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Smith, Patricia Ann

ADJUSTMENT TO SPINAL CORD INJURY: SOCIAL SUPPORT, LOCUS OF CONTROL, TIME SINCE ONSET OF INJURY

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ADJUSTMENT TO SPINAL CORD INJURY:
SOCIAL SUPPORT
LOCUS OF CONTROL
TIME SINCE ONSET OF INJURY

DISSertation

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

by

Patricia Ann Smith, B.A., M.A.

*****

The Ohio State University
1984

Reading Committee:

Don M. Dell, Ph.D., Advisor
Nancy E. Betz, Ph.D.
Bruce W. Walsh, Ph.D.
Ernest W. Johnson, M.D.

Approved by:

Advisor
Department of Psychology
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<tr>
<th>Year</th>
<th>Position</th>
<th>Institution</th>
</tr>
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<tbody>
<tr>
<td>1979</td>
<td>B.A., The Ohio State University, Columbus, Ohio</td>
<td></td>
</tr>
<tr>
<td>1979-80</td>
<td>Assistant Residence Hall Director, The Ohio State University, Columbus, Ohio</td>
<td></td>
</tr>
<tr>
<td>1980-81</td>
<td>Counselor, Counseling and Consultation Services, The Ohio State University, Columbus, Ohio</td>
<td></td>
</tr>
<tr>
<td>1981</td>
<td>M.A., The Ohio State University, Columbus, Ohio</td>
<td></td>
</tr>
<tr>
<td>1981-82</td>
<td>Psychology Intern, Southwest Community Health Center, Columbus, Ohio</td>
<td></td>
</tr>
<tr>
<td>1982-83</td>
<td>Counseling Supervisor, Graduate Teaching Assistant, The Ohio State University, Columbus, Ohio</td>
<td></td>
</tr>
<tr>
<td>1983-84</td>
<td>Psychology Intern, Department of Physical Medicine, The Ohio State University Hospitals, Columbus, Ohio</td>
<td></td>
</tr>
<tr>
<td>1984</td>
<td>Counselor, private practice, under the supervision of Joseph Shannon, Ph.D.</td>
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1. Relationship of Nerve Roots to Specific Muscles and Functions................. 44
Spinal cord injuries occur in the lives of approximately 7,000 to 10,000 individuals each year. Currently there are an estimated 150,000 persons with spinal cord injuries in the U.S. alone. These injuries often create tremendous changes for these individuals in all areas of life. For some, these changes lead to growth and enhancement; for others, stagnation. For all there is a process of adjustment and coping after the onset of a spinal cord injury. The process of adjustment and several variables affecting it will be the focus of this research.

Several researchers have attempted to define what constitutes coping or adjustment. Silver and Wortman suggested that coping or adjustment refers to "any and all responses made by an individual who encounters a potentially harmful outcome" (Silver and Wortman, 1980, p.281). These responses may include overt behaviors (e.g. participation in physical therapy), cognitions (e.g. "I'm not really injured..."
permanently."), emotional reactions (e.g. anger, depression), and physiological responses (e.g. nausea, sleep disturbances). Effective means of adjustment would alleviate the problem or reduce the resulting distress. Coping responses may also exacerbate the problem or may become problems themselves.

Moos and Tsu (1977), using crisis theory as a foundation, conceptualized certain adaptive tasks and coping skills needed during life crises, such as physical illness. These coping skills included: 1) understanding the reality of the crisis; 2) seeking information; 3) requesting reassurance and emotional support; 4) learning illness related procedures; 5) setting goals; 6) rehearsing alternative outcomes; and 7) finding general purpose or meaning in events. In addition, Trieschmann (1971; 1974; 1981), who has done extensive research and study in the specific area of adjustment to spinal cord injury, identified three dimensions that she felt, at the least, should be included in the measurement of adjustment to spinal cord injury. These include: 1) prevention of medical complications and performance of A.D.L. (i.e. activities of daily living) and mobility skills; 2) maintenance of a stable living environment; and 3) productivity. For the purpose of the present study, an amalgam of the previous definitions will be used, for none negate the others, yet all have
importance.

This process of adjustment to spinal cord injury has received the attention of clinicians involved in rehabilitation, as well as researchers in the fields of medicine, psychology, nursing, occupational and physical therapy. Even with this attention, there remain tremendous gaps in our knowledge of this process. Our limited knowledge is particularly distressing given studies that report that between 12% to 46% of the deaths of all spinal cord injured individuals, who survive the acute phase of injury, involve self-neglect or self-destructive behaviors (Treischmann, 1980). These deaths most often occur within five years after the injury is sustained. Sixty-two per cent of all spinal injuries occur to persons aged 15 to 29 years. Approximately 80% are men. Youth at onset, as well as the advances made by medical science, have increased the possibility of surviving the acute phase of these injuries. Thus, the notion of adjustment to spinal cord injury becomes a crucial issue for the rehabilitation of the individual toward a fulfilling and satisfying life.

Research to date has studied a number of variables thought to affect the process of adjustment. These include stages of adjustment (e.g. Shontz, 1965; Kerr and Thompson, 1972; Siller, 1969), personality (e.g. Hohman, 1975; Althelstan and Crewe, 1979; Bulman and Wortman, 1977), social
implications (e.g. Athelstan, 1981; Vash, 1981; Thornton, 1979), demographic factors (e.g. Kerr and Thompson, 1972; Wilcox and Stauffer, 1972; Kalb, 1971), and home and treatment environments (e.g. Taylor, 1967; Bodenhamer et al., 1983; Hikulic, 1971).

Shontz (1965) suggests that the individual goes through a series of stages as he or she attempts to cope with an undesirable life event. The first reaction is shock accompanied by feelings of detachment and surprising efficiency of thought and action. This, according to Shontz, is followed by an encounter phase characterized by profound helplessness, disorganization, and panic. This period, Shontz feels, is so intense that individuals manifest a type of avoidance called retreat or denial. There are cycles of encounter and retreat (accompanied by depression, anxiety, and frustration) until adaptation is complete. Adaptation is defined by renewed self-worth, a gradual decrease in anxiety, and an increase in satisfaction. Kerr and Thompson (1972) propose that the immediate reaction is denial, followed by profound depression. They suggest that individuals cannot become adjusted to their disabilities until they have fully experienced each of these phases.

The stage of adjustment cited most frequently is depression. Conclusions are mixed regarding the presence or absence of depression (Siller, 1969; Dinardo, 1971; Hohman,
1966). Siller (1969) states "a person should be depressed because something significant has happened, and not to respond as such is denial." Dinardo (1971) reports findings that suggest that the absence of depression is a good predictor of healthy adjustment. Deniers of the circumstances of their situations make the best adjustment, he concludes. Finally, Hohman (1966) challenges the assumption that depression is a necessary stage or period in adjustment. He suggests that spinal cord transection physiologically disrupts the affectual arousal of the person. Patients have reported that they often act "as if" they were feeling emotional because it is expected by those around them. There is considerable evidence to suggest that rehabilitation personnel overestimate the degree of psychological distress (Bodenhamer et al., 1983). In addition, Taylor (1967) reports that rehabilitation personnel may have an unrealistic and negative stereotype of the individual which does not differ significantly from that of the general population.

The personalities of the spinal cord injured individuals have been studied quite extensively. Hohman (1975) proposes that only those few individuals with a pre-injury history of treatment for depression and/or suicide attempts or some other form of psychological maladjustment show significant psychopathology and maladjustment after the spinal cord
injury. Althealan and Crewe (1979) review the literature and find support for the suggestion that people with spinal cord injuries have "behavioral tendencies" that predetermine them for their injuries. Bulman and Wortman (1977) examined the relation between the attribution of causality for the spinal cord injury and coping ability after injury. Self-blame and a feeling that the accident was unavoidable were successful predictors of good coping. They further suggest that individuals who have experienced an undesirable life event such as spinal cord injury need a reason or meaning to explain the "selective incidence of the accident." In addition, Treischmann (1980) and Kemp and Vash (1971) suggest that tests of problem-solving and creativity may relate to the ways in which individuals adjust to spinal injury. Finally, the variable of locus of control may be a critical issue in the adjustment process. In his work with spinal cord injury and depression, Dinardo (1971) found that individuals defined as "internals" (i.e. belief that one's own behavior controls outcomes) were measured as less depressed than those individuals measured as "externals".

The social implications of the disability, too, have been studied. According to Athelstan (1981), the change in social status is one of the most predictable outcomes of spinal cord injury. Vash (1981) suggests that some spinal cord injured individuals associate only with other disabled
individuals. Some respond this way due to self-derogation, the belief that one is not worthy to non-disabled people. She contends, however, that for many it is a positive choice rather than a defense, due to the power of sharing a similar experience.. In addition, she states, with supportive research (Singh and Magner, 1975; Treischmann, 1980), that people tend to attribute negative characteristics to the disabled individual which generalize beyond the direct effects of the disability. Ours is a society which places great importance on physical appearance and capability. Thornton (1979) points out that the disabled individual in the world outside of the hospital will be asked personal questions, hear negative comments, be stared at or ignored. Coping with unwanted sympathy or lack of empathy and obtaining help when needed and declining when not needed will have to be learned.

There is some evidence that demographic variables may be influential to adjustment with spinal cord injury. On the average, the younger person adjusts better than the older person (Kerr and Thompson, 1972). The age range of twenty to thirty-five may have the greatest variability in ultimate functioning (Wilcox and Stauffer, 1972). Regardless of age in this group, some adjust well, others do not. In addition, there is no evidence that severity of disability (e.g. quadriplegia versus paraplegia) affects adjustment. There is
no evidence on the effect of duration of disability on ultimate adjustment (Treischmann, 1980), although Kerr and Thompson (1972) suggest that it may take two to four years to learn to live with the disability with some degree of comfort and satisfaction. Another demographic variable considered as influential to adjustment is socioeconomic status (Kalb, 1971). At the National Spinal Cord Injury Model Systems Convention in 1978 it was reported that the lifetime care costs for the average person with quadriplegia are $325,000 to $400,000 (using a conservative estimate of life expectancy of 50% less than normal). For persons with paraplegia, the lifetime care costs are estimated to be between $180,000 to $225,000. These costs of both acute and long term medical care may greatly affect an individual's ability to cope with a spinal cord injury.

The treatment environment (i.e. hospital or rehabilitation center) significantly affects the behavior of the person with a spinal cord injury. Patients are often rewarded for dependent, passive, and compliant behaviors and ignored or punished for independent, assertive behavior (Mikulic, 1971). In addition, serious discrepancies exist between the perceptions held by rehabilitation personnel regarding their spinal cord injured patients' psychosocial situations and what their patients actually report (Bodenhamer et al., 1983). Taylor (1967) also found that
rehabilitation personnel overestimate the degree of psychological distress in their patients. These staff members may have an unrealistic and negative stereotype of the individual that does not differ significantly from that of the general population, she concludes. Finally, Treischmann (1980) believes that rehabilitation personnel carry preconceived notions of reactions to spinal cord injury and that staff members consider the patients to be more demoralized than they in reality may be.

Unfortunately, the research to date has been flawed on several significant dimensions. These flaws in the past research will be explained using each of the research areas (i.e. stages of adjustment, personality characteristics, demographic factors, and home and treatment environments) discussed above.

For example, stage theories of spinal cord injury are widely accepted by both rehabilitation personnel and the general public. Stage theories of adjustment have been largely based on clinical experience with spinal cord injured individuals (e.g. Shontz, 1975; Siller, 1969) in which the observations suggest that there are universal reactions, such as shock and depression, that occur in response to crisis situations. According to these theorists, people go through stages of emotional reactions. These stages are necessary for successful adjustment. Ultimately, the crisis is
resolved. Most of these reports are merely descriptive in nature; often subjective impressions of interview data, or simply anecdotal reports. A careful examination of the available literature suggests that the assumptions upon which these theories are based are unwarranted and largely unsubstantiated by empirical experimental research (Bourestrom and Howard, 1965; Dinardo, 1971; Lawson, 1976; Taylor, 1967; McDaniel and Sexton, 1970). Furthermore, the literature that purports to document evidence of emotional reactions that follow in stages is further complicated by the finding that spinal cord injury itself may reduce the experience of emotion due to the disruption of the autonomic nervous system (Hohman, 1966). Thus, this investigation of the stage theories of adjustment to spinal cord injury indicates that people, in fact, react emotionally to spinal cord injury with considerable variability. And, because of this tremendous variability, the suggestions that, in general, individuals respond to spinal cord injury in patterned stages is erroneous.

Likewise, the past research exploring personality variables has indicated that there is no reliable evidence for one unitary spinal cord injured personality (Treischmann, 1981). Although there may not be one unitary spinal cord injured individual personality, there may be common qualities, abilities, and/or characteristics of the
individual that affect adjustment to spinal cord injury. For example, these may include the propensity toward locus of control or a search for meaning to explain one's circumstances.

The search for meaning in one's experiences is a powerful human motivation. Clinicians and investigators have found that after spinal cord injury, individuals seem compelled to make sense of their experiences. Adjustment may well be influenced by the individuals' ability to find meaning or purpose in the injury. Bulman and Wortman (1977) asked spinal cord injured patients whether they had asked themselves the question "Why me?" and if so, how they had answered it. All respondents had asked themselves this question, but the explanations were highly varied. Although their work is the only systematic investigation of this issue, a variety of shortcomings render their work inadequate to answer questions regarding the issue of the search for meaning for the injury. For example, all of their respondents were answering this question only one to three months after injury. The attribution of meaning may change over time. Finally, their work used the concept of adjustment as defined only by rehabilitation personnel. Other research has revealed that there is considerable discrepancy between how the professional staff views the reactions of spinal cord injured individuals and the
responses the patients actually report (Bodenhamer et al., 1983; Taylor, 1967). Again, the limited but good quality research exploring the ascription of meaning for the injury suggests a warranted area of further investigation.

Locus of control may affect adjustment to spinal cord injury. Again Bulman and Wortman (1977) studied this variable (using Rotter's original scale) and found no correlation between coping and locus of control, but when they used a questionnaire exploring self or other blame or responsibility for the injury, they discovered that self-blame, in fact, significantly predicated good adjustment. Again, they used individuals who were very recently injured. In addition, Rotter's original scale has since been adapted to target more specific dimensions of locus of control, such as Wallston and Wallston's (1981) Multidimensional Health Locus of Control (MHLC) Scale. Although Shadish et al, (1980) found evidence that emotional distress was predicted by external locus of control and by time since injury, they did not study locus of control as it may affect pace and ultimate success of adjustment. Even though these studies have flaws, as detailed above, it is suggested that with methodological improvements the concept of locus of control should be further explored in the current investigation.

It has been suggested that the support from family and friends may help an individual cope more effectively with the
outcome of a spinal injury and its ramifications. Support from family has been associated with rehabilitation success in both hospital and the community (Kelman, Lowenthal, and Muller, 1966; Versluys, 1980; Kerr and Thompson, 1972). These studies used no systematic measuring instrument for this factor of social support. Descriptive and anecdotal information was primarily used. Recently, Morgan (1982) developed the Multiple Scales of Social Support (MSSS), one of the first systematic and scientifically developed instruments of social support. Although this instrument has been found to have acceptable reliability and validity in preliminary investigations, social support has not been assessed using the specific sample of spinal cord injured individuals. Because of the past research indicating that support of family and friends positively affects adjustment to spinal cord injury and the recent development of a competent instrument to measure social support, it will be included in the present research.

All of the studies of adjustment to spinal cord injury have used different assessment tools and often different criteria to measure adjustment. It has been suggested by many researchers (e.g. Silver and Wortman, 1980; Treischmann, 1980; Vash, 1981) that more precise and comprehensive definitions of adjustment are needed and a more precise and comprehensive assessment tool, based on these, be used.
Consequently, the present research will begin the preliminary work of developing an adequate instrument with which to measure adjustment to spinal cord injury. Despite problems in the past research, however, some variables seem to be predictive of adjustment to spinal cord injury. The research into factors associated with success in rehabilitation reveals that youth, an internal locus of control, adequate financial resources, a warm and loving family background, a history of accepting responsibility for vocational and educational plans, the presence of interpersonal support, creativity in problem solving, having many goals that involve accomplishment versus physical functioning, and self-blame for the injury are associated with adjustment to spinal cord injury (Goldberg and Freed, 1976; Kemp and Vash; 1971; Kerr and Thompson, 1972; Swenson, 1976; Bulman and Wortman, 1977; Treischmann, 1981).

Several areas of focus are needed to help fill the gaps in our current knowledge of adjustment to spinal cord injury. In this study, attention will first be given to refining an instrument measuring adjustment to spinal cord injury. This instrument will be developed based on a synthesis of knowledge gained from the work of past researchers (Silver & Wortman, 1980; Moos & Tsu, 1977; Treischmann, 1971, 1974, 1981; Bulman & Wortman, 1977). In addition, because there are opposing views in the literature (Treischmann, 1980; Kerr
& Thompson, 1972), as to the effect of time since onset of the injury and adjustment to the injury, individuals who have been recently injured as well as individuals who have had longer to cope with their disabilities will be included in the research. Self-report measures of adjustment to spinal cord injury, as well as adjustment as measured by rehabilitation staff and/or significant others, will be investigated. More reliable and valid assessment instruments and techniques will be employed. These areas will be addressed in this investigation.

Thus, the purposes of the present study will be to investigate recent and long term adjustment to spinal cord injury as affected by locus of control and social support. Preliminary work will also be started on the development of an assessment instrument that will measure adjustment to spinal cord injury.
CHAPTER 2

LITERATURE REVIEW

The literature in adjustment to spinal cord injury is very large, including work in the areas of medicine, psychiatry, social work, nursing, physical and occupational therapies, sociology, and psychology. For comprehensive reviews of the literature in adjustment to spinal cord injury in general, the reader is encouraged to explore Vash (1981) and Treischmann (1980). I will confine this review to a brief, but pertinent overview of the literature on the topic of adjustment to spinal cord injury as it pertains specifically to psychosocial aspects of the individual. For the purpose of this review there will also be included reviews of the literature in health locus of control and social support as they relate to health, chronic illness, and physical disability. Knowledge of the past research in these areas will lend an understanding to the rationale behind the hypotheses, in the present study, regarding the relationships between social support and locus of control and adjustment to
Psychosocial Aspects of Adjustment to Physical Disability

There is general agreement in the literature on adjustment to spinal cord injury that an individual's personality prior to traumatic spinal cord injury significantly affects their coping abilities after an injury such as this. Fordyce (1964) and Taylor (1967), using the MMPI, found that spinal cord injured subjects earned their highest scores on scales reflecting impulsiveness, rebelliousness, and energy (scales 4 & 9). They both suggest that these characteristics may be typical of individuals with spinal cord injuries and, in fact, may place them at greater risk to incur these injuries. Dahlstrom and Welsh (1960) found that normals who have MMPI scales 4 and 9 elevations are seen by others as overactive, impulsive, irresponsible, untrustworthy, egocentric, moody, adventurous, and individualistic. They also are seen as shallow and superficial which creates difficulties with interpersonal relationships. These qualities could well impede progress toward successful adjustment to spinal cord injury.

On the other hand, Hovey (1954) suggested that moderate elevations on scales 4 and 9 and the personality characteristics they reflect, may be assets in impressing...
others and winning social acceptance and approval. Thus, these personality traits may positively affect adjustment to spinal cord injury.

Though there are several studies supporting the conclusion that there are common personality characteristics present in some spinal cord injured individuals (as cited above), evidence indicating the effect of personality on adjustment or coping is equivocal. For example, Athelstan and Crewe (1979) studied adjustment to spinal cord injury as it might be associated with the nature of onset of injury. Based on questionnaire and interview data, they determined medical, vocational, and psychosocial adjustment ratings for 126 spinal cord injured persons. In addition, they classified the manner of onset of the injuries into three categories reflecting the degree of personal responsibility. Though they do not include information on the development or make-up if their questionnaire or interview items, they concluded that innocent victims received poorer ratings of adjustment than did subjects who were both passively and actively involved with the circumstances leading to their accidents. Subjects who were actively involved, having a high degree of responsibility for the accident, received the most favorable ratings of adjustment. Individuals with "behavioral tendencies" that place them at greater risk for spinal cord injury are actually better adjusted, as time goes
by, than are those individuals who were innocent victims, they conclude. These findings were contrary to their original hypotheses.

Treischmann (1980) suggests that the assumptions and interpretations of studies using MMPI data really do not pertain to many spinal cord injured individuals because of the necessity of averaging the MMPI profiles of such a heterogenous group. Vash (1975) also expressed concern that the search for pre-existing personality characteristics via psychological tests such as these leads to categorization by rehabilitation staff which may negatively affect their ability to adequately help people adjust to their disabilities. Bracken and Shepard (1980) also point out that the methodological problem with all studies using personality assessment is that measurement of personality can only logically be done after an injury occurs. Research conclusions based on post-injury personality assessments should be viewed with caution. They also conclude that there is little empirical data to support the hypothesis that pre-injury personality characteristics increase the risk of spinal cord injury.

In summary, the past research indicates a great deal of exploration on the effect of personality characteristics on adjustment to spinal cord injury, though there is quite a bit of discrepancy regarding just what this effect may be. Also
there has been some questions raised as to the importance of this exploration, in terms of its usefulness in actually helping spinal cord injured persons adjust to their injuries.

Unlike the researchers who have focused their attention on the relatively enduring personality characteristics of spinal cord injured persons, there are those researchers who hold with the hypothesis that there is an interaction between the person and the environment, which ultimately is more instrumental in affecting adjustment to spinal cord injury. Though it can be convincingly argued from both perspectives, an individual's propensity to assume personal responsibility for his or her circumstances or to blame external sources (i.e. locus of control) may be either part of the pre-injury personality, a result of the often uncontrollable life event, or both. This concept of locus of control was developed from Rotter's social learning theory (1966). Shadish, Hickman, and Arrick (1981) studied the relationship of emotional distress after spinal cord injury with locus of control and time. Emotional distress was measured using an interview based scale developed specifically for this study and an unspecified locus of control scale. Though they qualify their results by suggesting the need for validation and reliability studies of their scale and the use of self and others adjustment assessments, they conclude that emotional distress in spinal cord injured patients was best predicted
by external locus of control and recent injury. Spinal cord injured persons measured as having external locus of control experienced more distress than persons measured as having internal locus of control, even when injured longer. Spinal cord injured individuals saw their lives as significantly more controlled by chance than did a normative sample.

Bulman and Wortman (1977) also examined the ability of spinal cord injured persons to cope as affected by locus of control, but added the factor of attributions of blame and causality for the accidents causing their injuries. In addition, they asked their subjects to respond to the question, "Why me?", to assess how they had ascribed meaning or reason for their injuries. Using coping scores based on the assessment of a social worker and a nurse familiar with each subject, Rotter's Internal-External Scale (Rotter, 1966), and an interview questionnaire assessing attributions of blame and causality (developed specifically for this study), they came to the following conclusions. The more subjects blame another or the more they believe they could have avoided the accident, the worse they coped with their spinal cord injury. The more subjects blamed themselves, the better they coped. They also found that locus of control did not predict coping, though they only assessed persons who had been injured less than a year and were still living in a rehabilitation facility. The "Why me?" question yielded six
categories of responses: predetermination, probability, chance, "God had a reason", deservedness, and reevaluation of the injury as positive; though none of these six categories emerged as predictors of coping as measured by the rehabilitation staff.

Researchers studying the social consequences of spinal cord injury often agree that there are great changes in social demands and responses after spinal cord injury. For example, Cogswell (1968) found that subjects who were paraplegic had, after returning home from rehabilitation facilities, a marked reduction in number of social contacts, frequency in entering community settings, and number of roles (e.g. personal, vocational, social) in comparison to life before the injuries. All of the subjects reported an increase in these three activities over time, though there was great variability in the extent of the increase.

In contrast, Vash (1981) suggested that disabled persons often associate only with other disabled individuals, but for different reasons. Though she allows that this limited association may be due to self-derogation (i.e. one will not prove worthy to non-disabled friends) or outright rejection from non-disabled others, she contends that this is often a positive choice, rather than a defense, due to the sharing of a similar powerful experience. Even so, this might effectively cut off important sources of support from others.
who may help in the coping process.

In support of the social interaction perspective, Albrecht (1976) stated that people are a product of their social interaction environment. The behaviors and expectations of others mold the expectations and behaviors of self. In a negative manifestation of this interaction, Siller, Chipman, Ferguson, and Vann (1967) contended that a person with a physical disability often assumes the attitudes of others as his or her own. Prevalent are attitudes of self-deprecation and self-hate. Newly disabled individuals may still hold the negative values they held toward persons with disabilities before their injuries and refocus these negative feelings toward the self.

Many authors comment on the importance of the family in determining the success of rehabilitation efforts. Harris and associates (1973) believed that the reactions of persons to their disabilities are most affected by their family. Margolin (1971) goes as far to assert that the quality of interpersonal relationships within the family is more important to the outcome of rehabilitation than the disability itself. If the family communicates an attitude of valuing the individual, his or her self concept will be maintained, and he or she will participate more fully in rehabilitation.

Kerr and Thompson (1972) found that all of the persons
in their sample who had been rated as having an excellent mental adjustment to their spinal cord injuries had satisfactory lives before their injuries, and most came from exceptionally warm and loving family backgrounds. Kemp and Vash (1971) also found that interpersonal support was positively correlated with the degree of vocational productivity. Versluys (1980) found that the family's success or failure in coping with a physical disability is a crucial determinant in the person's adjustment. If the family is positive and supportive, the individual will do well in rehabilitation programs, but if the family cannot meet the challenges accompanying the onset of a physical disability, the individual may find adjustment insurmountable. This research definitely supports conclusions made in the social support literature (reported later in this review) that social support is an important moderator of life's stressful events.

In summary, the past literature indicates that successful adjustment to spinal cord injury is best predicted by internal locus of control, self-blame for the injury, and high levels of social support from the environment.

Finally, in this review of psychosocial factors affecting adjustment to spinal cord injury, will be a pertinent review of the evidence on the impact of the treatment environment. This impact appears to be, by and
large, negative. For example, Mikulic (1971) found that patients in rehabilitation facilities are often rewarded for dependent, passive, nonassertive behaviors, and ignored or punished when they try to be independent. Weissman and Kutner (1967) studied the effects of extended hospitalization on social behavior and found that the patient has little influence over his or her environment because of fixed hospital schedules and routine. They concluded that extended hospitalization often isolates the patient from his or her family and patient-patient relationships are often temporary and tenuous.

There is also evidence supporting the suggestion that many rehabilitation personnel have negative and unrealistic stereotypes of the disabled person (Taylor, 1967) and often overestimate the amount of psychological distress the person is experiencing (Bodenhamer et al., 1983). Albrecht and Higgins (1977) also found that the correlations between multiple measures of rehabilitation success and intercorrelations of staff ratings of patient adjustment, self ratings, and psychological test scores were very low. All of the past research indicates that the effect of the treatment environment is often a negative one. Though rehabilitation facilities may be quite adept at handling the physical/medical aspects of spinal cord injury, they appear to have quite a way to go to meet the psychosocial needs of
Social Support

Social support, though often seen as an ambiguous concept, has stimulated the attention of researchers whose interests are in clarifying and defining the concept. For the purpose of this review focus will be maintained in the area of social support as it may influence psychological and physical health. As has been suggested previously, one factor affecting adjustment to spinal cord injury is the maintenance of physical and psychological health. In addition, it has been maintained that the presence of social support may act as a buffer to alleviate stressful life events such as spinal cord injury (Treischmann, 1980).

There is agreement that social support can indeed mediate or alleviate the negative consequences of stressful life events, which in turn may limit an individuals susceptibility to disease. A leading researcher in this area was the late John Cassel (1974; 1976) who believed that certain aspects of the social environment (e.g. the presence of, and affiliation with, members of one's primary group) decreases susceptibility to disease. He proposed that various psychosocial processes play a stress-mediating role on disease. Thus, environmental intervention may be more
successful than traditional medical treatment in the prevention of disease.

Cassell (1974; 1976) and Kaplan and his colleagues (1977) investigated this concept of social support in both human and animal investigations and repeatedly found that deprivation of meaningful contact with family members accompanies higher disease rates. Cassel viewed the positive effect of social support as a "buffer" that helps to balance the delicate endocrine system of the body in times of stress. Through their work, Cassel and his associates concluded that "support is the 'metness' or gratification of a person's basic social needs (approval, succorance, esteem) through environmental supplies of social support" (Kaplan, Cassel, Gore, 1977, p.50).

Caplan (1974) also agreed that social support may act as a buffer against disease. He specified that an essential characteristic of this support was the perception by an individual that he or she was seen as unique and worthy of satisfaction and respect. He observed that most individuals seek and maintain relationships that create this support as a way to establish personal well-being. After further exploration, Caplan (1977) thus defined social support as mutual interpersonal attachments which promote a sense of mastery and competence in an individual. And in 1981, he emphasized that this sense of competence encourages mastery
of one's environment, in general, and mastery of stressful events, specifically. In addition, Caplan expanded his definition of social support to include support from one's community, thus including organized systems of support (e.g. professions, mutual help groups, community service institutions) with natural groupings (i.e. family, friends).

House and Wells (1978) attempted to synthesize and reorganize the contributions of past researchers of social support. This lead to their conceptualization of social support as characterized by relationships involving frequent interactions, strong positive feelings, and the ability and willingness to offer emotional and/or instrumental assistance in times of need (House & Wells, 1978). With this definition in mind, House (1980) proposed that there are four types of supportive behaviors involved in social support, which include: 1) emotional support (deemed most essential), providing empathy, love, trust; 2) instrumental support providing direct acts of financial or physical assistance; 3) informational support providing the specific education to facilitate decision making and coping; and 4) appraisal support providing information related to self-evaluation or social comparison.

Finally, in 1982, Mary Morgan, a doctoral candidate in counseling psychology at The Ohio State University, suggested in her dissertation that in the past there has been the
absence of a truly comprehensive model of social support. Taking the knowledge gained from past theorists and researchers, she defined the following dimensions of social support: emotional resources, esteem resources, assistance resources, affiliative style, and reciprocity.

As a result of the numerous theoretical foci, efforts to measure the concept of social support have been greatly varied and often imprecise. For example, social support has been measured by Sheehan and associates (1981) based solely on the question, "I am now getting (what percentage) of the total ideal support I would like." Using this measure of social support they concluded that the social support available, along with the number of life changes in the past two years, as well as the amount of adjustment required to cope with them were the most powerful predictors of accident/error rates. An example of research using dichotomous ratings of social support was done by Miller and colleagues (1976) who assessed social support in terms of the availability of a confidant and the presence of few or many acquaintances. Using this, they concluded that people with few close interpersonal relationships have higher physical symptom levels. Dressler (1980) also found that West Indian individuals who were members of a social support network (i.e. presence of mates, presence of siblings in the community, and societal membership) enjoyed better health.
Finally, Pearlin and Schooler (1978) defined social support as self-reliance versus help from others. Using this dichotomous measure of social support their results proved contradictory to the results of prior research. They concluded that self-reliance appeared to be more effective in alleviating stress than was the reliance on others for help and advice.

The above review of the literature deals specifically with the effect of social support on physical and mental well-being. Morgan (1982) suggested that in this area of social support, as well as others, there appears not only a great need for a more comprehensive model of social support, but also the need for a more precise, comprehensive measure of social support. She found that methods to assess social support have been as diversified as the theories have been. She found that a unique instrument has been employed for all but two of the studies involving the concept of social support. Because of this, she formulated a model of social support including the five dimensions of emotional resources, esteem resources, assistance resources, affiliative style, and reciprocity. Finally, she proposed that there is a factor of satisfaction of social support that is present in all five dimensions. She developed, as a result, a comprehensive questionnaire (including the dimensions of emotional resources, esteem resources, assistance resources,
affiliative style, and satisfaction) that combined the theoretical knowledge about social support with a more precise and methodologically sound instrument with which to measure it.

Health Locus of Control

The concept of locus of control, as originated by Rotter (1966) is basically easily defined. From Rotter's social learning perspective, he proposed that all individuals have a sense or perception of control in regard to their circumstances and situations. The aspect of control over which there is individual variability pertains to the location of responsibility for this control. Some individuals believe that, and behave as if, fate, luck, or chance are the ultimate determinants of their lives. Variables external to themselves hold greatest importance in creating individual circumstances. On the other hand, there are those individuals who believe that their own intrinsic personal characteristics, qualities, and attributes are responsible for events in their lives. Internal or endogenous qualities are responsible for one's life events. Using this theoretical definition, Rotter (1966) developed an assessment device to measure locus of control. This
instrument measures an individual's propensity to place responsibility for their lives with internal or external locus of control.

Rotter's concept of locus of control has since been studied theoretically and empirically by numerous researchers. For a review of the literature in this area, the reader is referred to Lefcourt (1982) who did a comprehensive synthesis of the development of the concept of locus of control, in both theory and research.

Rotter's concept of locus of control has been challenged and ultimately refined based on several key points. For example, there may be no global or general individual propensity toward internal or external locus of control and thus, no way to adequately measure it. Rather, individuals may have an inclination toward locus of control dependent upon a particular situation or circumstance. Likewise, locus of control is not an enduring or fixed trait in an individual. Measurements of locus of control should then be specific to a particular issue. Another aspect of the theory that has been challenged is the dichotomous quality of locus of control. Individuals are not either "internals" or "externals". Rather an individual exhibits a propensity toward locus of control that should be seen on a continuum between internal and external. Finally, it has been suggested that external locus of control be expanded to
include two separate sources. (Lefcourt, 1982)

Measurement of the concept of locus of control has enjoyed an evolution, just as the theory has evolved. Assessment tools have become more precise and methodologically sound due to the popularity of this theory and research using it. Instruments have been developed to measure specific areas of locus of control (e.g., mental health, achievement, affiliation). In addition, many new instruments have added a third dimension of locus of control, expanding the dimensions to include internal, chance, and powerful others locus of control.

For the purpose of this study attention has been placed in the specific area of locus of control pertaining to health. Strickland (1978) comprehensively reviews the earlier literature in this area. She concludes in this review that there is a relationship between a belief in internal control and physical health or well being. Individuals who are assessed as "internals" are more likely to take preventive measures to keep themselves healthy and free of disease or the possibility of accident. At the National Heart and Lung Institute Working Conference on Health Behavior in 1975 (Weiss, 1975), locus of control was related to several different aspects of health behavior. For example, it was stated, based on previous research, that individuals who were assessed as "externals" were less likely
to comply with medical treatment. In addition, external control is associated with higher rates of morbidity, lower rates of compliance, lower health motivation, reduced ability to control weight, smoking, and use of alcohol and other drugs.

Wallston and Wallston (1981) review the more recent research that has been completed using the Health Locus of Control Scale (HLC) and the Multidimensional Health Locus of Control Scale (MHLC), both of which were developed by the Wallstons. Wallston and her colleagues (1976) developed the original HLC measuring people's beliefs that health is or is not determined by their own behavior. "Health-externals" are individuals who have generalized expectancies that their health is determined by fate, luck, and chance, or powerful others over which they have little control. "Health-internals" are individuals whose health expectancies are governed by his or her own behavior over which there is much personal control.

The original HLC was designed to yield a single score (the higher the score, the more external the belief in locus of control), similar to Rotter's I-E Scale (Rotter, 1966). However, the Wallstons, their colleagues, and other researchers (e.g. Collins, 1974) uncovered evidence supporting the addition of a third dimension (powerful others) of locus of control to the theory and the instrument
Levenson (1974; 1975; 1976) first argued that not only are internal beliefs orthogonal to external beliefs, but the understanding and prediction of locus of control could be further improved by studying fate and chance expectations separately from external control by powerful others. She developed three scales (Internal, Powerful Others, Chance) to measure locus of control in general.

Because, like Rotter's I-E Scale, Levenson's new scales did not include items specific to expectations regarding health, Wallston and Wallston (1978) developed the Multidimensional Health Locus of Control Scale (MHLC) to replace their earlier HLC, using Levenson's three dimensions. In addition, due to Levenson's strong conviction that beliefs about people in general should have less predictive power than beliefs about one's own control, the Wallstons decided to use only personally worded items in their new scales. The research following the development of this scale has indicated that it proves to hold acceptable degrees of validity and reliability (see chapter on Methodology).

Research using the MHLC has yielded the following results, as cited by Wallston and Wallston (1981). In a synthesis of normative data for the MHLC, they conclude that the least internal group are chemotherapy outpatients (Wallston, 1979) and the most internal group are women...
beginning voluntary medical weight reduction programs (Saltzer, 1979). In addition, the chemotherapy outpatients show higher chance beliefs and the sample of women beginning voluntary medical weight reduction programs exhibit lowest health chance beliefs. Finally, people with chronic diseases are most "chance external" and persons taking preventive actions least "chance external", with healthy adults and college samples falling between these two groups. In fact, all samples selected because they engage in preventive health behavior express generally high beliefs in health-internality. Overall, they conclude, chronically ill patients show relatively high beliefs in health-externality, both chance and powerful others.

Scores on the powerful others-externality scale have the widest range with primiparous women in prepared childbirth having the lowest scores (Nicholson, 1980) and diabetics showing the highest scores (Nagy, 1979). Highest powerful others-external health beliefs are held by chronic patients and college students show lowest powerful others-external beliefs. Healthy adults and persons engaging in preventive health care are in between these two groups.

Using health locus of control as a dependent variable, DeVellis, DeVellis, Wallston, and Wallston (1980b), using subjects who were epileptic, found that persons with seizures that were more severe, more frequent, and less predictable or
nontrollable expressed higher beliefs in chance and lower beliefs in internal control. Their research strongly supports the idea that negative experiences, over which there is little control, encourages the development of high beliefs in external control (powerful others and chance) and low beliefs in internal control.

Finally, one other study of changes in health locus of control following a naturally occurring event was Nicholson's (1980) investigation using primiparous parents involved in prepared childbirth. Nicholson found that mothers decreased significantly (pre- to post-partum) on the internal dimension of locus of control and increased in chance locus of control. It was concluded that it is plausible that their experiences during hospitalization could lead to these changes.

The Multidimensional Health Locus of Control Scales have not yet been used with a sample of spinal cord injured adults. Because of the scale's extensive information on normative data and reliability and validity results, it was chosen for the current study. Comparisons can then be made and conclusions can be drawn based on this existing information.
Synthesis of Reviews of the Literature

A perusal of the literature in the areas of social support, health locus of control, and adjustment to spinal cord injury reveals some relationships between the research in these three areas and the conclusions drawn from them. For example, the support of the family, one component of social support, has been unanimously considered a crucial determinant of successful adjustment to spinal cord injury (Treischmann, 1980; Versluys, 1980; Kerr and Thompson, 1972; Harris et al., 1973; Margolin, 1971). Likewise, there is much research supporting the suggestion that social support is a buffer to help mediate and alleviate stressful life events, and may, in fact, be necessary to physical and emotional well-being (Cassel, 1974, 1976; Kaplan et al., 1977; Caplan, 1974, 1977, 1981; Dressler, 1980; Pearlin and Schooler, 1978). Support from community resources has been proposed as another important component of social support (Caplan, 1981; House & Wells, 1978; House, 1980; Morgan, 1982). Likewise, the treatment environment (including social service organizations and rehabilitation personnel) has been found to have significant influence upon spinal cord injured persons who must be involved with rehabilitation facilities not only immediately after their injuries, but often periodically throughout the rest of their lives.

Though measures of health locus of control have not been used with spinal cord injured samples, other samples of individuals with chronic conditions indicate a shift toward a more external source of control or responsibility for one's health (Wallston, 1979; Nagy, 1979; DeVellis et al., 1980b). And like evidence found in research studying social support, which links high levels of social support with physical health or well being, there is also evidence linking a belief in internal control with good health and sense of well-being (Strickland, 1978). One study in the social support literature interestingly suggested that self-reliance versus reliance on others was more effective in relieving stress (Pearlin and Schooler, 1978). This could have implications for both social support and locus of control and how they may influence the stressful event of spinal cord and the adjustment to it. This study indicates that social support has an inverse relationship with internal locus of control (i.e. self-reliance). In the current study, it is suggested that if an individual has a great sense of internal control, he or she may create less social support from the environment
around him or herself. It is also suggested that successful adjustment to spinal cord injury will be best predicted by higher perceived social support, which may decrease an individual's expectancies regarding internal locus of control.

Attributions of blame and causality for a person's spinal cord injury, studied by Bulman and Wortman (1977), may also have implications for whether health locus of control is placed with self or with external sources. If an individual places the blame or the cause of his/her injury with external sources (e.g. predetermination, "God had a reason") his/her expectancies for health control would be with chance or powerful others.

The vast majority of the research in adjustment to spinal cord injury involves samples of spinal cord injured persons who have recently been injured and are still living in rehabilitation facilities (e.g. Bulman & Wortman, 1977; Bodenhamer et al., 1983; Kerr and Thompson, 1972). It is proposed, in the current study, that adjustment to spinal cord injury will change over time. Assessments of adjustment taken from individuals who have been out of the protected environment of a rehabilitation facility, will change. It is important to use a sample of individuals who have had recent injuries, as well as those who have had longer to cope with their injuries. In addition, the assessments of adjustment
have primarily been taken from rehabilitation personnel and
significant other people. In the current study, it is
suggested that the perceptions of adjustment by spinal cord
injured persons themselves have been greatly neglected.
Adjustment as assessed by the individual is, at the very
least, as important as the assessments of others. Great
attention will be placed with self-assessments of adjustment
in the current study.

Taking into consideration these possible associations
and relationships, the current study will explore adjustment
to spinal cord injury, as assessed by the spinal cord injured
person, and how it may be influenced by health locus of
control, social support, and length of time since onset of
the injury. In addition, attention will be focused upon the
assessments of adjustment by others (i.e. physical therapist
and close friend or family member) to determine possible
relationships to self assessment of adjustment.
CHAPTER 3

METHODOLOGY

The primary purpose of this study was to investigate the self-assessment of adjustment to spinal cord injury, as it may be affected by social support, locus of control, and length of time since onset of the injury. To accomplish this, it was first necessary to devote attention to the preliminary development of an assessment instrument measuring adjustment. A final purpose of the study was to compare assessments of adjustment by the spinal cord injured person with adjustment as assessed by a physical therapist and close friend or family member.

The following sections will first describe the subject groups. Second, the instruments that were used will be described with available reliability and validity data. Specific attention to the preliminary development of the adjustment to spinal cord injury will be included in this section. Thirdly, the procedures for gathering the data will be discussed. Finally, the methods for the analyses of the
data selected for this study, along with the hypotheses that were tested, will be presented.

Subjects

Subjects included ten current and twenty-eight past patients of the spinal cord injury unit at Dodd Hall, the rehabilitation facility for The Ohio State University Hospitals. For current patients of Dodd Hall, the time since onset of the injury was less than one year. For those subjects who are past patients of Dodd Hall, the injury and the resultant disability occurred at least four years prior. These individuals have been injured as a result of accidents (e.g. motor vehicle, sports, industrial). Individuals with quadriplegia (i.e. complete motor and sensory loss of the arms and legs) and paraplegia (i.e. complete motor and sensory loss of the legs) and individuals with quadriparesis or paraparesis (incomplete loss of sensory or motor functioning in the upper or lower extremities) will be used as subjects for this study. See Figure 1 and Table 1 for a representation of the spinal cord and the relationship of the nerve roots to the specific muscles and their functions. Table 2 reports the functional expectations and the equipment required for spinal cord injured individuals depending upon the level of the injury on the spinal cord. Individuals who
CERVICAL (NECK)

C4 Diaphragm
C5 Deltoid (lifts arms sideways) and Biceps (bends elbow)
C6 Wrist Extensors
C7 Triceps (straightens elbow)
C8 and T1 Hands and Fingers

THORACIC (CHEST)

T2 - T8 Chest muscles
T6 - T12 Abdominal muscles

LUMBAR (BACK)

L1 - L5 Leg muscles and S1

SACRAL (LOW BACK)

S2 and Bowel and bladder below

COCCIX (TAIL BONE)


Figure 1. Relationship of Nerve Roots to Specific Muscles and Functions
TABLE 1

MUSCLES SUPPLIED AND FUNCTIONS SERVED BY SPINAL NERVE MOTOR ROOTS

<table>
<thead>
<tr>
<th>Root Segment</th>
<th>Representative Muscles</th>
<th>Function Served</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 &amp; C2</td>
<td>High Neck Muscles</td>
<td>Aid in head control</td>
</tr>
<tr>
<td>C3 &amp; C4</td>
<td>Diaphragm</td>
<td>Inspiration (breathing in)</td>
</tr>
<tr>
<td>C5 &amp; C6</td>
<td>Deltoïd</td>
<td>Shoulder flexion, abduction</td>
</tr>
<tr>
<td></td>
<td>Biceps</td>
<td>Elbow flexion (elbow bent)</td>
</tr>
<tr>
<td>C6 &amp; C7</td>
<td>Extensor Carpi Radialis, Pronator Tertes</td>
<td>Wrist dorsiflexion (back of hand up), Wrist pronation (palm down)</td>
</tr>
<tr>
<td>C7 &amp; C8</td>
<td>Triceps, Extensor Digitorum Communes</td>
<td>Elbow extension (elbow straight)</td>
</tr>
<tr>
<td>C8 &amp; T1</td>
<td>Flexor Digitorum Superficialis, Opponens Pollicis, Interossei (intrinsic)</td>
<td>Finger flexion (first &amp; second phalanges)</td>
</tr>
<tr>
<td>T2-T6</td>
<td>Intercostals</td>
<td>Forced inspiration (breathing in), Forced inspiration (breathing out, coughing)</td>
</tr>
<tr>
<td>T6-T12</td>
<td>Intercostals, Abdominals</td>
<td>Forced inspiration (breathing in), Forced inspiration (breathing out, coughing), Aid in expiration (coughing), Aid in trunk flexion (sitting up)</td>
</tr>
<tr>
<td>L1, L2, L3</td>
<td>Iliopsoas, Adductors</td>
<td>Hip flexion (thigh to chest), Hip abduction (thigh out to side, legs apart)</td>
</tr>
<tr>
<td>L4, L5, S1</td>
<td>Quadriceps, Gluteus Medius, Tibialis Anterior</td>
<td>Knee extension (knee straight), Foot dorsiflexion (foot up, walk on heels)</td>
</tr>
<tr>
<td>L5, S1, S2</td>
<td>Gluteus Maximus, Gastrocnemius</td>
<td>Hip extension (thigh in line with trunk, hips straight, e.g., standing), Foot plantar flexion (foot down, walk on toes)</td>
</tr>
<tr>
<td>S2, S3, S4</td>
<td>Anal Sphincter, Urethral Sphincter</td>
<td>Bowel function (fecal continence), Bladder control (urinary continence)</td>
</tr>
</tbody>
</table>

### TABLE 2

FUNCTIONAL EXPECTATIONS AND EQUIPMENT REQUIRED FOR SPINAL CORD INJURY PATIENTS

<table>
<thead>
<tr>
<th>Activities</th>
<th>C5</th>
<th>C6</th>
<th>C7-C8</th>
<th>T1-T5</th>
<th>T6-T12</th>
<th>L1-L3</th>
<th>L1-L5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-care:</strong></td>
<td></td>
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<tr>
<td>Eating</td>
<td>D/P</td>
<td>P₁</td>
<td>P₂/₁</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Dressing</td>
<td>D</td>
<td>P/I</td>
<td>P/I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
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<tr>
<td>Toileting</td>
<td>D</td>
<td>P/I</td>
<td>P/I</td>
<td>I</td>
<td>I</td>
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<tr>
<td><strong>Work with hands:</strong></td>
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<tr>
<td>Writing</td>
<td>D</td>
<td>P₃</td>
<td>P₃</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Typing</td>
<td>P₁₃</td>
<td>I₂₃</td>
<td>I₃</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
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<tr>
<td>Operating telephone</td>
<td>P</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
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<tr>
<td><strong>Bed Independence:</strong></td>
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</tr>
<tr>
<td>Rolling over, sitting up</td>
<td>P₄₃</td>
<td>P₅/I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
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<tr>
<td><strong>Wheelchair Independence:</strong></td>
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<tr>
<td>Transfers to/from wheelchair</td>
<td>D</td>
<td>P/I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
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<tr>
<td>Propel wheelchair</td>
<td>I₄</td>
<td>I₅</td>
<td>I</td>
<td>I</td>
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<td><strong>Ambulation:</strong></td>
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<td><strong>Driving with hand controls</strong></td>
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<td>Bus</td>
<td>O</td>
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<td>O</td>
<td>O</td>
<td>O</td>
<td>P/I</td>
</tr>
<tr>
<td>Train</td>
<td>D</td>
<td>D/P</td>
<td>P₁</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
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<tr>
<td>Plane</td>
<td>P</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
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<tr>
<td><strong>Public toilets</strong></td>
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<tr>
<td>O</td>
<td>P₁₁</td>
<td>P₁₁</td>
<td>P₁₁</td>
<td>P₁₁</td>
<td>P₁₁</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LEGEND**

1 Complete independence is possible  
2 Partial independence is possible with use of special equipment  
3 Dependence is to be expected  
4 Not possible

1 With electric or CO₂ powered splints  
2 With nonpowered hand splint  
3 With electric typewriter  
4 With loops, balkan frame—electric bed  
5 With electric bed  
6 With electric wheelchair  
7 With adapted hand rims (special lugs or hose wrapped)  
8 Not practical  
9 With long leg brace and crutches  
10 With short leg braces and crutches  
11 With zipper-back wheelchair

have sustained injury to nerve roots T1 and above are considered quadriplegic or quadriparetic. Individuals injured at T2 or below are considered paraplegic or paraparetic. There is variability in both motor and sensory function depending upon the level of injury. In addition, there may be variability in sensory and motor function among individuals who have injuries at the same level but dependent upon the "completeness" of the injury. A complete transection of the spinal cord would produce complete sensory and motor functioning loss at the level of injury and below. Many individuals have incomplete injuries leaving some nerves intact, others damaged, at a particular level of injury, which in turn affects sensory and motor functioning differentially. The distinguishing common characteristic of the spinal cord injuries and their resultant physical disabilities is the suddenness and unexpectedness of the onset of the injuries for the individuals. Past research indicates that the coping process does not differ depending upon the level or extent of injury to the spinal cord (Kerr and Thompson, 1972). Again, the significant common experience of a sudden, unexpected spinal cord injury accompanied by major changes in life make these individuals candidates for this sample.

The age of the subjects was between 18 - 50 years of age. Both male and female subjects were used, although the
proportion of male subjects was greater, due to the greater proportion (80 percent) of male individuals who are spinal cord injured in the population (Treischmann, 1980). Thirty-one males and seven females were involved in the current study.

Instruments

Social support. Social support was measured using the Multiple Scales of Social Support (MSSS; Morgan, 1982). The MSSS consists of five, ten item subscales relating to the dimensions of emotional resources, esteem resources, assistance resources, affiliative style, and satisfaction. For the purposes of the current study, the total scale score was used. The single total score was used due to the fact that the sample size in the current study was not adequate to test the additional variables in the data analysis. Also, all of the subscales in the scale are positively correlated with one another and the total scale holds acceptable levels of reliability and validity, as studied by Morgan (1982). Responses to the items are obtained using a five point Likert scale, where response scoring ranges from 1 (definitely NOT TRUE about me) to 5 (definitely TRUE about me). Scores for the total MSSS are obtained by summing the item scores after switching the scoring for negatively worded items. In order
to establish a zero-point, all responses for all items were recoded from 1, 2, 3, 4, and 5 to 0, 1, 2, 3, and 4 respectively. Summation across all items revealed a total MSSS with a score range of between 0 to 200. Higher scores are reflective of greater perceived social support, while lower scores reflect lesser perceived social support, as assessed by each of the five dimensions.

Evidence for the reliability and validity of the MSSS has been provided by Morgan (1982) in her research on the development of the instrument. The total MSSS produced a standardized item alpha coefficient of .93. Standardized item alpha coefficients for each subscale indicate coefficients of .79 for the Emotional Resources and .74 for the Assistance Resources subscales. The Satisfaction, Affiliative Style and Esteem resources subscales produced stronger coefficients of .86, .85, and .84 respectively. Morgan states in her dissertation, "Since Cronbach's alpha provides a conservative estimate of a measure's reliability (Carmines and Zeller, 1979), these results clearly indicate that the MSSS and its subscales possess acceptable degrees of reliability."

The validity of the MSSS was examined by correlating its total scale performance with selected measures of anger, anxiety, self-esteem, interpersonal behavior and social desirability. Morgan found that levels of perceived social
support, as measured by the MSSS, appeared to be positively related to levels of State Self-Esteem (.354) and interpersonal behaviors reflecting Inclusion (.548) and Affection (.487) needs. In addition, the MSSS demonstrated negative relationships with Powerlessness (-.315), State Anger (-.370), Trait Anger (-.350), State Anxiety (-.470), and Trait Anxiety (-.634). Finally, the MSSS produced a positive correlation of .710 between response set and the total MSSS. Morgan explains this substantial positive correlation by stating, "These findings initially suggest that the MSSS in its present form may be more easily manipulated by the respondents than is preferred. On the other hand, it may be that perceptions of social support, as measured by the MSSS, are related to a more general view of the world . . . It appears that subject opinions about their lives and the world around them are substantially related to their perceptions of social support." (Morgan, 1982, p. 95)

Though further validation studies are indicated for the MSSS, Morgan's research provides reasonable empirical support for the inference of construct validity. The MSSS may be found in Appendix A.

**Locus of Control.** Locus of control was measured using the Multidimensional Health Locus of Control (MHLC; Wallston, Wallston, and DeVellis, 1978) Scales, which measure three
distinct dimensions: Internality, Chance Externality, and Powerful Others Externality. The MHLC consists of three, six item scales which assess these dimensions. Responses to the items are obtained using a six point Likert scale, where response scoring ranges from 1 (strongly DISAGREE) to 6 (strongly AGREE). Total scores for each subscale on the MHLC are obtained by summing the item scores after reverse scoring the internally worded items. Each subscale has a score range of between 6 to 36. Higher scores are reflective of external health locus of control, while lower scores reflect internal health locus of control.

Evidence for the reliability and validity of the MHLC has been provided by Wallston and Wallston (1981). In their studies the alpha reliabilities for the MHLC were as follows. Alpha reliabilities ranged from .61 to .86 on the Internal dimension, from .65 to .87 on the Chance dimension, and from .56 to .83 on the Powerful Others dimension. In studies of test-retest reliability using Form A of the MHLC the correlations were .66 for the Internal dimension, .73 for the Chance dimension, and .71 for the Powerful Others dimension. These results clearly indicate that the MHLC subscales possess acceptable degrees of both alpha and test-retest reliabilities.

Wallston and Wallston (1981) provide information on scale concurrent validity by investigating the relationship
between health locus of control beliefs and other general or specific locus of control beliefs. For example, when correlated with Levenson's (1973; 1974; 1975) I, P, and C Scales, measuring generalized locus of control beliefs, they found positive correlations ranging from .28 to .80.

Several studies have correlated health locus of control with other measures. For example, Baughman (1978) found the Chance dimension of the MHLC to be the best predictor of self-evaluation of health condition, such that better health status was perceived by persons with less belief that chance controls their health. The Powerful Others dimension and the Internal dimension of the MHLC were also significant predictors of this variable, so that better health status was perceived by persons who scored higher on these scales.

Finally, Wallston and Wallston answer the validity question, "Do the scales measure persons' beliefs about the locus of control of their health?" with a "Yes," although they admit that the "proof" for such a conclusion is far from definitive. Thus, although further validation studies should be undertaken using the MHLC, existing evidence of its validity appears sufficient for the purposes of the current investigation. The MHLC can be found in Appendix B.

Ascription of Meaning. The ascription of meaning for the injury was assessed by the method used by Bulman and
Wortman (1977) in their study of adjustment as affected by the attribution of blame for a spinal cord injury. The subjects in the current study were asked (as in the Bulman and Wortman study) whether they had ever asked themselves the question, "Why me?" and, if so, how they had answered it. See Appendix C. Bulman and Wortman found in their study that the reasons elicited from the subjects seemed to fall into six categories: predetermination, probability, chance, "God had a reason," deservedness, and reevaluation of the event as positive. These same categories were used in the current investigation. The information was not used in the formal statistical analysis. Rather, it was used as descriptive, anecdotal information.

There is no available reliability or validity information regarding this assessment technique.

Adjustment. Adjustment to spinal cord injury was assessed using a scale developed from the definitions of coping and adjustment used in the research of Bulman and Wortman (1977), Treischmann (1980), and Moos and Tsu (1977).

Moos and Tsu (1977) identified seven coping skills based on their expansion of crisis theory to target the crisis of physical illness. These include: 1) denying or minimizing the extent of the illness; 2) seeking information; 3) requesting reassurance and emotional support; 4) learning
illness related procedures; 5) setting goals; 6) rehearsing alternative outcomes; and 7) finding general purpose or patterns of meaning. Treischmann (1981), based on a complete review of the literature in adjustment to spinal cord injury, suggested that there are, at least, three crucial areas of adjustment needed in assessment instruments. These include: 1) prevention of medical complications and performance of A.D.L. (activities of daily living) and mobility skills; 2) maintenance of a stable living environment; and 3) productivity.

A comprehensive synthesis of this existing theory and research reveals four dimensions of adjustment. These include adjustment in the areas of 1) medical/physical, 2) productivity, 3) social, and 4) personal. These dimensions involve the more specific coping skills proposed by Moos and Tsu (1977) and expands upon the suggested areas of adjustment to spinal cord injury that were proposed by Treischmann (1981).

Within these four dimensions, this researcher used items reflecting adjustment that were supplied by both rehabilitation personnel and past and present patients at Dodd Hall, the rehabilitation facility of The Ohio State University Hospitals. In each of these investigations, rehabilitation personnel and patients were asked how they would define good and poor adjustment to spinal cord injury.
In addition, items measuring adjustment that were used by Bulman and Wortman (1977) were used in the present study.

For example, Bulman and Wortman (1977) found that individuals were described as coping well if they had accepted the reality of their injury and were attempting to deal positively with it. Individuals who were motivated to improve their physical abilities, and who reflected a desire to be as physically independent as possible were considered to be coping well. Individuals were considered to be coping poorly if they denied the extent of their injuries despite medical evidence to the contrary, if they denied how much work was necessary for rehabilitation, and/or expected to get better miraculously, or if they showed no interest in improving their condition.

Items were included if they fit into one of the four dimensions of adjustment and if there was some existing research support for inclusion of the item. Thus, using the information gathered from previous research, in addition to the responses obtained in this study, a twenty-nine item scale was developed. Also included in the scale was a final question asking each respondent, "On a scale from one to ten (one being worst adjustment, ten being best adjustment, how would you rate your personal (or his/her) adjustment to spinal cord injury?" See Appendix D. Responses to the items on the adjustment scale were obtained using a six point
Likert scale, where response scoring ranges from 1 (strongly disagree) to 6 (strongly agree). After analyzing the items for internal consistency reliability, using Chronbach's alpha, the scale was refined to include only those items with acceptable levels of reliability. Total scale scores for each respondent on the adjustment scale were then obtained by reversing the scoring for negatively worded items, totaling the item scores, and dividing by the total number of items in the refined scale. Each respondent was given a mean score of between 1 and 6. This standardized the scores, which helped eliminate the lack of precision (when purely summative scores are used) in true score measurement that is provided by each individual item. This adds to the accuracy of the score and its ability to reflect individual differences. These techniques for the scoring of the scale prevented the problems inherent in the simple summation of scale numbers which may inadequately reflect true measures of the criterion (Anastasi, 1982). Higher scores indicated better adjustment and lower scores indicated poorer adjustment to spinal cord injury.

**Procedures**

Each of the subjects was given a cover letter explaining the purpose of the study and the voluntary nature of their
participation in it. See Appendix E. It was also explained that their participation in the study would be kept confidential. Consent forms were provided.

Each subject was given a set of inventories including the Multidimensional Social Support Scales (MSSS; Morgan, 1982) and the Multidimensional Health Locus of Control Scales (MHLC; Wallston, Wallston, and DeVellis, 1978). In addition, each subject was given the open ended question, "While thinking about your spinal cord injury, have you ever asked yourself the question, 'Why me?' and, if so, how have you answered it. See Appendix C. Finally, demographic data was collected from each subject. See Appendix F.

Assessments of adjustment for the ten recently injured subjects, who were currently patients at Dodd Hall, were obtained from a member of the physical therapy staff at Dodd Hall. The physical therapist was asked to complete adjustment ratings for all of the spinal cord injured individuals who were currently patients at Dodd Hall. This ensured anonymity for those patients who were willing to participate in this study. The physical therapist had worked daily with the person for at least three weeks before filling out the questionnaire. For each of the twenty-eight subjects who were injured at least four years prior, and were no longer patients at Dodd Hall, the same adjustment inventory was completed by a family member or close friend. All of the
subjects completed a self-assessment, using the same adjustment inventory described above, of adjustment to their spinal cord injuries.

Each current patient at Dodd Hall was approached individually about their willingness to participate in this research. If willing, they were each given a set of inventories to complete and return. Those subjects who were quadriplegic (i.e. impaired motor functioning of the upper and lower extremities) were given assistance with completing the written questionnaires.

The same material was sent to former patients of the spinal cord injury unit of Dodd Hall. If willing to participate, they were instructed to complete the inventories and return them via postage paid mail.

Data Analysis

Data collection in the present investigation yielded the following scores for each subject. A single score was collected from the Multidimensional Social Support Scales, which measure the dimensions of emotional resources, esteem resources, assistance resources, affiliative style, and satisfaction. The single score was used due to the fact that
the sample size in the current study was not adequate to test the additional variables in the data analysis. Also, all of the subscales in the scale are positively correlated with one another and the total scale holds acceptable levels of reliability and validity, as studied by Morgan (1982). Three scores were collected based on the Multidimensional Health Locus of Control Scales measuring Internality, Chance Externality, and Powerful Others. One score of adjustment to spinal cord injury as measured by the spinal cord injured person him or herself was obtained from each subject. Each subject supplied anecdotal, descriptive information regarding the ascription of meaning for the spinal cord injuries. Finally, descriptive demographic data for each subject was obtained.

The time since onset of the spinal cord injury was obtained from the demographic data sheet filled out by each subject. The time was computed in terms of months since the injury occurred, for purposes of data analysis.

Assessment of adjustment as perceived by close friend or family member was obtained for those subjects who are at least four years post injury. Assessment scores of adjustment to spinal cord injury as perceived by the physical therapist and by the close friend or family member were obtained for each subject who was less than one year post injury.
Initial statistical analyses were devoted to the refinement of the adjustment scale. Subject responses to the items were item analyzed for internal consistency reliability (Chronbach's alpha). The total scale was divided into the four subscales: medical/physical, productivity, social/relationship, and self/personal. Anastasi (1976) suggested in her work on psychological testing that dividing relatively homogeneous items into subscales, each of which covers a different aspect of the criterion (in this case adjustment) would improve the quality of the item analysis because items with low indices of internal consistency would not be discarded, but would be segregated. Within each subscale fairly high internal consistency could thus be attained. At the same time, internal consistency would not be accepted as a substitute for item validity. The adjustment scores were obtained based on this item analysis and the refinement of the scale.

The adjustment scores from the original scale, obtained from the close friend or family member and from the physical therapist, were item analyzed separately from the self-assessments. These separate analyses were used to achieve greater reliability in the refined instrument by adding supporting or detracting evidence for the acceptance or rejection of any particular item, though the refined adjustment scale predominantly reflected the results of the
item analysis based on the self-assessment of adjustment. For example, if the reliability of the scale, as measured by the individual, seemed negligibly improved by the deletion of a particular item, the item analyses for the others' assessments were consulted to determine whether reliability of these scales would be improved with the deletion of a particular item as well. Thus, if the reliability of the scales was not improved in any of the other item analyses, then an item was maintained.

After the initial item analyses, each item considered for deletion was removed in successive, incremental steps, with attention paid to the impact of the deletion to the subscale and total scale inter-item correlations and item-total correlations. At each iteration of the analyses, an item was deleted only if there was evidence that the reliability was improved.

In addition, once the initial item analyses were completed, the individual items were checked again for ambiguity of content or meaning. For example, one of the deleted items inquired about productivity in "work and/or leisure activities". A respondent may have a different response depending upon whether work or leisure activities were involved. Because the reliability of the scale was improved by this item's deletion, in addition to the problems with the item's content and meaning, it provided more
supportive evidence for the item's removal.

Finally, the final question asking the respondents to place adjustment on a scale from 1 to 10 was deleted from the total scale score and ultimately from the additional data analyses, because it did not maintain the consistent and systematic manner of measuring adjustment, as reflected in the Likert scale items. In addition, the item was omitted by a number of the respondents. Finally, there was very little variability in the responses, with most in the very high range (i.e. 8-10), which shed little light on the possible differences in adjustment.

A multiple regression analysis of the data was used to determine the amount of variance in adjustment, as perceived by the spinal cord injured individual, accounted for by the dimensions of health locus of control, social support, and time since onset of the injury. Simple correlations between the self-assessments of adjustment and assessments by the physical therapist and close friend or family member were completed to determine the relationships between these assessments.

The following hypotheses were tested:
1) Internal health locus of control will be a significant predictor of successful adjustment to spinal cord injury as measured by the spinal cord injured individual.
2) Chance and Powerful Others health locus of control
will be a significant predictor of poorer adjustment to spinal cord injury as measured by the spinal cord injured individual.

3) Greater perceived social support will be a significant predictor of successful adjustment to spinal cord injury as measured by the spinal cord injured person.

4) The assessment of adjustment, as perceived by the spinal cord injured person, will be positively correlated to the assessment of the close friend or family member.

5) The assessment of adjustment, as perceived by the spinal cord injured person, will be negatively correlated to the assessment of the physical therapist.

6) Time since onset of the injury will be a significant predictor of adjustment to spinal cord injury as measured by the spinal cord injured person.
CHAPTER 4

RESULTS

The results of this study will be presented in four sections. The characteristics of the present sample, taken from the demographic data information supplied by the subjects, will be discussed in the first section. The second section will focus on the refinement of the Adjustment to Spinal Cord Injury Scale, initially reporting the reliability information and results. This will be followed by a presentation of the statistically refined form along with its reliability results. The third section will address the information gained when the revised instrument was used in the analyses to determine the relationships between health locus of control, time, and social support as they may predict adjustment to spinal cord injury. The fourth section will report the results obtained from the "Why me?" questions.
Descriptive Information

Of a potential sample of eleven subjects, ten individuals (90.9%) who were currently living in the rehabilitation facility and were less than one year post injury, agreed to participate in the study. In addition, fifty-six persons who had been injured at least four years prior to the study, were asked to participate through the mailed information. Twenty-eight (50%) agreed to participate. Of the total number of individuals who were asked to be involved in the study, thirty-eight of sixty-seven (56.7%) agreed to participate. A total of thirty-eight people participated in this study. This included thirty-one men (89.2%) and seven women (10.7%). Table 3 presents demographic information pertaining to age, sex, time since onset of the injuries, and paraplegia or quadriplegia. These items were chosen from the demographic information collected from the subjects because these items were most frequently completed on the demographic data questionnaire. Many of the subjects incompletely filled out this portion of the research material. In addition, these items reflected demographic statistics that could be compared with statistics based on a large nationwide sample of spinal cord injured individuals (National Spinal Cord Injury Model Systems Conference, 1978).
Ages ranged from eighteen to forty-eight, with a mean for the entire sample of 27.02. When the sample was divided into groups based on time since injury, those individuals who were injured less than a year (26.3% of the total) and who were still living in the rehabilitation facility, had an age range of eighteen to thirty-five, with a mean of 25.6. The age range of those persons injured at least four years (73.6% of the total) was between twenty-one and forty-eight, with a mean of 28.55. Twenty-five persons of the total sample are quadriplegic (65.7%) and thirteen persons are paraplegic (34.2%). Again when divided by time since onset of injury, 80% are quadriplegic and 20% are paraplegic who are less than one year post injury, while 60.7% are quadriplegic and 39.2% are paraplegic who are at least four years post injury.

The causes of the injuries fell into five categories including motor vehicle accidents, diving accidents, falls, gunshot wounds, and sports accidents. See Table 4 for a summary of the causes of the injuries in this sample.
### TABLE 3
#### DEMOGRAPHIC STATISTICS

<table>
<thead>
<tr>
<th>TIME SINCE INJURY</th>
<th>LESS THAN 1 YEAR</th>
<th>MORE THAN 4 YEARS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>MALES</td>
<td>6</td>
<td>60.0</td>
<td>25</td>
</tr>
<tr>
<td>FEMALES</td>
<td>4</td>
<td>40.0</td>
<td>3</td>
</tr>
<tr>
<td>PARAPLEGIC</td>
<td>2</td>
<td>20.0</td>
<td>11</td>
</tr>
<tr>
<td>QUADRIPLEGIC</td>
<td>8</td>
<td>80.0</td>
<td>17</td>
</tr>
<tr>
<td>MEAN AGE FOR FEMALES</td>
<td>4</td>
<td>29.2</td>
<td>3</td>
</tr>
<tr>
<td>MEAN AGE FOR MALES</td>
<td>6</td>
<td>23.1</td>
<td>25</td>
</tr>
</tbody>
</table>

### TABLE 4
#### CAUSES OF SPINAL CORD INJURIES

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Vehicle Accidents</td>
<td>21</td>
<td>55.2</td>
</tr>
<tr>
<td>Diving Accidents</td>
<td>7</td>
<td>18.4</td>
</tr>
<tr>
<td>Sports Accidents</td>
<td>4</td>
<td>10.5</td>
</tr>
<tr>
<td>Falls</td>
<td>3</td>
<td>7.8</td>
</tr>
<tr>
<td>Gunshot Wounds</td>
<td>3</td>
<td>7.8</td>
</tr>
</tbody>
</table>
The most recent data collected concerning the demographic characteristics of the spinal cord injured population were reported at the National Spinal Cord Injury Model Systems Conference (1978). Statistics show that almost 50% of the spinal injuries occurred between the ages of 15 and 24. Sixty-two percent occurred in the age range 15-29. Thus, the spinal cord injury group is predominantly a young one. As the table above indicates, the sample used in this study is consistent with the national statistics on age, with a mean age of 27.02. Forty-eight percent of those reaching the regional spinal injury centers are paraplegic and 52% are quadriplegic compared to 34.2% and 65.7%, respectively, in this sample. The total incidence of males who are spinal cord injured nationally is 82%, with females accounting for 18%. This sample is surprisingly close to this incidence rate (81.5%, males; 18.4%, females).

Using the statistics based on sex and paraplegia or quadriplegia, Pearson Chi-Square statistical tests were performed to determine whether the sample in the current study was significantly different from the nationwide sample on these important categories. In a chi-square test between the two samples, based on incidence of paraplegia or quadriplegia, and non-significant difference was found ($X^2 = 2.9$, $p < .01$). Likewise, a chi-square test based on the sex distribution in the two samples, revealed that there
was a non-significant difference ($X^2 = .005, p \leq .01$). These statistics would indicate that, indeed, the sample in the current study is representative of the large nationwide sample of spinal cord injured individuals on the very important categories of sex and type (i.e. paraplegia or quadriplegia) of spinal cord injury.

In the national population of spinal cord injured persons, the most frequent cause of injury is motor vehicle accidents (46.9%), with falls next (21%), then sports (14.9%), penetrating wounds (13.2%), and all others (4%) following. The current sample indicates that vehicular accidents are indeed the most common cause (55.2%). Following these in the current sample are diving accidents (18.4%), sports accidents (10.5%), falls (7.8%), and gunshot wounds (7.8%).

Again, according to the comparisons of the national statistics with those of the current study, the sample of individuals in the current study are indeed representative of the population of spinal cord injured individuals in general.

**Refinement of Adjustment to Spinal Cord Injury Scale (ASCI)**

Results of initial item discrimination analyses using the total ASCI revealed a standardized alpha coefficient
of .80. In order to refine the experimental instrument, decisions for deleting or accepting items were determined based on the reliability information gained from the item analysis of the original scale as measured by the subject, close friend or family member, and physical therapist. Information used for this was obtained from item-item correlations, item-total correlations, and the net gain or loss to alpha if the item was deleted, based on the total scale and the four subscales. After the initial item analysis, each item considered for deletion was removed in successive, incremental steps, with attention paid to the impact of the deletion to the subscale and total scale inter-item correlations and item-total correlations taken into consideration. At each iteration of the analysis, an item was deleted only if the above considerations were met. The items deleted were 2, 4, 7, 12, and 14. This created a twenty-four item revised scale. See Appendix G for the refined form, by subscale.

Results of the item discrimination analysis on the revised Adjustment to Spinal Cord Injury Scale (ASCI) are reported for each item by subscale in Appendix H. Summary data are presented in Table 5 and reveal that inter-item correlations among all items ranged from -.23 to .70 with a mean of .17. The item-total correlations among all the items ranged from 2.55 to 5.55 with a mean of 4.64.
Standardized item alpha coefficients for each subscale indicate acceptable coefficients of .52 for the productivity scale, .58 for the social scale, .56 for the medical/physical scale, and .62 for the personal scale. This revised form produced a standardized item alpha coefficient of .83. Although the net gain in coefficient alpha was not substantial, the five items that were deleted, upon closer examination, were problematic (e.g. wording, content, or meaning of the item) or when evaluated using the item analyses done with the assessments of others, they did not contribute to the reliability of the scale. Since Cronbach's alpha provides a conservative estimate of a measure's reliability (Carmines & Zeller, 1979), these results clearly indicate that the revised ASCI possess acceptable degrees of reliability.

The score for each subject based on the refined scale was then computed by changing the scores of the negatively worded items, summing the scores per item, and dividing by the total items, to obtain a mean score of between 1 and 6 for each subject. The scores on the ASCI were then used in the multiple regression analysis to determine the effects of social support, locus of control, and time since onset of injury on adjustment to spinal cord injury as measured by the spinal cord injured individual.
TABLE 5

SUMMARY STATISTICS FOR THE REVISED ASCI

<table>
<thead>
<tr>
<th>SCALE</th>
<th>INTER-ITEM CORRELATION RANGE</th>
<th>INTER-ITEM MEAN</th>
<th>ITEM-TOTAL CORRELATION RANGE</th>
<th>ITEM-TOTAL MEAN</th>
<th>STAND. ITEM MEAN</th>
<th>ALPHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical/Physical</td>
<td>-.15 to .70</td>
<td>.14</td>
<td>.08 to .43</td>
<td>.28</td>
<td>.56</td>
<td></td>
</tr>
<tr>
<td>Productivity</td>
<td>-.10 to .42</td>
<td>.19</td>
<td>.09 to .39</td>
<td>.27</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>Self/Personal</td>
<td>-.18 to .50</td>
<td>.17</td>
<td>.18 to .50</td>
<td>.32</td>
<td>.62</td>
<td></td>
</tr>
<tr>
<td>Social/Relation</td>
<td>.41 to .41</td>
<td>.41</td>
<td>.41 to .41</td>
<td>.41</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td>Total Scale</td>
<td>-.23 to .70</td>
<td>.17</td>
<td>.15 to .59</td>
<td>.37</td>
<td>.83</td>
<td></td>
</tr>
</tbody>
</table>

Multiple Regression Analysis with Self-Assessment

The variable of social support produced a mean of 134.44, with a standard deviation of 26.85, and a range in scores of between 91 and 181. Internal locus of control produced a mean of 28.24, with a standard deviation of 5.14, and a range in scores of between 16 and 36. Chance locus of control produced a mean of 18.60, with a standard deviation of 6.57, and a range in scores of between 7 and 32. The variable of powerful others locus of control produced a mean of 19.05, with a standard deviation of 6.55, and a range in
scores of between 6 and 31. The variable of time since onset of injury produced a mean of 77.21, with a standard deviation of 80.07, and a range in scores between 1 and 231. Finally, the variable of adjustment to spinal cord injury produced a mean of 4.65, with a standard deviation of .68, and a range in scores of between 3.46 and 5.79. See Table 6.

The analysis of the data, using the stepwise multiple regression, indicated that social support is indeed a predictor of adjustment to spinal cord injury, as perceived by the spinal cord injured person ($R^2 = .54$, $p < .001$). The analysis also revealed that powerful others locus of control was negatively correlated with adjustment to spinal cord injury, as perceived by the spinal cord injured person ($R^2 = -.14$, $p < .001$). Sixty-eight percent of the total variance was accounted for by both variables; social support and powerful others locus of control. See Tables 7 and 8.

Table 7 also indicates that a significant positive correlation was also found between powerful others locus of control and chance locus of control ($r = .40$, $p < .01$).

A stepwise multiple regression analysis was completed to determine the amount of relationship or variance accounted for by the variables of social support, internal control, chance control, powerful others control, and time since onset of injury. The first variable entered into the regression
equation was social support with a beta weight of .73 (p < .001). Then added to equation was powerful others locus of control with a beta weight of -.04 (p < .01). See Table 9. Table 9 also indicates that the variable of social support produced a semi-partial correlation of .73, which indicates the amount of variance accounted for by this variable, with the effects of the variance accounted for by the variable of powerful others locus of control partialled out. In addition, the variable of social support produced a partial correlation of .79, which indicates the amount of variance accounted for by this variable, with the effects of the variance accounted for by all of the other variables partialled out.

The additional steps in the stepwise multiple regression analysis did not add to the variance in the adjustment scores. These two variables were the only variables which contributed significantly to the variance in adjustment scores, while the other variables did not make a significant contribution.
### TABLE 6
**MEANS, STANDARD DEVIATIONS, AND RANGES FOR VARIABLES**

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
<th>RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCIAL SUPPORT</td>
<td>134.44</td>
<td>26.85</td>
<td>91-181</td>
</tr>
<tr>
<td>INTERNAL LOCUS</td>
<td>28.24</td>
<td>5.14</td>
<td>16-36</td>
</tr>
<tr>
<td>CHANCE LOCUS</td>
<td>18.60</td>
<td>6.57</td>
<td>7-32</td>
</tr>
<tr>
<td>POWERFUL OTHERS LOCUS</td>
<td>19.05</td>
<td>6.55</td>
<td>6-31</td>
</tr>
<tr>
<td>TIME SINCE INJURY (MONTHS)</td>
<td>77.21</td>
<td>80.07</td>
<td>1-231</td>
</tr>
<tr>
<td>ADJUSTMENT</td>
<td>4.65</td>
<td>.68</td>
<td>3.46-5.79</td>
</tr>
</tbody>
</table>

### TABLE 7
**CORRELATION MATRIX**

<table>
<thead>
<tr>
<th></th>
<th>Social Support</th>
<th>Internal Locus</th>
<th>Chance Locus</th>
<th>Powerful Others Locus</th>
<th>Time</th>
<th>Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Locus</td>
<td>-.12</td>
<td>-.12</td>
<td>-.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chance Locus</td>
<td>-.01</td>
<td>-.07</td>
<td>.40*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Powerful Others</td>
<td>-.07</td>
<td>-.24</td>
<td>-.18</td>
<td>-.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>.07</td>
<td>-.24</td>
<td>-.18</td>
<td>-.39*</td>
<td>.22</td>
<td></td>
</tr>
<tr>
<td>Adjustment</td>
<td>.74**</td>
<td>.10</td>
<td>-.31</td>
<td>-.39*</td>
<td></td>
<td>.22</td>
</tr>
</tbody>
</table>

**p < .001  * p < .01**
Table 8

RESULTS OF STEPWISE REGRESSION ANALYSIS

<table>
<thead>
<tr>
<th>STEP</th>
<th>MULTIPLE R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Social Support)</td>
<td>.735</td>
<td>.54</td>
</tr>
<tr>
<td>2 (Powerful Others)</td>
<td>.827</td>
<td>.68</td>
</tr>
</tbody>
</table>

Table 9

INFORMATION FOR CONSTRUCTION OF REGRESSION EQUATION

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>B (CONSTANT)</th>
<th>STANDARD ERROR</th>
<th>STANDARD BETA</th>
<th>SEMI PARTIAL ERROR</th>
<th>PARTIAL BETA</th>
<th>CORRELATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCIAL SUPPORT</td>
<td>.02</td>
<td>2.42</td>
<td>.73</td>
<td>.09</td>
<td>.73</td>
<td>.79</td>
</tr>
<tr>
<td>POWER OTHERS LOCUS</td>
<td>-.04</td>
<td>9.90</td>
<td>-.38</td>
<td>.09</td>
<td>-.38</td>
<td>-.56</td>
</tr>
</tbody>
</table>

A summary of the residual analysis of the regression equation is presented in Table 10. This analysis provides supportive evidence for the regression equation, in that it indicates the difference between the actual scores (A1) and how the regression equation would predict the actual scores (A1'). Using the regression equation found in this analysis, there would be a minute difference (.001) between the observed adjustment scores and what one would predict the
scores to be, based on the measures of social support and powerful others locus of control.

TABLE 10

ANALYSIS OF THE VARIANCE ACCOUNTED FOR BY REGRESSION EQUATION

<table>
<thead>
<tr>
<th>DF</th>
<th>SUM OF SQUARES</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIGNIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>REGRESSION</td>
<td>2</td>
<td>11.81</td>
<td>5.90</td>
<td></td>
</tr>
<tr>
<td>RESIDUAL</td>
<td>35</td>
<td>5.45</td>
<td>.16</td>
<td>37.94</td>
</tr>
</tbody>
</table>

TABLE 11

RESIDUAL ANALYSIS

<table>
<thead>
<tr>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREDICTED VALUE</td>
<td>4.64</td>
</tr>
<tr>
<td>STAND.PREDICTED VALUE</td>
<td>.00</td>
</tr>
<tr>
<td>STAND.ERROR PREDICTED</td>
<td>.11</td>
</tr>
<tr>
<td>RESIDUAL</td>
<td>.00</td>
</tr>
<tr>
<td>STANDARD RESIDUAL</td>
<td>.00</td>
</tr>
<tr>
<td>STAND.ERROR RESIDUAL</td>
<td>-.01</td>
</tr>
</tbody>
</table>

Finally, when determining the relationship between the self-assessments of adjustment and the assessments of adjustment by the physical therapist, a non-significant correlation was found, though the sample size was too small (N=10) to determine statistically significant correlations. The relationship between the self-assessments of adjustment
and the assessments of close friends or family members was found to be significantly positively correlated ($r = .524$, $p < .001$).

Attributions of Meaning: Why Me?

Bulman and Wortman (1977), social psychologists who have contributed much to the current knowledge about coping to undesirable life events, speculated in their research with spinal cord injured persons, that when confronted with a traumatic event such as spinal cord injury, people are compelled to make sense or meaning in the selective incidence of that event. They suggested that this attribution of meaning may affect successful coping with spinal cord injury. In their research they asked twenty-nine subjects whether they had asked themselves the question, "Why me?" (when thinking about the incident of their accidents), and if so, how had they answered the question. All of their respondents had, in fact, asked themselves this question. All but one had determined at least one response to this question. Bulman and Wortman felt that the reasons fell naturally into six categories: predetermination, probability, chance, "God had a reason," deservedness, and reevaluation of the event as positive.
Each of the subjects in the current study were asked the same question and the responses were divided according to the categories found in the Bulman and Wortman study. Five of the 38 subjects responded that they had asked themselves the question, "Why me?", but had not been able to answer it. Four subjects responded in ways reflected by the following response: "I don't try to answer it. I just go with what I have now and try to make the best of it." Only one subject responded negatively, by saying, "No, but a doctor asked me this same question. He was the first one that brought this 'Why me?' crap to my attention. I could be in a lot worse shape or dead."

With the exception of three responses, the remaining 28 subjects responded with reasons that also fell naturally into the six categories. Thirty-one people answered with one reason, three answered with two reasons, two answered with three answers, and one person answered with four reasons for a total of thirty-seven responses. The most frequent response to "Why me? was 'God had a reason' (with 9 responses), then deservedness (with 7), reevaluation of the event as positive (7), predetermination (6), and lastly probability (1). Of the three responses that didn't fall into the six categories, two reasoned, "Why not me?" and the third answered, "I learned to trust no one."
CHAPTER 5

DISCUSSION

The primary purpose of this investigation was to determine the effects of health locus of control, social support, and the length of time since onset of spinal cord injury, on adjustment. Secondly, the purpose of this research was to explore adjustment to spinal cord injury, as assessed by others. As I began to explore this area more thoroughly, I also discovered the need to pay careful attention to the assessment instrument as a device to measure this adjustment.

In a study such as this, there is a great inclination toward focusing only upon what was accomplished as a result of it. The beginning section of this chapter will be devoted to the results of the study, as they pertain to the original hypotheses, with possible explanations and implications. Included in this section will be several sample responses to the "Why me?" question, with some discussion of these responses following. The next section will involve
additional analyses of the data that help to further explain the results of this study. Though this study has, in fact, answered some of this study's original questions, it has raised, as is the case with most knowledge gained through research, many more questions than have or could be answered within the scope of a study such as this. For this reason, the final sections will be devoted to the limitations of the study and future research questions.

What was most striking about the results of this study, was the powerful relationship between social support and adjustment to spinal cord injury. The results provide clear evidence for a correlation between the self-assessment of adjustment to spinal cord injury and social support. Individuals who had higher perceptions of social support were more successfully adjusted to their spinal cord injuries. This finding supports the past literature in social support and adjustment to spinal cord injury, which indicates that the support of others is crucial for mediating stressful life events, such as spinal cord injury. Though this seems intuitively obvious, this relationship has never been studied using a systematic measurement tool assessing support, with a sample such as this. The past research has often been based on anecdotal information or on the clinical experience of the researchers (Treischmann, 1980).

This finding may have implications for treatment for
spinal cord injured persons who are both living in rehabilitation facilities shortly after their injuries, as well as after they have returned home. The importance of the support of significant other people should be stressed to both families and the individuals themselves. Encouragement should be given to families or close friends to become actively involved with the rehabilitation process. What appears crucial is that the individual feels the support and valuing from others and believes that there are resources outside of him or herself which can be called upon during this tremendously stressful time. Spinal cord injured individuals should be encouraged to maintain and develop significant relationships after their injuries. As Cogswell (1968) found, often people who have incurred injuries such as this have a marked reduction in the number of social contacts and frequency in entering community settings. In contrast to this, Vash (1981) suggested that persons with physical disabilities may exclusively associate with others with disabilities because of the sharing of a similar experience. Regardless of reasons why an individual does or does not maintain social contacts, it seems very clear from the findings of this study and the results of other research (e.g., Harris et al., 1973; Margolin, 1971; Kerr and Thompson, 1972; Versluys, 1980) that close interpersonal relationships as well as the perception of support from the community is a
significant determinant of successful coping.

An additional result of increasing an individual's sources of family and community support, would be greater contact between non-disabled and disabled persons. This would help to dispel some of the negative stereotypes and uncertainty than many people experience when dealing with others who are different from themselves.

In addition, adjustment to spinal cord injury, as assessed by the ASCI, was found to have a significant negative relationship with powerful others locus of control. Lower expectancies of powerful others locus of control predicted more successful adjustment to spinal cord injury, as assessed by the spinal cord injured person. The more an individual believed that powerful others controlled their health, the less well they had adjusted to their spinal cord injuries.

There has been some disagreement in the past literature as to the effect of locus of control on coping. Shadish, Hickman, and Arrick (1981) found that emotional distress in spinal cord injured patients was best predicted by external locus of control, while Bulman and Wortman (1977) found that locus of control did not predict coping. It is suggested in this study that the dimensions of locus of control were more adequately studied because of the use of subjects who were both recently and longer injured (unlike Bulman and Wortman's
study), the use of a multidimensional locus of control scale, and the use of a scale which was specific to health related issues (unlike either study).

This finding has implications for both locus of control, as well as adjustment to spinal cord injury. The powerful others dimension is particularly applicable to health locus of control and the potential samples of subjects who may use it. For example, individuals who have experienced a spinal cord injury, by necessity, must involve him or herself with powerful others in the medical profession. Often these people must live in rehabilitation facilities for extended periods of time. It has been found in past research, that patients in rehabilitation facilities are often punished for assertive, independent behaviors, and rewarded for compliance (e.g. Taylor, 1967; Mikulic, 1971). This atmosphere could definitely contribute to feelings of external control by powerful others. In addition, spinal cord injured people often must be involved with either rehabilitation facilities or with the medical profession for the remainder of their lives. It, thus, becomes important to explore ways in which to encourage people to believe and behave in ways that facilitate personal responsibility. Giving people more power in decision making in rehabilitation facilities and in the home environment and encouraging the taking of individual responsibility would increase a sense of
power and control over one's life. Many persons with spinal cord injuries experience pressure from others to assume a subordinant or sick role, in which they must be cared for by others as a result of their injuries (Treischmann, 1981). It becomes very difficult to maintain independence and self-reliance when others are taking control of one's life.

When trying to explain both the findings of the importance of social support and lower perceptions of powerful others support as predictors of successful adjustment, it seems that a fine balance must be accomplished between self-reliance and support from others. A combination of individual responsibility and the perception that there are resources external to ourselves to call upon in times of need would seem the optimal balance to facilitate adjustment and coping. Pearlin and Schooler (1978) suggested that self-reliance versus reliance on others was more effective in relieving stress. Their study indicated that social support has an inverse relationship with internal locus of control (i.e. self-reliance) which ultimately affects stress. At least when considering the stressful event of spinal cord injury, a balance between support from others and self-reliance would appear important.

Another significant finding of this study was the positive relationship between the self-assessment of adjustment and the assessment of the close friend or family
member. These findings suggest that there is great similarity between how an individual experiences adjustment to their injuries and how the close friend or family perceives a loved one's adjustment. Past research unanimously agrees to the importance of positive relationships and attitudes with family and close friends on adjustment (e.g. Margolin, 1971; Treischmann, 1980). It would appear to be easier to supply and experience this support, if the perceptions of adjustment and coping were similar between the spinal cord injured person and with those people he or she is most closely involved with.

Interestingly, this study did not support a recent study (Shadish et al., 1981) suggesting an existing association of high expectancies of internal locus of control with successful adjustment or coping to spinal cord injury. The differences in findings could be a result of the use of different instruments measuring locus of control. It is suggested that the findings of this study are more reflective of the association of locus of control and adjustment to spinal cord injury. The current study used a locus of control scale specific to health issues and one that assesses three dimensions (i.e. internal, chance, and powerful others) of control, both of which have been found to be important considerations when measuring locus of control (Lefcourt, 1982). Further consideration of the effect of locus of
control on adjustment was taken with post hoc analyses of the results.

In this study the assessment of adjustment to spinal cord injury, as perceived by the individual, was compared with the assessment of adjustment of the physical therapist. A significant relationship was not found. Past research has indicated that there is a negative relationship between the perceptions of rehabilitation personnel and the individual (Bodenhamer et al., 1983; Higgins, 1977). These researchers have found that rehabilitation personnel overestimate the amount of distress the person is experiencing and that correlations of staff ratings of adjustment and self ratings are very low. The sample size (N=10) of the current study would not allow for adequate analysis of this possible relationship, though this relationship is definitely worthy of additional study.

Finally, time since onset of injury did not have a significant relationship with adjustment to spinal cord injury, as assessed by the individual. This study seemed to indicate that those individuals who were very recently injured and who were still living in the rehabilitation facility, had very similar perceptions of adjustment as did those individuals who were at least four years, and in many cases much longer, injured. This is a surprising result due to the suggestion in the past literature that time is a
significant determinant of successful coping to spinal cord injury (Kerr and Thompson, 1972; Treischmann, 1972). Few studies have, in fact, assessed adjustment as it may change over time, and the perception that it does change over time has often been based on anecdotal information or subjective clinical experience. When tested empirically, as was the case in this study, there was no significant relationship found between adjustment and time since onset of injury. Individuals who incur spinal cord injuries may, in fact, have greater understanding and awareness of what may encourage the successful process of adjustment in the early stages, soon after injuries, than was previously considered by researchers and clinicians.

Bulman and Wortman (1977), social psychologists who have contributed much to the current knowledge about coping to undesirable life events, speculated in their research with spinal cord injured persons, that when confronted with a traumatic event such as spinal cord injury, people are compelled to make sense or meaning in the selective incidence of that event. They explored this ascription of meaning by asking spinal cord injured individuals if they had ever asked themselves the question, "Why me?", and if so, how had they answered it. Each of the subjects in the current study were asked the same question and the responses were divided according to the categories found in the Bulman and Wortman
study (i.e. probability, predetermination, chance, deservedness, "God had a reason," and re-evaluation of the event as positive). As was the case with the Bulman and Wortman study, only one subject in this study responded that he had not asked himself this question. The remainder of the respondents answered with reasons that did, indeed, fall into the categories suggested by Bulman and Wortman. The following are the most representative examples of each of the six categories.

**Probability**

...When it's your turn, it's your turn. When it is your turn, it will happen. It could happen at any time. People do menial things and bad things happen. When your number is up, it is up."

**Predetermination**

...I guess I've always just thought of it as bad luck. My car accident wasn't a particularly bad accident. The guy with me was injured, but I didn't have a cut on me. I think of it as bad karma...something that was fated to happen.

**Chance**

It was just an accident and I have to deal with it now.

**God had a reason**

Well, the way I see it is it was meant to be by God...God wanted me on this world for something and I'll find out what
it is.

Deservedness

I knew something bad was going to happen just by the way I was living; meaning drinking, drugs. I had two car accidents and one motorcycle accident just previous to the major or should I say the big one...I also had premonitions that something was going to happen. So to answer why me? It had to be me...I worked hardest for it.

Re-evaluation of the event as positive

It wasn't an act of God, just an accident, that definitely presented a challenge that has changed my life...a challenge that's made me a better person...The situation has given me an opportunity to meet special people. Other people have made me realize my need to be understanding. This has definitely made me a more patient person. Although there are a few obvious aspects of the handicap that are limiting, the answer to 'Why me?' is, in a way I was blessed. It presented me with a whole new, unique view of myself and the world around me.

Finally, a response that seemed to reflect the struggle and confusion in the search for meaning that, encompassed all of the categories of reasons:

I've asked that question many times over to myself, family, friends, and God. At first, I thought I was being punished for being a bad person. I've made
mistakes and maybe I'm different, but I wasn't a bad person. Of course, everyone's answer to my question of 'why me?' was there is no answer. Then they would say that God would never put us through more than He knew we could handle (emotionally and physically). Maybe this was my fate, maybe I'll be a better person when I get through all the hurt and readjustment. I could possibly meet someone very special because of all of this and be happy again. I could have died and many times over it's a great consolation. Why me? Why not. I'm just as vulnerable as the rest of the world. No one has any control of life's tragedy, pain, or death.

As these responses beautifully illustrate, there appears to be a genuine search for meaning as a response to an event as traumatic as spinal cord injury. As Frankl (1959) has suggested, the need for meaning may well represent a powerful human motivation. This may be especially true when confronted with a traumatic, undesirable life event.

Additional Analyses of the Data

Though there has been some disagreement in the past literature regarding locus of control and adjustment to spinal cord injury, there is general acceptance of the hypothesis that internal locus of control is positively
associated with successful adjustment to spinal cord injury (Treischmann, 1981). Because there was no positive correlation found between internal locus of control and adjustment to spinal cord injury in the current study, post hoc analyses comparing the means of locus of control in the current study with means found in a comparable sample, were done. A study using the MHLC with a spinal cord injured sample has not been done. Because of this, the analyses were done using the results found by DeVellis et al. (1980b) who measured locus of control on a nationwide sample of chronically ill (i.e. epileptic) persons. This sample was chosen because the sample had been randomly selected, was relatively large (N=286), and had locus of control scores based on the MHLC. The sample produced a mean internality score of 25.46, with a standard deviation of 5.39. The current sample produced a mean of 28.24, with a standard of 5.14. A t-test to determine whether the means in these two samples were significantly different, was completed. This test indicated that the two means are significantly different (t=2.99, p<.01). On the chance dimension, the DeVellis et al. sample had a mean of 17.6, with a standard deviation of 6.14, compared with a mean of 18.6, with a standard deviation of 6.57, in the current sample. The means of the two samples were not found to be significantly different (t=.92). Finally, considering the powerful others dimension, the
DeVellis et al. sample had a mean of 20.93, with a standard deviation of 6.68, compared with a mean of 19.05, with a standard deviation of 6.55. The means of the two samples were not found to be significantly different ($t = -1.63$).

The findings of these analyses suggest that the spinal cord injured sample in the current study scored significantly higher on the internal dimension of the Multidimensional Health Locus of Control Scale, than did a comparable sample. This might help to explain the results of the regression analysis which found that internal locus of control was not a significant predictor of successful adjustment. The current sample had a greater belief in internal control, with less variability in the scores reflecting this. Even though this sample was higher than average on the internal dimension of locus of control, the dimension of powerful others control appears to distinguish these subjects. A belief in powerful others control may make the difference when considering the effect of locus of control on adjustment.

In addition, research measuring health locus of control with other samples of individuals with chronic conditions indicate a shift toward a more external source of control or responsibility for one's health (Wallston, 1979; Nagy, 1979; DeVellis et al., 1980b). The health locus of control results obtained from the spinal cord injured individuals in this study does not support this. Spinal cord injured individuals
may not experience this shift to a more external locus of control, as do other individuals with chronic medical conditions.

Limitations

In this study, preliminary work was begun to develop an instrument measuring adjustment to spinal cord injury, because there have been few systematic assessments of adjustment to spinal cord injury in the past research. In this study an assessment instrument to measure adjustment to spinal cord injury was developed, item analyzed for reliability, and found to have adequate reliability in the preliminary investigation. For the purposes of this study, it was used as a self-assessment instrument. In the initial item analysis, it was discovered that the instrument appeared to have higher indications of reliability for a physical therapist and close friend or family member than it did as a self-assessment device. The greater reliability found with the physical therapist's assessments may have been a result of using only one physical therapist for assessments of adjustment. The ASCI should be given to a greater number of physical therapists to determine whether the reliability results would maintain high levels. An additional suggestion raised on this point would be that separate instruments should be developed depending upon whom is being asked to
assess adjustment. Though careful attention was given to the development of the instrument in this study, further work needs to be done on item selection and reliability and validity studies.

In addition, all of the instruments used in the current study need validation with similar samples of subjects so that more adequate comparisons can be made between the results found.

Another limitation of this study involved the small number of subjects who were recently injured and were still living in the rehabilitation facility. Though this problem often plagues research such as this due to the relatively small population of potential subjects, the results found when using a small sample size must be judged with caution.

The number of subjects obtained for this study was also not adequate to assess the multidimensionality of the social support variable in the data analysis. Though Morgan (1982) found adequate evidence for the reliability and validity of the total scale score, future attention should be given to adjustment as it may be differentially affected by social support.

Questions for Future Research

Through the work and knowledge gained through this research, it became very apparent that there is great need
for a systematic, well validated, and reliable instrument to measure adjustment to spinal cord injury. Through this study, and others, we have added to the theory and knowledge about this process of adjustment, but more emphasis should be placed with taking what has been learned in the past through theory, research, and clinical experience and developing ways to more adequately empirically study it.

It would also be appropriate to further explore health locus of control and adjustment to spinal cord injury. It has often been suggested that chronic medical conditions contribute to a shift toward external locus of control. The current study challenges this as it pertains to the chronic medical condition of spinal cord injury. Measuring health locus of control with other spinal cord injured samples could add additional knowledge regarding this.

Future research attention should be placed with the attributions of meaning that human beings seem compelled to make when confronted with life's traumatic events. Specific attention should be devoted to how this search for meaning may affect an individual.

The differences between the perceptions of rehabilitation personnel and the individual's assessments of adjustment deserves further exploration, due to the discrepancy in the literature that exists. Because the sample size in this study was inadequate to investigate the
possible difference, additional study seems warranted.

Finally, this study raised the interesting possibility that time since onset of the injury does not affect adjustment to spinal cord injury. Since this is contrary to what has generally been accepted in the past literature, it would appear to be a topic deserving of further exploration.

In summary, though there remain questions to explore regarding adjustment to spinal cord injury and the factors that may affect it, this study provides clear evidence suggesting the importance of social support as a positive influence of successful adjustment to spinal cord injury. In addition, when an individual perceives that his or her circumstances are most controlled by powerful others, this leads to less successful adjustment to spinal cord injury. Time since the onset of the injury and a sense of internal control of health related issues were not found to significantly predict adjustment to spinal cord injury. Though there was no significant relationship between the perceptions of adjustment as assessed by the physical therapist in comparison to the assessments of the individual, there was a significant relationship between self-assessments and assessments by close friends or family members.
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APPENDIX A

After each of the following statements, ask yourself: How true is this about me? Select the answer below which best applies to you and mark its corresponding number in the space after the statement.

<table>
<thead>
<tr>
<th>Definitely</th>
<th>Usually</th>
<th>I am</th>
<th>Usually</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT TRUE</td>
<td>NOT TRUE</td>
<td>NOT SURE</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td>about me</td>
<td>about me</td>
<td></td>
<td>about me</td>
<td>about me</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. The love and support of my spouse or special friend enriches my life nearly every day. _____
2. Sometimes I just don't know where to turn for help.
3. I attend a variety of clubs, church, and civic activities. _____
4. I socialize with a wide variety of people. _____
5. I think others regard me as very good at what I do.
6. I am involved in a wonderful love relationship. _____
7. I wish I felt closer to certain important people in my life. _____
8. My responsibilities for those with whom I work are an important source of meaning in my life. _____
9. I have the opportunity to talk with my closest friends frequently. _____
10. I don't often feel respected by my friends. _____
11. Sometimes I doubt that members of my family really care about me.
12. I wish others thought better of me. _____
13. If I wanted to learn about something, I am likely to attend a workshop, lecture, or meeting about it. _____
14. One thing I enjoy in life is meeting new people. _____
15. I doubt that others value my opinion. _____
16. I feel really loved by at least one other person. _____
17. I would feel better if I had more confidence in the advice I get from others. _____
18. I shy away from consulting a professional about a specific problem. _____
19. Compared to most people, I don't have many close friends. _____
20. I feel respected for the work I do. _____
21. I don't feel very close to anyone. _____
22. I wish I was better at helping those who depend on me for moral support. _____
23. I don't know where to call for public assistance. _____
24. Not many people really know me well. _____
25. Most people I know seem to think I am a capable person. _____
26. I feel a responsibility toward those people who are important to me. _____
27. My life would improve if there was more love in it. _____
28. I make it a point to learn about various helping services in my community. _____
29. I am best described as a "loner." _____
30. My friends seem proud to introduce me as their friend. _____
31. Throughout my life there has usually been one special caring person to love me. _____
32. Though I hate to say so, I feel rejected even by those persons whose respect I want most. _____
33. I have a strong commitment to the people with whom I work. _____
34. I am close to many relatives outside of my immediate family (grandparents, aunts, uncles, cousins). ___

35. Other people seem to think I have good ideas and abilities. ___

36. One specific person has given me much helpful advice and guidance. ___

37. Unfortunately, I think my good qualities are often overlooked by other people. ___

38. Whenever I need help, I discover where it is available to me. ___

39. I am the kind of person who does not get close with others. ___

40. I am often helpful to friends when they need me. ___

41. There are people in my life for whom I'd do almost anything. ___

42. I often feel like I need more advice and information than I'm getting. ___

43. I believe it helps me to help others. ___

44. I don't socialize much with other people. ___

45. At social gatherings, I generally feel like other people are glad I came. ___

46. The love and support of my family is indispensable in my life. ___

47. I wish I had more close friends in whom I could confide. ___

48. I know how to get assistance from church and governmental agencies. ___

49. My life is enriched by the variety of friends with whom I can share both work and good times. ___

50. My people seem to regard me as an upstanding and honorable person. ___
This is a questionnaire designed to determine the way in which different people view certain important health-related issues. Each item is a belief statement with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item we would like you to circle the number that represents the extent to which you disagree or agree with the statement. The more strongly you agree with a statement, then the higher will be the number you circle. The more strongly you disagree with a statement, then the lower will be the number you circle. Please make sure that you answer every item and that you circle only one number per item. This is a measure of your personal beliefs; obviously, there are no right or wrong answers.

Please answer these items carefully, but do not spend too much time on any one item. As much as you can, try to respond to each item independently. When making your choice, do not be influenced by your previous choices. It is important that you respond according to your actual beliefs and not according to how you feel you should believe or how you think we want you to believe.

1. If I get sick, it is my own behavior which determines how soon I get well again. 1 2 3 4 5 6
2. No matter what I do, if I am going to get sick, I will get sick. 1 2 3 4 5 6
3. Having regular contact with my physician is the best way for me to avoid illness. 1 2 3 4 5 6
4. Most things that affect my health happen to me by accident. 1 2 3 4 5 6
5. Whenever I don't feel well, I should consult a medically trained professional. 1 2 3 4 5 6
<p>| | | | | | | |</p>
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<thead>
<tr>
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<tr>
<td>6.</td>
<td>I am in control of my health.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>My family has a lot to do with my becoming sick or staying healthy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8.</td>
<td>When I get sick, I am to blame.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>Luck plays a big part in determining how soon I will recover from an illness.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10.</td>
<td>Health professionals control my health.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11.</td>
<td>My good health is largely a matter of good fortune.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12.</td>
<td>The main thing which affects my health is what I myself do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13.</td>
<td>If I take care of myself, I can avoid illness.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14.</td>
<td>When I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15.</td>
<td>No matter what I do, I'm likely to get sick.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16.</td>
<td>If it's meant to be, I will stay healthy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17.</td>
<td>If I take the right actions, I can stay healthy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.</td>
<td>Regarding my health, I can only do what my doctor tells me to do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
APPENDIX C

AS YOU THINK ABOUT YOUR OWN SPINAL CORD INJURY, HAVE YOU EVER ASKED YOURSELF THE QUESTION, "WHY ME?", AND IF SO, HOW HAVE YOU ANSWERED THIS QUESTION? PLEASE USE THE SPACE BELOW FOR YOUR RESPONSE.
SPINAL CORD INJURED INDIVIDUAL

This is a questionnaire designed to determine the way different people view certain issues regarding spinal cord injury. Each item is a belief statement with which you may agree or disagree. Beside each statement is a scale which ranges from strongly dis-agree (1) to strongly agree (6). For each item we would like you to circle the number that represents the extent to which you dis-agree or agree with the statement. The more strongly you agree with a statement, then the higher will be the number you circle. The more you disagree with a statement, then the lower will be the number you circle. Please make sure that you answer every item and that you circle only one number per item. This is a measure of your personal beliefs about your own spinal cord injury. There are no right or wrong answers.

Please answer these items carefully, but do not spend too much time on any one item. As much as you can, try to respond to each item independently. When making your choice, do not be influenced by your previous choices. It is important that you respond according to your actual beliefs and not according to how you feel you should believe or how you think we want you to believe.

1 Strongly Disagree 4 Slightly Agree
2 Moderately Disagree 5 Moderately Agree
3 Slightly Disagree 6 Strongly Agree

1. I participate in making decisions regarding my own medical treatment and care. 1 2 3 4 5 6
2. I am as independent and self-reliant as physically possible. 1 2 3 4 5 6
3. I show interest and motivation in rehabilitation activities. 1 2 3 4 5 6
4. I have a desire to be productive in work and/or leisure activities. 1 2 3 4 5 6
5. I am uncomfortable with expressing positive feelings (e.g. joy, affection, sensitivity, warmth). 1 2 3 4 5 6
6. I help find solutions to my own problems. 1 2 3 4 5 6
7. I can accept help when needed. 1 2 3 4 5 6
8. I spend a great deal of time thinking about the past. 1 2 3 4 5 6
9. I spend little time or attention developing my own abilities. 1 2 3 4 5 6
10. I attend mostly to my disabilities and the physical functioning I have lost. 1 2 3 4 5 6
11. My relationships with close friends and/or relatives are satisfying. 1 2 3 4 5 6
12. I am comfortable with my own sexuality. 1 2 3 4 5 6
13. I cannot accept myself as a person with a spinal cord injury. 1 2 3 4 5 6
14. I am comfortable with expressing negative feelings (e.g. anger, sadness, fear). 1 2 3 4 5 6
15. I have not educated myself about spinal cord injuries. 1 2 3 4 5 6
16. I have prevented medical problems by using good self-care. 1 2 3 4 5 6
17. I have maintained good mobility skills. 1 2 3 4 5 6
18. I have not maintained a stable living environment. 1 2 3 4 5 6
19. I do not understand my limitations. 1 2 3 4 5 6
20. I consider myself realistic about my abilities and disabilities. 1 2 3 4 5 6
21. I work toward enhancing my skills within my physical limitations. 1 2 3 4 5 6
22. I am very self-critical. 1 2 3 4 5 6
23. I see myself as different from others but not inferior. 1 2 3 4 5 6
24. I do not have any specific goals to accomplish. 1 2 3 4 5 6
25. I enjoy challenges. 1 2 3 4 5 6
26. I am uncomfortable with my own body. 1 2 3 4 5 6
27. I have difficulty with adjusting to changes in my life. 1 2 3 4 5 6
28. I will look for alternative solutions to problems when the first solution fails. 1 2 3 4 5 6
29. I am pessimistic about the future. 1 2 3 4 5 6
30. On a scale from 1 to 10 (1 being the worst adjustment and 10 being the best adjustment), how would you rate your personal adjustment to your spinal cord injury.
This is a questionnaire designed to determine the way different people view certain issues regarding spinal cord injury. Each item is a belief statement with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item we would like you to circle the number that represents the extent to which you dis-agree or agree with the statement. The more strongly you agree with a statement, then the higher will be the number you circle. The more you disagree with a statement, then the lower will be the number you circle. Please make sure that you answer every item and that you circle only one number per item. This is a measure of your personal beliefs about each spinal cord injured individual you are working with in physical therapy. There are no right or wrong answers.

Please answer these items carefully, but do not spend too much time on any one item. As much as you can, try to respond to each item independently. When making your choice, do not be influenced by your previous choices. It is important that you respond according to your actual beliefs and not according to how you feel you should believe or how you think we want you to believe.

1 Strongly Disagree 4 Slightly Agree
2 Moderately Agree 5 Moderately Agree
3 Slightly Disagree 6 Strongly Agree

1. He/she participates in making decisions regarding his/her medical treatment and care. 1 2 3 4 5 6

2. He/she is as independent and self-reliant as physically possible. 1 2 3 4 5 6

3. He/she shows interest and motivation in rehabilitation activities. 1 2 3 4 5 6

4. He/she has a desire to be productive in work and/or leisure activities. 1 2 3 4 5 6

5. He/she is uncomfortable with expressing positive feelings (e.g. joy, affection, sensitivity, warmth). 1 2 3 4 5 6

6. He/she helps find solutions to his/her problems. 1 2 3 4 5 6
7. He/she can accept help when needed. 1 2 3 4 5 6
8. He/she spends a great deal of time thinking about the past. 1 2 3 4 5 6
9. He/she spends little time or attention developing his/her abilities. 1 2 3 4 5 6
10. He/she attends mostly to his/her disabilities and the physical functioning he/she has lost. 1 2 3 4 5 6
11. His/her relationships with close friends and/or relatives appear satisfying. 1 2 3 4 5 6
12. He/she is comfortable with his/her sexuality. 1 2 3 4 5 6
13. He/she is unaccepting of himself/herself as a person. 1 2 3 4 5 6
14. He/she is comfortable with expressing negative feelings (e.g. anger, sadness, fear). 1 2 3 4 5 6
15. He/she has not tried to educate himself/herself about spinal cord injuries. 1 2 3 4 5 6
16. He/she has prevented medical problems by using good self-care. 1 2 3 4 5 6
17. He/she has maintained good mobility skills. 1 2 3 4 5 6
18. He/she has not maintained a stable living environment. 1 2 3 4 5 6
19. He/she does not understand his/her limitations. 1 2 3 4 5 6
20. He/she is realistic about his/her abilities and disabilities. 1 2 3 4 5 6
21. He/she works toward enhancing his/her skills within his/her physical limitations. 1 2 3 4 5 6
22. He/she is very self-critical. 1 2 3 4 5 6
23. He/she sees himself/herself as different but not inferior. 1 2 3 4 5 6
24. He/she does not have goals to accomplish. 1 2 3 4 5 6
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>25.</td>
<td>He/she enjoys challenges.</td>
</tr>
<tr>
<td>26.</td>
<td>He/she is uncomfortable with his/her own body.</td>
</tr>
<tr>
<td>27.</td>
<td>He/she has difficulty with adjusting to changes in his/her life.</td>
</tr>
<tr>
<td>28.</td>
<td>He/she will look for alternative solutions to problems when the first solution fails.</td>
</tr>
<tr>
<td>29.</td>
<td>He/she is pessimistic about the future.</td>
</tr>
<tr>
<td>30.</td>
<td>On a scale from 1 to 10 (1 being the worst adjustment and 10 being the best adjustment), how would you rate this individual's adjustment to his/her spinal cord injury.</td>
</tr>
</tbody>
</table>
APPENDIX E

July, 1984

52 West Dodridge Street
Columbus, Ohio 43202
(614)267-4907

Dear,

As a doctoral candidate in psychology at The Ohio State University, I became very interested in the process of adjustment to spinal cord injury, due to my own personal experience with an injury such as this. As a result, I am doing my doctoral dissertation on the adjustment to spinal cord injury and factors possibly affecting it. I am under the supervision of Don M. Dell, Ph.D., graduate faculty advisor.

As a (former) patient at Dodd Hall, you have become a potential candidate for involvement in this research. The purpose of this study is to gain more knowledge about the adjustment to spinal cord injuries as a way to help those who will become spinal cord injured in the future.

Participation in this study is strictly voluntary. A consent form is provided. Confidentiality regarding both participants and the information that they provide will be strictly maintained. This study will also have no affect or bearing on your medical treatment or rehabilitation. For these reasons, it is unnecessary to sign any of the forms except, of course, the consent form if you are willing to participate.

Enclosed you will find the MSSS and the MHLC inventories. In addition, you will find a demographic data sheet and a sheet asking a single question. Finally, you will find an adjustment inventory marked for the SPINAL CORD INJURED INDIVIDUAL. These are all to be filled out by you, which should take approximately 1 hour to complete. You will also find an adjustment inventory to be filled out by a close friend or relative who knows you well. This is the only questionnaire to be filled out by someone other than yourself, and should take approximately one half hour to complete.

Your participation would be greatly appreciated and, in fact, is needed to allow this research to proceed. Please take the time to fill out these questionnaires if you are willing to
participate, and return them (via postage paid mail) as soon as possible. In addition, I will be happy to send you the results of my study upon your request. If you have any questions pertaining to your involvement in this study, please do not hesitate to contact me at 52 W. Dodridge, Columbus, Ohio, 43202; phone number, (614)267-4907. Thank you very much.

Sincerely,

Patricia A. Smith, M.A.
Don M Dell, Ph.D.
APPENDIX F

1. DATE OF BIRTH

2. ARE YOUR PARENTS LIVING OR DEAD? MOTHER LIVING? DEAD?
   FATHER LIVING? DEAD?

3. NUMBER OF BROTHERS AND SISTERS
   OLDER THAN YOU  BROTHERS  YOUNGER THAN YOU  BROTHERS
   SISTERS

4. EDUCATION - HIGHEST GRADE OF SCHOOL COMPLETED:
   COMPLETED 8TH GRADE  SOME COLLEGE
   DID NOT COMPLETE HIGH SCHOOL  COMPLETED COLLEGE
   COMPLETED HIGH SCHOOL  GRAD OR PROFESSIONAL
   TECHNICAL OR BUSINESS SCHOOL  SCHOOL

5. DO YOU LIVE - (CHECK ALL THAT APPLY)
   ALONE  WITH OWN PARENTS
   WITH SPOUSE  WITH IN-LAWS
   WITH CHILDREN  WITH OTHER RELATIVES -
   WITH OTHERS (E.G. ROOMMATE)  SPECIFY
   WITH BROTHERS AND SISTERS  WITH A PET - SPECIFY

6. CURRENT MARITAL STATUS:
   MARRIED - HOW LONG?
   SEPARATED - HOW LONG?
   DIVORCED - HOW LONG?
   WIDOWED - HOW LONG?

7. SOURCES OF YOUR INCOME: (CHECK ALL THAT APPLY AND AMOUNT)
   SALARY $ PER MONTH OTHER
   (DESCRIBE)
   RETIREMENT PENSION $ PER MONTH
   SOCIAL SECURITY $ PER MONTH
   DISABILITY INSURANCE $ PER MONTH
   INVESTMENTS $ PER MONTH
   COMPENSATION $ PER MONTH
   SOC. SECURITY DISABILITY $ PER MONTH

8. ARE YOU PRESENTLY EMPLOYED? (CHECK ALL THAT APPLY)
   FULL TIME
   PART TIME
   HOMEMAKING
   SCHOOL OR TRAINING PROGRAM
   IF UNEMPLOYED, HOW LONG?
   IF CURRENTLY IN REHABILITATION FACILITY, WHAT WAS
   FORMER EMPLOYMENT STATUS?

9. DATE OF INJURY
10. LEVEL OF LESION

11. ARE YOU A PARAPLEGIC OR A QUADRIPLEGIC?

12. CAUSE OF INJURY
APPENDIX G

ADJUSTMENT TO SPINAL CORD INJURY (ASCI) SCALE
REVISED SCALE BY SUBSCALE

MEDICAL/PHYSICAL

1. I participate in making decisions regarding my medical treatment and care.

3. I show interest and motivation in rehabilitation activities.

15. I have not tried to educate myself about spinal cord injuries.

16. I have prevented medical problems by using good self-care.

17. I have maintained good mobility skills.

19. I do not understand my limitations.

20. I am realistic about my abilities and disabilities.

26. I am uncomfortable with my own body.

SELF/PERSOAL

5. I am uncomfortable with expressing positive feelings (e.g. joy, affection, sensitivity, warmth)

8. I spend a great deal of time thinking about the past.

10. I think mostly about my disabilities and the physical functioning I have lost.

13. I find it hard to accept myself as a person with a spinal cord injury.

22. I am very self-critical.

23. I see myself as different but not inferior.

27. I have difficulty with adjusting to changes in my life.

29. I am pessimistic about the future.
PRODUCTIVITY

6. I help find solutions to my problems.

9. I spend little time or attention developing my abilities.

21. I work toward enhancing my skills within my physical limitations.

24. I do not have specific goals to accomplish.

25. I enjoy challenges.

28. I will look for alternative solutions to problems when the first solution fails.

SOCIAL/RELATIONSHIPS

11. My relationships with close friends and/or relatives are satisfying.

12. I have not maintained a stable living environment.
# APPENDIX H

## DESCRIPTIVE ITEM STATISTICS BY REVISED SUBSCALES

<table>
<thead>
<tr>
<th>Medical/physical</th>
<th>ITEM NUMBER</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
<th>ITEM-TOTAL CORRELATIONS</th>
<th>STANDARD ITEM ALPHA</th>
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<td>Scale Total</td>
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<td>5.92</td>
<td></td>
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| Productivity     | 6           | 5.50 | .72                 | .148                    | .148              |
|                  | 9           | 4.84 | 1.48                | .251                    | .313              |
|                  | 21          | 5.10 | 1.23                | .359                    | .373              |
|                  | 24          | 5.42 | 1.22                | .389                    | .496              |
|                  | 25          | 5.45 | 1.15                | .087                    | .357              |
|                  | 28          | 5.50 | .92                 | .388                    | .355              |
| Scale Total      | 31.82       | 3.70 |                     |                         | .519              |

| Self/Personal    | 5           | 4.39 | 1.81                | .215                    | .394              |
|                  | 8           | 3.29 | 1.98                | .414                    | .581              |
|                  | 10          | 3.55 | 1.95                | .399                    | .342              |
|                  | 13          | 4.87 | 1.60                | .324                    | .299              |
|                  | 22          | 2.55 | 1.73                | .228                    | .148              |
|                  | 23          | 4.47 | 1.64                | .180                    | .277              |
|                  | 27          | 3.79 | 1.79                | .297                    | .358              |
|                  | 29          | 4.21 | 1.82                | .501                    | .593              |
| Scale Total      | 31.13       | 7.54 |                     |                         | .619              |

| Self/Relationship| 11          | 5.02 | 1.16                | .413                    | .560              |
|                  | 18          | 4.66 | 1.73                | .413                    | .515              |
| Scale Total      | 9.71        | 2.45 |                     |                         | .585              |