienced symptoms of MS?

____

6. Diagnosis given for your early symptoms prior to the diagnosis of MS?

____

7. Do you attend MS support groups monthly? yes no

8. Does a significant person attend these meetings with you?

yes no

9. Do you feel that persons in your household accept your illness/disability?

yes no

10. How many persons are in your household? _____

11. Of these, how many are under age 18? ________

12. Does any member of your family also have MS? yes no

13. If yes, please state relationship: ____________________

14. Are you presently participating in any kind of counseling or therapy?

yes no

15. Were you in this therapy prior to your diagnosis of MS?

yes no

Personal Data Profile - page 2

16. What is the highest grade you finished in school?_____

17. Did you graduate from college? yes no

18. If yes, what is the degree you obtained?__________

____

19. Are you employed? yes no

20. If yes, do you work: full time part time

21. What is your occupation?__________________________

22. Are you self-supporting? yes no

23. Do you receive public funds? yes no

24. Would you describe your lifestyle as stressful?

yes no

25. Is religion a major force in your life? yes no

26. If yes, circle affiliation most usually claimed:

Catholic Protestant Jewish Muslim Other

Vulnerability to Stress Test

Score each item according to how much of the time each statement applies to you using the following scale:

1 = almost always
2 = often
3 = sometimes
4 = seldom
5 = never

______ 1. I eat at least one hot, balanced meal a day.

______ 2. I get seven to eight hours of sleep at least four nights a week.

______ 3. I give and receive affection regularly.

______ 4. I have at least one relative within 50 miles on whom I can rely.

______ 5. I exercise to the point of perspiration at least twice a week

______ 6. I smoke less than half a pack of cigarettes a day.

______ 7. I take fewer than five alcoholic drinks a week.

______ 8. I am the appropriate weight for my height.

______ 9. I have an income adequate to meet basic expenses.

______10. I get strength from my religious beliefs.

______11. I regularly attend club or social activities.

______12. I have a network of friends and acquaintances.

______13. I have one or more friends to confide in about personal matters.

______14. I am in good health (including eyesight, hearing and teeth).

______15. I am able to speak openly about my feelings when angry or worried.

______16. I have regular conversations with the people I live with about domestic problems, e.g., chores, money and daily living issues.

Vulnerability to stress test page 2

_____17. I do something for fun at least once a week.

_____18. I am able to organize my time effectively.

_____19. I drink fewer than three cups of coffee (or tea or cola drinks) a day.

_____20. I take quiet time for myself during the day.

Please answer ALL the questions by simply checking the answer which you think most nearly applies to you.

A1. Been feeling perfectly well and in good health?
___ Better than usual
___ Same as usual
___ Worse than usual
___ Much worse than usual.

A2. Been feeling in need of some medicine to pick you up?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

A3. Been feeling run down and out of sorts?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

A4. Felt that you are ill?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

A5. Been getting any pains in your head?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

A6. Been getting a feeling of tightness or pressure in your head?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

A7. Been having hot or cold spells?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

B8. Lost much sleep over worry?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

General Health Questionnaire - page 2

B9. Had difficulty staying asleep?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

B10. Felt constantly under strain?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual

B11. Been getting edgy and bad tempered?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

B12. Been getting scared or panicky for no good reason?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

B13. Found everything getting on top of you?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

B14. Been feeling nervous and uptight all the time?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

C15. Been managing to keep yourself busy and occupied?
___ More so than usual
___ Same as usual
___ Rather less than usual
___ Much less than usual.

C16. Been taking longer with the things you do?
___ Quicker than usual
___ Same as usual
___ Longer than usual
___ Much longer than usual.

C17. Felt on the whole you were doing things well?
___ Better than usual
___ About the same
___ Less well than usual
___ Much less well.

C18. Been satisfied with the way you've carried out your tasks?
___ More satisfied
___ About the same as usual
___ Less satisfied than usual
___ Much less satisfied.

C19. Felt that you are playing a useful part in things?
___ More so than usual
___ Same as usual
___ Less useful than usual
___ Much less useful.

C20. Felt capable of making decisions about things?
___ More so than usual
___ Same as usual
___ Less so than usual
___ Much less capable.

C21. Been able to enjoy your normal day-to-day activities?
___ More so than usual
___ Same as usual
___ Less so than usual
___ Much less than usual.

D22. Been thinking of yourself as a worthless person?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

D23. Felt that life is entirely hopeless?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

D24. Felt that life is not worth living?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual

General Health Questionnaire - page 4

D25. Thought of the possibility that you might do away with yourself?
___ Definitely not
___ I don't think so
___ Hass crossed my mind
___ Definitely have.

D26. Found at times you couldn't do anything because your nerves were too bad?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

D27. Found yourself wishing you were dead and away from it all?
___ Not at all
___ No more than usual
___ Rather more than usual
___ Much more than usual.

D28. Found that the idea of taking your own life kept coming into your mind?
___ Definitely not
___ I don't think so
___ Has crossed my mind
___ Definitely has come to mind.

Rosenberg Self-esteem Scale

Answer each statement by placing a number on the blank which most closely describes how you feel. Use the following numbering scale:

1 = almost always
2 = often
3 = sometimes
4 = seldom
5 = never

_____ 1. I feel that I am a person of worth, at least on an equal basis with other.

_____ 2. I feel that I have a number of good qualities.

_____ 3. All in all, I am inclined to feel that I am a failure.

_____ 4. I am able to do things as well as most other people.

_____ 5. I feel I do not have much to be proud of.

_____ 6. I take a positive attitude toward myself.

_____ 7. On the whole, I am satisfied with muself.

_____ 8. I wish I could have more respect for myself.

_____ 9. I certainly feel useless at times.

_____ 10. At times I think I am no good at all.

Beck Inventory

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

1. 0 I do not feel sad.
   1 I feel sad.
   2 I am sad all the time and I cannot snap out of it.
   3 I am so sad or unhappy that I can't stand it.

2. 0 I am not particularly discouraged about the future.
   1 I feel discouraged about the future.
   2 I feel I have nothing to look forward to.
   3 I feel that the future is hopeless and that things cannot improve.

3. 0 I do not feel like a failure.
   1 I fell I have failed more than the average person.
   2 As I look back on my life, all I can see is a lot of failure.
   3 I feel I am a complete failure as a person.

4. 0 I get as much satisfaction out of things as I used to.
   1 I don't enjoy things the way I used to.
   2 I don't get real satisfaction out of anything anymore.
   3 I am dissatisfied or bored with everything.

5. 0 I don't feel particularly guilty.
   1 I feel guilty a good part of the time.
   2 I feel quite guilty most of the time.
   3 I feel guilty all of the time.

6. 0 I don't feel I am being punished.
   1 I feel I may be punished.
   2 I expect to be punished.
   3 I feel I am being punished.

7. 0 I don't feel disappointed in myself.
   1 I am disappointed in myself.
   2 I am disgusted with myself.
   3 I hate myself.

8. 0 I don't feel I am any worse than anybody else.
   1 I am critical of myself for my weaknesses or mistakes.
   2 I blame myself all the time for my faults.
   3 I blame myself for everything bad that happens.

Beck Inventory - page 2

9. 0 I don't have any thoughts of killing myself.
   1 I have thoughts of killing myself, but I would not carry them out.
   2 I would like to kill myself.
   3 I would kill myself if I had the chance.

10. 0 I don't cry any more than usual.
    1 I cry more now than I used to.
    2 I cry all the time now.
    3 I used to be able to cry, but now I can't cry, even though I want to.

11. 0 I am no more irritated now than I ever am.
    1 I get annoyed or irritated more easily than I used to.
    2 I feel irritated all the time now.
    3 I don't get irritated at all by the things that used to irritate me.

12. 0 I have not lost interest in other people.
    1 I am less interested in other people than I used to be.
    2 I have lost most of my interest in other people.
    3 I have lost all of my interest in other people.

13. 0 I make decisions about as well as I ever could.
    1 I put off making decisions more than I used to.
    2 I have greater difficulty in making decisions than before.
    3 I can't make decisions at all anymore.

14. 0 I don't feel I look any worse than I used to.
    1 I am worried that I am looking old or unattractive.
    2 I feel that there are permanent changes in my appearance that make me look unattractive.
    3 I believe that I look ugly.

15. 0 I can work about as well as before.
    1 It takes an extra effort to get started at doing something.
    2 I have to push myself very hard to do anything.
    3 I can't do any work at all.

16. 0 I can sleep as well as usual.
    1 I don't sleep as well as I used to.
    2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
    3 I wake up several hours earlier than I used to and cannot get back to sleep.

17. 0 I don't get more tired than usual.
    1 I get tired more easily than I used to.
    2 I get tired from doing almost anything.
    3 I am too tired to do anything.

Beck Inventory - page 3

18. 0 My appetite is no worse than usual.
    1 My appetite is not as good as it used to be.
    2 My appetite is much worse now.
    3 I have no appetite at all anymore.

19. 0 I haven't lost much weight, if any, lately.
    1 I have lost more than 5 pounds. I am purposely trying to lose weight, by eating less. Yes_____ No_____
    2 I have lost more than 10 pounds.
    3 I have lost more than 15 pounds.

20. 0 I am no more worried about my health than usual.
    1 I am worried about physical problems such as aches and pains, upset stomach, or constipation.
    2 I am very worried about physical problems and it is hard to think of much else.
    3 I am so worried about my physical problems that I cannot think about anything else.

21. 0 I have not noticed any recent change in my interest in sex.
    1 I am less interested in sex than I used to be.
    2 I am much less interested in sex now.
    3 I have lost interest in sex completely.

Matson and Brooks Adjustment Scale

Check all the statements which you feel apply to the way you feel about your disease.

___ 1. It's not true; it can't be happening to me.

___ 2. It won't get me down.

___ 3. I guess I have to face it.

___ 4. I know it's there, but I don't think much about it.

___ 5. I try to conceal my symptoms.

___ 6. I keep searching for a cure or treatment.

___ 7. I'm grieving for the loss of my former self.

___ 8. I'm living with it.

___ 9. I keep seeking an authority who will deny the diagnosis.

___ 10. I am active in programs; seeking out other patients.

___ 11. I keep publicly explaining about M.S.

___ 12. I am spending time and energy on other matters.

___ 13. I keep refusing help.

___ 14. I am reluctant to accept help.

___ 15. I am learning to accept help.

___ 16. I accept help when necessary.

___ 17. I keep holding to my past life and values.

___ 18. I am starting to recognize a change in my life-orientation.

___ 19. I am subjectively re-arranging priorities in my life.

___ 20. I am integrating my life style with new values.

Matson and Brooks Adjustment Scale - page 2

Score each of the statements below with a number which best describes how much you have been helped by each in your effort to continue a healthy life in spite of your disease. Use the following number values:

1 = helps a lot
2 = helps some
3 = does not help
4 = have not used

_____ 1. Faith in self

_____ 2. Forget self

_____ 3. Know others less fortunate

_____ 4. Religion

_____ 5. Doctor

_____ 6. Fight symptoms

_____ 7. Clinic

_____ 8. Family

_____ 9. Other patients

_____ 10. Anything other

_____ 11. Accepting it

_____ 12. Friends

_____ 13. Not coping

Matson and Brooks Adjustment Scale - page 3

Place a check in front of each word which you feel can be used to describe you .

___ Content
___ Frustrated
___ Clean
___ Dirty
___ Active
___ Passive
___ Happy
___ Sad
___ Sensible
___ Foolish
___ Fast
___ Slow
___ Cheerful
___ Depressed
___ Friendly
___ Unfriendly
___ Able to achieve goals
___ Unable to achieve goals
___ Relaxed
___ Tense
___ Mature
___ Immature
___ Hardworking
___ Lazy
___ Anxious
___ Calm
___ Responsible
___ Irresponsible
___ Dependable
___ Undependable

APPENDIX B

Raw Data Scores foı Males

n	Adj	Lng	NSE	PSE	Age	Vts	BDS	SoD	GHa	GHb	GHc	GHd
1	3.57	3	7	15	41	46	8	7	11	4	7	7
2	3.38	2	5	24	43	50	7	5	3	4	8	0
3	3.33	17	16	16	59	43	13	7	3	2	7	10
4	3.13	3	6	21	31	46	6	2	4	4	5	0
5	3.09	16	22	5	43	39	37	8	6	11	12	16
6	3.00	21	6	25	43	48	0	7	1	0	5	0
7	2.90	26	6	22	54	44	6	2	3	4	7	0
8	2.82	7	19	14	39	43	20	5	8	5	18	11
9	2.77	2	15	14	31	47	22	3	6	12	9	7
10	2.77	1	8	22	49	43	6	2	6	2	7	0
11	2.71	20	7	19	43	48	6	4	5	7	6	4
12	2.70	2	17	11	41	69	33	5	16	18	17	15
13	2.63	6	9	25	64	43	17	4	4	4	10	1
14	2.40	12	7	18	44	34	3	6	8	3	11	6

Note. Explanation of abbreviations used.

Adj=Adjustment score, Brooks & Matson scale (1982);
Lng=Length, in years, subject had MS
NSE=Negative statements, Self–esteem scale, Rosenberg (1965)
PSE=Positive statement, Self–esttem scale, Rosenberg (1965)
Age=subject's age;
VtS=Vulnerability to stress scale, Miller & Smith (1983);
BDS=score on Beck Depression Inventory, Beck et al (1961);
SoD=severity of disability, Kurtzke Disability Scale (1955);
GHa=General Health, somatic symptoms, Goldberg and Hillier (1979);
GHb=General Health, anxiety and incomnia;
GHc=General Health, social dysfunction; and
GHd=General Health, severe depression.

APPENDIX C

Raw Data Scores for Females

n	Adj	Lng	NSE	PSE	Age	VtS	BDS	SoD	GHa	GHE	GHc	GHd
1	2.88	16	9	19	59	34	11	7	5	4	8	1
2	3.17	42	6	25	68	47	10	5	7	8	7	0
3	3.14	12	7	21	48	49	18	4	8	3	11	6
4	2.55	5	17	12	44	51	17	3	12	10	10	7
5	3.80	7	5	18	50	31	6	4	9	6	7	2
6	3.00	1	6	19	53	46	14	2	4	8	10	0
7	3.00	25	7	22	72	29	8	5	5	7	10	2
8	2.33	8	14	15	35	48	23	5	8	5	11	3
9	3.33	25	5	20	60	49	17	5	13	6	8	1
10	3.20	11	11	17	49	37	17	5	10	6	8	3
11	3.14	21	8	22	51	45	9	3	4	0	7	0
12	3.08	7	6	25	53	33	3	2	6	6	8	0
13	2.91	1	9	19	37	43	17	4	7	4	8	5
14	3.00	25	14	18	59	53	8	5	9	3	7	1
15	3.27	15	10	19	62	50	10	3	6	6	11	3
16	2.90	3	10	19	44	53	7	5	4	5	7	1
17	3.09	3	6	21	36	51	11	3	11	12	5	1
18	3.16	7	6	23	44	47	8	3	10	9	9	1
19	3.43	42	8	23	78	45	2	7	3	2	9	0
20	2.38	1	14	16	29	36	12	2	3	9	9	2
21	3.44	27	10	19	46	33	8	2	6	4	9	0
22	1.88	2	15	13	72	54	22	2	9	13	14	13
23	2.66	6	10	20	55	51	18	5	3	2	15	1

APPENDIX C (con't)

Raw Data Scores for Females

n	Adj	Lng	NSE	PSE	Age	VtS	BDS	SoD	GHa	GHb	GHc	GHd
24	2.80	25	5	20	74	42	3	2	3	4	2	0
25	3.16	3	8	14	42	40	7	4	6	8	8	3
26	3.00	15	9	15	63	58	22	4	13	7	10	2
27	3.33	3	5	22	45	32	4	2	6	6	7	0
28	2.69	5	5	17	60	30	10	5	8	7	7	2
29	3.33	7	5	23	51	38	0	3	3	3	6	0
30	3.00	21	7	25	73	32	0	7	5	4	7	0
31	3.33	9	12	23	55	36	7	2	4	6	9	0
32	3.27	27	8	7	47	47	11	7	5	4	8	7
33	3.00	15	17	14	51	45	18	3	4	7	7	9
34	2.83	14	10	18	52	63	6	7	5	9	7	5
35	2.77	17	10	21	52	43	23	4	7	7	10	2
36	2.91	11	6	20	41	45	10	3	6	4	12	1
37	2.60	9	8	25	54	38	7	7	2	2	12	2
38	3.14	1	6	22	47	35	13	2	8	1	13	1
39	3.83	8	5	23	39	30	1	3	2	2	7	0
40	2.50	1	12	19	35	36	5	3	6	6	7	2
41	3.00	1	18	15	36	56	23	2	11	14	11	8
42	2.43	1	16	13	26	31	27	2	6	10	10	12
43	3.66	25	9	23	56	30	3	7	1	0	7	6
44	3.00	2	5	25	58	42	2	2	7	1	7	0
45	3.22	6	7	21	40	46	6	4	10	4	10	0
46	3.10	3	7	17	44	53	14	5	2	4	5	6

APPENDIX C (con't)

Raw Data Scores for Females

n	Adj	Lng	NSE	PSE	Age	VtS	BDS	SoD	GHa	GHb	GHc	GHd
47	2.81	29	17	11	55	73	36	5	17	13	17	8
48	2.40	1	15	18	31	59	13	4	5	8	11	2
49	3.50	2	13	20	42	50	10	2	13	9	7	3
50	3.09	13	13	15	54	52	10	7	6	6	7	3
51	2.64	7	7	16	41	42	13	4	6	11	5	9
52	3.29	3	16	10	45	69	25	3	6	15	13	7
53	3.09	1	6	18	49	38	6	2	9	4	12	1
54	3.66	3	7	24	35	35	9	5	3	0	3	0
55	3.60	19	5	25	59	28	0	5	0	0	7	0
56	3.18	31	8	21	74	36	10	2	11	8	10	1
57	3.11	27	14	14	50	41	10	2	4	4	4	8
58	3.14	15	10	25	45	55	10	5	9	4	7	1
59	2.60	6	6	23	35	43	2	2	2	0	7	1
60	3.38	18	14	14	42	54	5	3	14	5	11	3
61	3.00	9	7	21	57	39	7	5	11	2	8	0
62	2.73	15	10	18	38	47	10	5	12	10	9	1
63	2.64	6	7	20	39	37	10	5	11	8	10	1
64	3.17	1	5	25	39	40	2	4	8	7	7	0
65	3.00	10	6	24	35	31	1	4	4	1	7	0
66	3.33	29	7	25	61	47	7	5	1	0	7	0
67	2.92	2	15	16	34	53	15	2	4	10	4	8
68	2.75	8	7	25	63	43	10	3	7	5	7	0
69	3.25	5	12	16	32	45	11	5	9	6	12	8

APPENDIX C (con't)

Raw Data Scores for Females

n	Adj	Lng	NSE	PSE	Age	VtS	BDS	SoD	GHa	GHE	GHc	GHd
70	2.40	1	11	15	29	57	16	4	8	9	10	4
71	3.40	2	18	16	53	60	14	3	10	7	7	1
72	2.88	5	6	23	44	53	13	2	4	4	8	1
73	3.00	15	13	20	41	49	8	3	5	1	7	0
74	3.22	8	9	17	41	32	20	5	8	12	8	6
75	2.86	6	7	24	48	51	6	5	11	7	11	1
76	3.50	1	5	19	39	35	7	2	9	5	4	1
77	3.10	1	10	18	24	43	9	2	4	6	7	4
78	3.33	1	17	10	28	62	28	4	8	15	15	11
79	3.20	8	6	21	49	42	4	2	5	3	7	0
80	3.50	2	7	24	42	39	7	4	4	0	6	0
81	3.33	32	6	20	76	57	3	6	5	5	1	1
82	3.00	23	5	23	49	22	6	5	3	0	7	0
83	3.00	22	10	18	42	41	4	2	3	4	7	2
84	3.25	4	5	21	58	37	6	3	7	3	7	0

Note. Explanation of abbreviations used.

Adj=Adjustment score, Brooks & Matson scale (1982);
Lng=Length, in years, subject has MS
NSE=Negative statements, Self-esteen scale, Rosenberg (1965)
PSE=Positive statement, Self-esteem scale, Rosenberg (1965)
Age=subject''s age;
Vts=Vulnerability to stress scale, Miller and Smith (1983);
BDS=score on Beck Depression Inventory, Beck et al (1961);
SoD=severity of disability, Kurtzke Disability Scale (1955)
GHa=General Health, somatic symptoms, Goldberg and Hillier (1979);
GHb=General Health, anxiety and insomnia;
GHc=General Health, social dysfunction; and
GHd-General Health,severe depression.

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