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Orronic Pain: A Study of Treatment Outcome as it Relates to Coping Behaviors, Assertiveness, Spiritual Well-Being, and MMPI Scores

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by

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ABSTRACT

This study evaluated chronic pain patients in an attempt to predict treatment outcome. Forty-one volunteer patients completed a Patient History Questionnaire, The Ways of Coping (WOC), The Interpersonal Behavior Survey (IBS), The Spiritual Well-Being Inventory (SWB), and the Minnesota Multiphasic Personality Inventory (MMPI). Each of these instruments were used to predict treatment outcome as measured by items from the Pain Treatment Outcome Questionnaire including Functional Activity Level, Use of Analgesic Medications, Subjective Pain Rating, and Return to Work.

Linear regression statistics were used to determine which of the independent variables successfully predicted treatment outcome. Number of Months Since Last Worked predicted Post Treatment Return to Work and was the strongest of all the predictive variables. Functional Activity Level predicted Post Treatment Functional Activity Level. Spiritual Well-Being predicted Post Treatment reduction of Medication Use. Problem Focused Coping, from the Ways of Coping predicted Post Treatment reduction of Subjective Pain. Elevations on the MMPI D, Pd, Mf-Male and conversion V scales all predicted for a failure to reduce Post Treatment Use of Analgesic Medications. Elevations on the MMPI Mf scale predicted for Post Treatment Return to Work.

All of the following variables failed to significantly predict any of the treatment outcome variables: The Ways of Coping Emotion Focused Coping, Religious Coping, the MMPI manipulative reaction profile (Hs, D, Pd, Ma), the Interpersonal Behavior Survey General Assertivness scale, and Frequency of Church Attendance. This study was approached from a cognitive phenomenological perspective which integrated the work of Lazarus and Moos. Developing training for return to work and increasing chaplaincy programs in Pain Treatment Centers are practical applications of these findings.

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CHAPTER ONE

INTRODUCTION

Statement of the Problem

Chronic pain is a problem of major significance in America today. It is estimated that one out of three Americans suffers from some form of chronic pain, disease, or disability. These 135 million people account for a total annual cost of roughly seventy billion dollars in medical costs, lost work time and compensation (Wallis, 1984). Due to this enormous human and financial cost, it is becoming ever more critical that our understanding and care of this national problem dramatically increase in precision and effectiveness.

The study of chronic pain has opened a Pandora's box of complex clinical and theoretical problems. Recent research in the field has clarified some issues while generating many new questions in the process. Some of the issues still open for debate in this broad field are: How is chronic pain best conceptually and operationally defined? Are there clear differences between organic and functional pain (Keschner, 1960)? Can we accurately predict which treatments will be effective with

which types of pain? How is pain best measured, objectively or subjectively? Are there personality profiles that identify persons who are more likely to suffer from chronic pain or positively respond to treatment? Are there significant variables that so far have not been adequately researched in the field of chronic pain? Do certain coping styles correlate with positive adjustment to pain?

The following study will attempt to address some of these key issues as well as others directly related to the understanding and treatment of chronic pain. Of specific interest to this study is the question of being able to predict treatment outcome based on cognitive phenomenological theories of Moos and Lazarus. In setting forth the foundation of this study historical and current perspectives of pain will be discussed. In addition to pain the field of coping will also be addressed, especially as it relates to spirituality, assertiveness, and pathology. Outcome measures, hypotheses, and additional questions will also be set forth in this chapter.

Understandings of Pain

One of the more common conceptualizations of chronic pain is that it is that pain which persists after the injury or disease has been treated. Atkinson states that "a diagnosis of chronic pain simply requires that the patient has experienced pain daily

for at least 6 months" (Atkinson, 1983). For research in the field the following working definition of pain has been suggested: "pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (Pain, 1979).

Historically there have been three neurological theories of pain set forth. The first was vonFrey's specificity theory (Degenaar, 1977) which assumed a fixed, direct line communication system from the skin to the brain enabling a specific one-to-one relationship between a certain stimulus and a corresponding psychological dimension such as touch, cold, warmth, and pain.

The second theory was Sherrington's pattern theory (Degenaar, 1977) which held that the basic determinants of pain are stimulus intensity and central summations. This theory was distinguished by the fact that previously experienced temporal-spatial patterns can be neurologically learned, remembered, and recognized.

The third theory was the gate-control developed by Melzack and Wall (Degenaar, 1977). This theory combined elements of both the specificity and pattern concepts. It suggested that a neutral mechanism in the dorsal horns of the spinal cord acts like a gate which can increase or decrease the flow of nerve impulses from peripheral fibers to the central nervous system.

Pain can also be divided into cutaneous and visceral categories. There are two types of cutaneous pain. The first is

short latency, sharp, and pricking and is mediated by certain large, rapidly conducting myelinated A fibers. The second type is the agonizing, burning, pain which subsides slowly after cessation of the noxious stimulus and is mediated by small unmyelinated C fibers. Both of these start in nociceptors which are receptors preferentially sensitive to noxious or potentially noxious stimuli. Prostaglandins, unsaturated fatty acids, are believed to be agents that cause surface pain sensitization. Although not exclusively, it has been demonstrated that pain is primarily lateralized on the left hemisphere, as are hysterical conversion reactions.

Visceral pain is quite different from the more superficial cutaneous type in that it is dull and aching and its pathway is in different fibers which run with autonomic nerves. Another type of pain is referred pain, as in angina pectoris, where viscerally based pain is felt on the skin as well as in the viscera. Projected pain is when a pain is projected beyond the site of the pain stimulus as in hitting the funny bone or as in phantom limb pain.

Sternbach (1982) distinguishes between acute pain and chronic pain. He sees acute pain as being of recent onset, short duration, and is marked by autonomic changes. "Acute pain is one of emergency response, the fight or flight reaction" (p. 5). In contrast chronic pain is that pain which lasts at least six

months (Pawlicki, 1983). Other common characteristics of acute pain include: a more immediate onset; the presence of several symptoms of which pain is one, but not necessarily the predominant; the pain is usually relieved by medication or sleep; the patient is medically sick or injured; acute pain tends to be described as sharp, searing, burning, cutting, tearing, prickling and is localized in nature. On the other hand, chronic pain is usually the central problem, not just a symptom of an underlying disease; there is a pattern or cycle of the pain complaint which includes chronic sickness and often an alteration of the entire lifestyle to accomodate the pain; the pain is usually described as dull, deep, vague and diffuse.

All pain fibers are mediated through the substantia gelatinosa in the dorsal horn of the spinal column. From the substantia gelatinosa pain neurons either go to the brain through the contralateral anteroventral quadrant with the spinothalamic tract, or through the reticular pathway. Pain pathways primarily terminate in the periaqueductal gray matter and midbrain areas. The brain produces endorphins and enkephalins which serve as morphine like analgesics. Raphe nuclei are descending fibers which are rich in serotonergic fibers and interact in the substantia to inhibit the entry of pain signals. This helps account for the fact that serotonergic antidepressants are effective in the relief of chronic pain symptoms.

Black (1982) points out that pain can be conceptualized in terms of its disabling effects:

> Pain is defined as having two categories, namely physical and psychogenic pain. Physical pain is believed generally to flow directly from a physical injury; it is the natural effect on the nervous system and the brain. As to whether there is a precise definition of pain, neither the legal nor the medical profession have agreed, mainly because medical authorities have not discovered precisely all that is involved with the pain concept. Psychogenic pain is the emotional component of pain. It has no adequately understood connection with organic or physiological matters. While initiated by injury it is thus organically induced, however, it is perpetuated by psychological and social factors. There are several forms of psychogenic pain, symbolic or referred pain which occurs when the victim receives an injury with more mental rather than physical components such as a slap on the face. There is also phantom pain which may follow an amputation. The essential distinction between physical and psychogenic pain is that physical pain is the physical reaction to injury; whereas, psychogenic pain is the result of the victim's perception of the injury (p. 4).

For the sake of clarity in this study three definitions of pain will be used. The first will be a more conceptual one of pain in general. The second will focus more specifically on

chronic pain. The third will be an operational definition specific to this study.

1. Pain is an unpleasant sensory experience associated with actual or potential damage. It is an integration of physiological, psychological and cultural factors and is influenced by anxiety, attention, and suggestion.

2. Chronic pain is that pain which persists for over six months after the disease or injury has been treated.

3. Pain is operationally understood in this study by four factors: Subjective Pain Rating, Use of Analgesic Medications, Functional Activity Level, and Return to Work.

DSM III and Pain

The Diagnostic and Statistical Manual of Mental Disorders (Third Edition) (DSM-III) lists several conditions relevant to the understanding of pain syndromes. Psychological Factors Affecting Physical Condition (316.00) is the DSM-III category used when the determination is made that a physical condition is either initiated or exacerbated by demonstrable environmental stimuli and significant meaning is ascribed to them. "Common examples of physical conditions for which this category may be appropriate include, but are not limited to: obesity, tension headache, migraine headache, angina pectoris, painful menstruation, sacroiliac pain", etc. (DSM-III, 1980, p. 303). This category

refers to disorders that have been historically refered to as "psychosomatic" or "psychophysiological."

Somatization Disorder (300.81) is another diagnosis sometimes used in relation to chronic pain. "The essential features are recurrent and multiple somatic complaints of several years duration for which medical attention has been sought but which are apparently not due to any physical disorder." "Complaints are often presented in a dramatic, vague, or exaggerated way, or are part of a complicated medical history in which many physical diagnoses have been considered" (DSM-III, 1980, p. 241). Pain patterns such as lower back pain are common forms of the somatization disorder.

Psychogenic Pain Disorder (307.70) is a third DSM-III category that relates to pain syndromes. "The essential feature is a clinical picture in which the predominant feature is the complaint of pain, in the absence of adequate physical findings and in association with evidence of the etiological role of psychological factors" (DSM-III, 1980, p. 247). Psychological factors are evidenced either by a clear temporal or logical connection between an observable event that "is apparently related to a psychological conflict or need and the initiation or exacerbation of the pain, or by the pain's permitting the individual to avoid some activity that is noxious to him or her or

to get support from the environment that otherwise might not be forthcoming" (DSM-III, 1980, p.247).

Hypochondriasis (300.70) is also a disorder that can be related to chronic pain. "The predominant disturbance is an unrealistic interpretation of physical signs or sensations as abnormal, leading to preoccupations with the fear or belief of having a serious disease. Thorough physical evaluation does not support the diagnosis of any physical disorder that can account for the physical signs or sensations or for the individual's unrealistic interpretation of them. The unrealistic fear or belief of having a disease persists despite medical reassurance and causes impairment in social or occupational functioning" (DSM-III, 1980, p. 251).

Coping

Many of the understandings of chronic pain carry with them some notion indicating that specific medical interventions have often taken place, usually in the form of "surgical procedures, nerve blocks, transcutaneous electrical nerve stimulation, acupuncture, or analgesic medications" (Barber, 1980, p. 35). All of these procedures have been helpful in many different patient populations; however, treating pain from a purely medical perspective has not proven satisfactory in gaining a full view of the nature and most effective treatment of chronic pain. Fordyce

(1976) and Fordyce, Fowler, Lehman, and DeLateur (1968) have shown the advantage of substituting a learning model of pain for a disease model. Sternbach (1982) points out that:

> The disease model infers an underlying cause that must be sought and treated. This is useful and indeed a necessary approach when the problem is one of acute pain that must be diagnosed as a symptom. However, the disease model may not be useful, and may even be irrelevant when the problem is one of chronic pain in which the cause is understood but not treatable (p.7).

In recent years there has been a significant growth in the field of behavioral medicine to include findings and treatments from outside the purely medical model. Health psychology, social work, educational medicine, physical therapy, occupational therapy, and rehabilitation psychology are all fields that have made important new contributions to the treatment of chronic pain. One of the most important of these conceptions is the need to go beyond the fundamental medical problems to an understanding of the environmental factors such as marriage, family, career, finances, and an awareness of the intrapsychic issues of personality, cognitive appraisal, sense of mastery, hope, and styles of coping. It is now widely accepted that pain perception is an integration of physiological, psychological, and cultural factors and is influenced by anxiety, attention, and suggestion. This is the

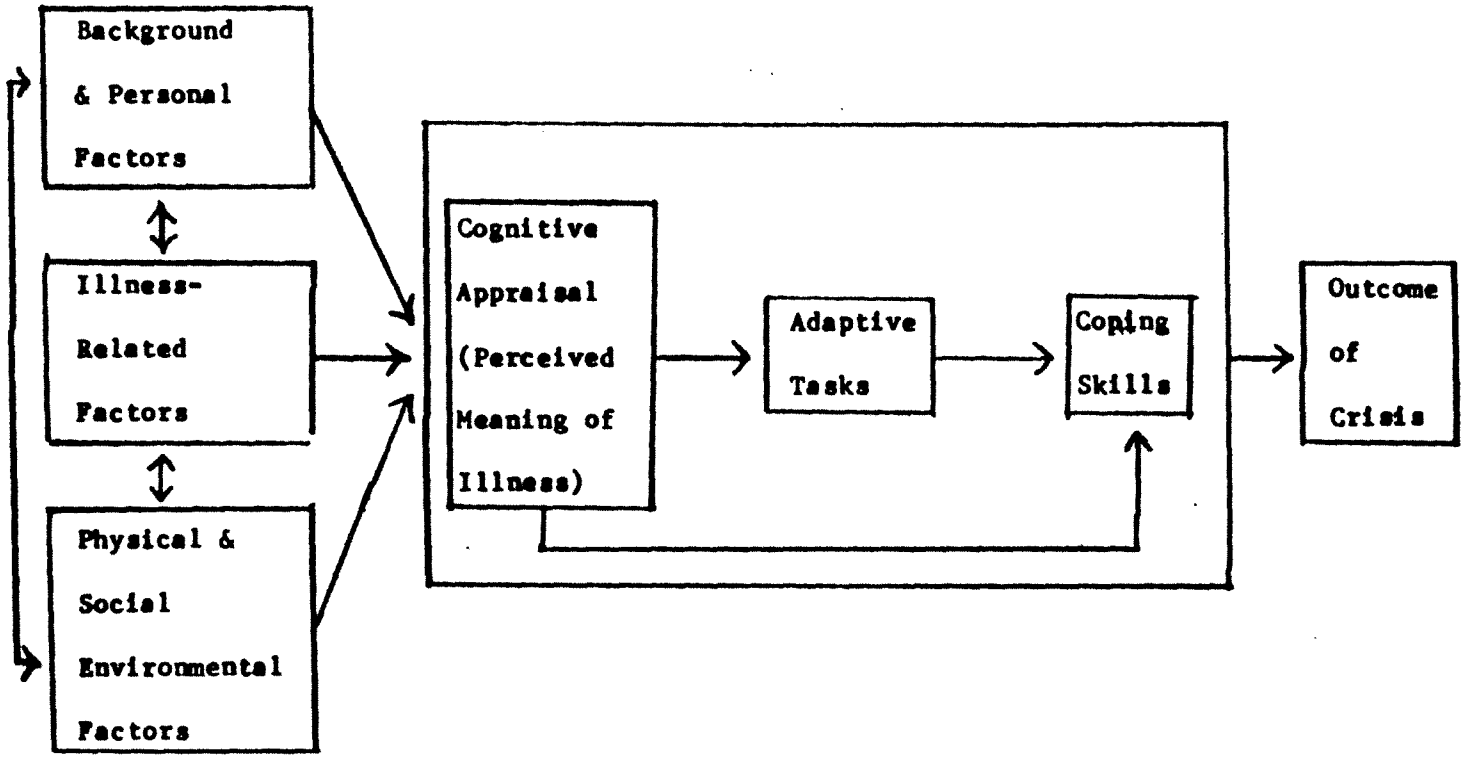

Figure 1. Moos' Conceptual Model of Coping With Physical Illness (Moos and Tsu, 1977).

central thesis of Moos' (see Figure 1) social-ecological psychology of health, "that as we better understand the individual in terms of his social-ecological environment we will be better able to understand and predict his "health-related outcomes" (Moos, 1979, p. 523).

The first conceptions of coping came from the psychodynamic theories. These early models saw coping as a defense mechanism of the ego to protect against internal demands of the person. Coping was not presented as an adaptive function in response to external demands but rather as an indicator of pathology (Freud, 1946; Menninger, 1954; and Haan, 1977). These dynamic conceptions are incomplete in that they fail to account for the positive adaptive function that coping can represent as a problem-solving process.

A second conceptualization of coping came in response to the severly stressful events of life such as death (Kubler-Ross, 1969), bereavement (Parkes, 1972), and natural disasters (Lucas, 1969). These models emphasized normative or predictable rules related to how people would respond to life crisis. Stages of response to these stressors were a main contribution of these writers.

The behaviorists represent a third understanding of coping theory. They have presented coping as a behavioral response to a stimulus that is either adaptive or non-adaptive. These behavioral approaches have emphasized environmental stressors and

action oriented responses to them. Research along these lines has been very helpful in getting past the notion of coping as pathology and have helped see it in terms of individual and environmental factors.

A fourth model of coping has come from the cognitive-behavioral school. This approach sees coping as a function of cognitive evaluations leading to behavioral responses (Turk, Meichenbaum, and Genest, 1985).

Moos and Tsu (1977) have described coping as a multifaceted response. They assert that the way one copes with physical illness will depend on such factors as background and personal factors, illness related issues, and physical and social-environmental factors. Cognitive appraisal is the critical variable in determining illness adjustment. Wallis (1984) indicated that:

> Pain pioneer Bonica believes that drugs are not the entire answer to pain but envisions a day when people will look to their own innate mental powers to relieve suffering. I don't think it takes too much scientific license to say that we will discover mental activities that can produce specific analgesia. In ten or 15 years, perhaps we can begin to teach people to control their own pain (p. 79).

Moos suggests that there are seven adaptive tasks to be dealt with in coping with illness: dealing with pain and incapacitation;

dealing with the hospital environment and special treatment procedures; developing adequate relationships with professional staff; preserving a reasonable emotional balance; preserving a satisfactory self-image; preserving relationships with family and friends; and preparing for an uncertain future. Each one of these skills clearly applies to the adjustment process of the chronic pain patient (Moos & Tsu, 1977).

Of critical importance to the whole field of chronic pain is the style of coping used by the individual and its interaction with the pain syndrome. Lazarus (1974) suggests a cognitive-phenomenological model for understanding coping and delineates two types of coping responses:

> The first of these is Problem-Focused coping which emphasizes efforts to change the situation or environmental stimulus or by altering one's own behavior in response to the problem situation. The second is Emotion-Focused coping which focuses on reducing internal distress reactions. The kinds of evaluation relevant to emotions include 1) threat, 2) harm, 3) challenges, and 4) positive well-being. Emotion is a complex disturbance that includes three loosely interrelated components: namely, subjective affect, (which includes the conscious features of the cognitive appraisal), behavioral action impulses, and physiological changes related to species-specific forms of mobilization for action" (p. 322).

Lazarus defines coping as "efforts, both action oriented and intrapsychic, to manage; that is to master, tolerate, reduce, minimize; environmental and internal demands and conflicts among them which tax or exceed a person's resources" (Coyne & Lazarus, 1980, p. 154). This concept of coping serves several purposes. The first of these has to do with alterations of the person-environment relationship. This "problem-oriented coping refers to efforts to deal with the sources of stress, whether by changing one's problem-maintaining behavior or by changing environmental conditions" (Coyne & Lazarus, 1980, p. 155).

The second aspect of the coping concept has to do with the control of stressful emotions and internal maintainance for the processing of information and action and emphasize the emotional context. The third purpose Coyne and Lazarus point out is that these aspects of coping both interact and overlap and demonstrate the dynamic relationship between coping and problem solving. Fourth, it points out that coping may be positive (reward, benefit) or negative (avoidance of pain) oriented. Fifth, it indicates that the skills used may or may not be routine or automated and may therefore push the organism to its extreme limits. Coyne and Lazarus (1980) point out that:

> The coping process is a dynamic constellation of many acts, and both the demands and the strategies of the person change as the transaction unfolds. As we noted earlier, coping with

> extreme stress often involves an acute phase in which efforts are most appropriately directed toward minimizing or defensively distorting the impact of the event (emotion regulation); and a reorganization phase in which the harm, loss, or threat is recognized and coping efforts are focused on altering the troubled person-environment relationship. However, it is also possible for the two functions to be in conflict as when paliative (emotion-focused) coping obstructs or delays actions required to protect people against illness (p. 155).

Closely related to these responses are three potential cognitive appraisals people can make regarding stressful events. These are: "harm/loss refering to damage that has already occurred; threat refering to anticipated or future harm; and challenge in which the focus is placed on potential gain, growth, or mastery rather than negatively on the possible risks" (Cohen & Lazarus, 1979, p. 219). Coyne, Aldwin and Lazarus (1981) make the fascinating point that in their research "depressed and nondepressed persons did not differ in the type of problems they faced, they differed in how they coped with these particular situations" (p. 444).

Of particular salience to the chronic pain patient is a whole syndrome of potential threats to the patient. Cohen and Lazarus (1979) summarize these threats as:

1. The very possible threats to life and fears of dying as in acute cancer patients.
2. Threats to body integrity and comfort related to bodily injury or disability, permanent physical changes or disfigurement, constant pain and discomfort, or even degrees of incapacitation.
3. Threats to the stability of one's self-concept and future plans which may include the necessity to alter one's self-image or belief systems, uncertainty concerning one's future and the course of the illness or disability, a possible endangering of life goals, and the very real possibility of losing personal control and self-efficacy.
4. Threats to one's emotional well-being due to having to deal with fear, anxiety, anger, dread, and guilt that result from the many stresses in their life.
5. Threats to the performing of normal social roles and involvements such as separation from family, friends or other supportive groups. Also of importance in this area is the strain that results from increased dependence and decrease in social status.
6. Threats related to new physical and environmental situations which may include adjusting to the medical setting, schedule, and terminology (p. 276).

Another important contribution that Lazarus' cognitive phenomenological approach has made to the field of behavioral medicine in general and chronic pain in particular is its delineation of the adaptive tasks required in illness. His theory suggests that although many people respond to illness as a threat, many others respond to it as a difficult task or challenge to be mastered. Lazarus (1974) summarizes five essential adaptive tasks of illness:

> 1) to reduce harmful environmental conditions and enhance prospects of recovery, 2) to tolerate or adjust to negative events and realities, 3) to maintain a positive self-image, 4) to maintain emotional equilibrium, and 5) to continue satisfying relationships with others (p. 232).

Folkman and Lazarus (1980) have demonstrated that people use a wide spectrum of coping strategies as opposed to a single response style. They found that "the context of an event, who is involved, how it is appraised, age, and gender" (p. 219) all contribute to the personal response. Folkman and Lazarus (1980) also indicate that:

> Work contexts favor problem-focused coping, and health contexts favor emotion-focused coping. Situations in which the person thinks something constructive can be done or that are appraised as requiring more information favor problem-focused

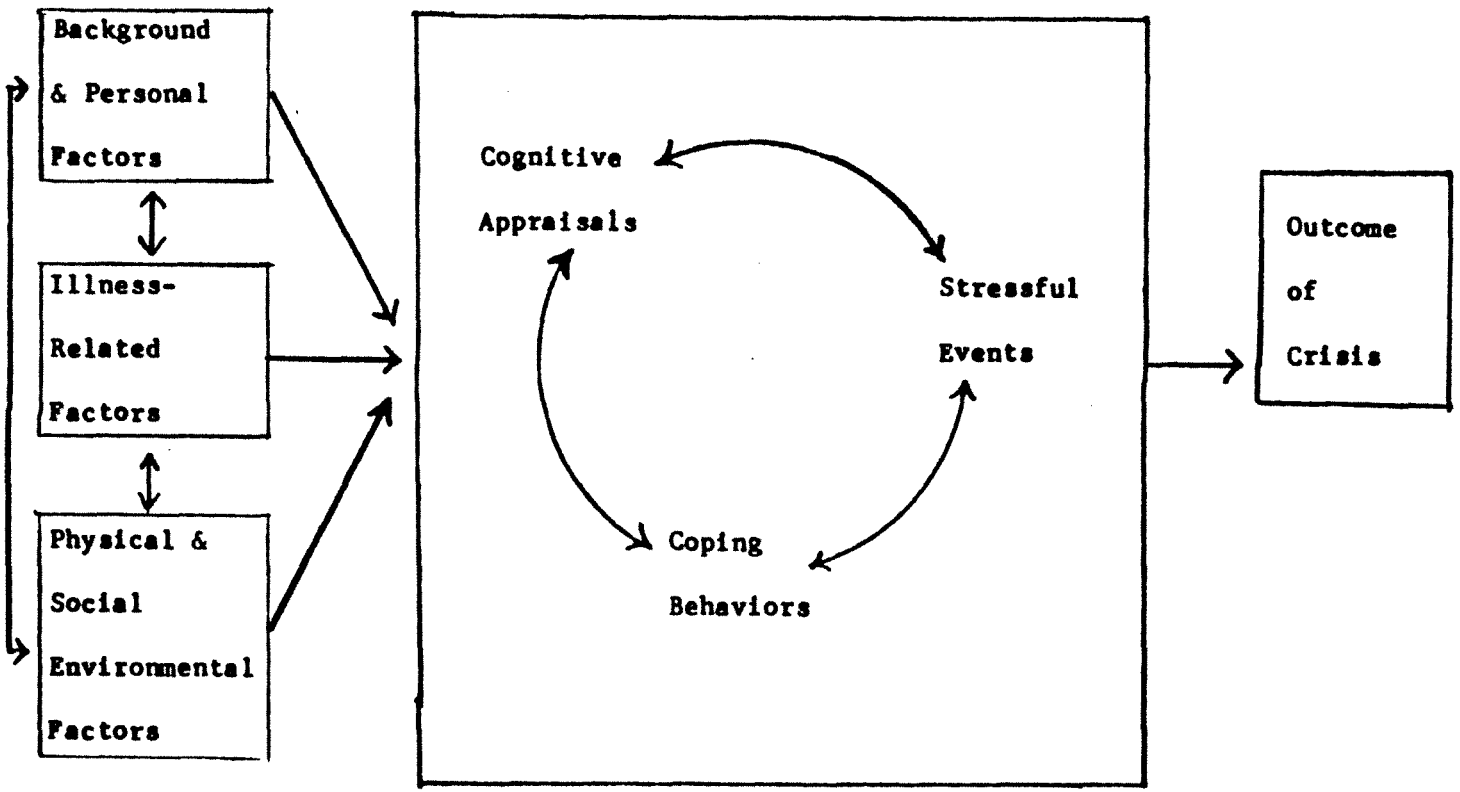

Figure 2. Integrated Moos and Lazarus models (adapted from Campbell, 1983)

coping, whereas those having to be accepted favor emotion-focused coping (p. 219).

Integrating Moos' and Lazarus' models of coping (see Figure 2) provides a fresh approach to understanding coping patterns and responses to chronic pain. This model causes us to look at the many related environmental issues that have to do with increased incapacitation due to chronic pain. The constant discomfort affects work performance and relationships. A job that was once a symbol of competence, productivity, and significance has now become a source of despair, anxiety, self-doubt, and conflict. The boss is now somebody to be avoided as it becomes continuously more difficult to deal with his support, questions, frustration, hostility, or whatever he is perceived as projecting. Self-doubt, depression, and anger characterize the patient's primary responses at work.

Closely related to the work problems are the very crucial issues of private health insurance, workman's compensation, and social security. All three of these represent a double bind for the patient in that they are all essential to support him during his disability, but in so doing often prolong the pain in that every six months to a year the patient has to "justify his illness" in order to maintain financial compensation. Very often the major cash settlements related to the injury or pain are dependent on "proving" the chronicity and/or intensity of their

pain. Money frequently becomes a primary reinforcer for the pain syndrome. It is for this reason that malingering has become such a major problem in the assessment and treatment of chronic pain (Keschner, 1960). Painter, Seres, and Newman (1980) found that post treatment reimbursement deminished treatment gains made during therapy.

The family represents a critical environmental issue in understanding chronic pain. Living with a person who has chronic pain creates many problems for family members such as the sufferer's helplessness, their demands for succorance and frequent irritability.

Another family issue that has received considerable investigation has to do with sexual problems related to chronic pain. "Sexual problems may result from chronic pain, and conversely a pain syndrome may be triggered by sexual problems" (Maruta, & McHardy, 1983, p. 68). In their research two-thirds of the sample reported deterioration of sexual adjustment with decreased frequency and quality. More than one third of the respondents reported deterioration of the total marital adjustment. Often the sexual dysfunction served as a screen for larger marital problems that may or may not be related to the chronic pain. In these cases one or both partners had significant secondary gains that could result from their sexual dysfunction.

Fordyce (1976) has grouped these various factors together under the heading of secondary gains. In assessing the chronic pain patient it is crucial to determine what the patient gains by having pain or what the patient will lose by giving up the pain.

Intrapsychic factors relating to chronic pain represent a tremendous variety of very important issues. Among the most consistent of these is depression (Coyne, Alwin, & Lazarus, 1981). This depression is related to the pain itself, the sense of learned helplessness, the many adverse ramifications that result from it, and the frustration and anger at the whole situation.

Sternbach and Timmermans (1975) point out that most of the diagnostic descriptors of depression also apply to chronic pain patients including: decreased sex drive, sleep disturbance, changes in appetite, social withdrawal, irritability, and somatic preoccupation. Psychological testing usually indicates depressive tendencies among chronic pain patients (Sternbach & Timmermans, 1975; McCreary, 1977). It has been demonstrated that reducing the pain not only decreases the depression (Bond, 1973; Sternbach & Timmermans, 1975), but that treating the depression will tend to decrease the pain (Bradley, 1963; Merskey, & Hester, 1972; Taub, & Collins, 1974).

Besides depression, these patients are often marked by hypochondriasis, extreme anxiety, and hysteria (McCreary, 1977). "Their self-image is extremely poor and they are accustomed to

losing in everything they do and they just present as turkeys or crooks" (Neidre, 1983, p. 4).

Spirituality and Coping

Personal spirituality is an area of renewed interest and research for contemporary psychology. Cunningham (1983) points out that:

> Conflicts surrounding ethics, morality and spiritual development are often central concerns of people in psychotherapy. Therapists should be sensitive to a patient's religious upbringing and current beliefs and to whether spiritual attitudes and feelings can be used to help to relieve psychic suffering (p. 17).

Unfortunately many psychologists disregard this crucial area in their dealing with patients in spite of the fact that between 95 and 98 percent of Americans say they believe in God (Lipset, 1984) and that according to a recent Gallup poll "41 percent of Americans regularly attend a church or synagogue, a figure that has remained roughly the same for more than a decade" (Cunningham, 1983).

In the American population at large religion in general and personal Christian spirituality in particular play an extremely important part in people's lives and coping responses. Throughout the Bible and other religious literature there are passages relevant to illness, stress and coping that a large portion of our

society is familiar with and seek to practice. One of the intents of this study is to assess the role of spirituality on coping responses. This is not an area that has received extensive research. Lazarus' Ways of Coping checklist (Folkman, & Lazarus, 1980) fails to mention any religious styles of coping such as prayer, church attendance, or reading of religious literature.

A number of recent instruments have been developed to assess religious orientation and personal spirituality which will hopefully lead to an expansion of research in this area. Such scales include Allport's Religious Orientation Survey (1962), Ellison's Spiritual Well-Being Scale (1979), and Wichern's Spiritual Leadership Qualities Inventory (1980). It has recently been demonstrated that praying, being prayed for, and being in church represented some of the most reinforcing practices for patients successfully responding to hemodialysis (Garvin, Hollandsworth, & Gersch, 1982; Campbell, 1983). Campbell (1983) demonstrated that not only religious coping but the more general category of spiritual well-being was a significant predictor of positive response to hemodialysis.

Findings such as these give positive impetus to exploring spiritual coping strategies in other areas including adjustment to chronic pain. Butler and Thomas (1980) have helpfully demonstrated that religious preference is closely related to acceptance of disability. Thomas, Davis, and Hochman (1976) have

suggested "the intensity of one's religious beliefs may be more important to acceptance than the specific religion itself" (p. 509).

Assertiveness and Coping

Many treatment settings have long utilized social skills training and personal effectiveness training. Goldstein (1973), Hersen, Eisler and Miller (1973) and Liberman, King, DeRisis, and McCann (1975) have all written concerning these interpersonal skill techniques programs in psychiatric patients. Lange and Jakubowski (1976) have explored the popularization of assertiveness training in non-psychiatric populations. Heinrich, Cohen, and Naliboff (1982) have pointed out that such interpersonal training has been relatively untried in medical problems such as chronic pain. In their clinic they are integrating assertiveness training with physical rehabilitation interventions and self-care techniques.

Mauger, Simpson, and Adkinson (1981) have investigated the relationship between assertiveness, aggressiveness and Christian populations. In their article they asked a number of questions relevent to this present study:

> Should psychologists consider religious orientations as an etiological factor in the production of excesses or deficits in assertive and aggressive behaviors? If religion is a factor in these types of behaviors, intervention strategies should take a

person's faith into account. If the theological tenets of a religious group influence the cognitive structure and personality of group members, there should be some demonstrable impact on the member's personality test scores (p. 2).

Heinrich, Cohen, and Naliboff (1982) have similarly reported significant relationships between assertiveness and chronic pain:

Patients and their spouses have had very positive reactions to the groups, particularly to the interpersonal skill training component. It is our belief that such training can be successfully integrated into traditional approaches to treating pain problems and that such an integration will increase the effectiveness of the more traditional interventions and lead to increased patient satisfaction and more effective functioning (p. 134).)

Campbell's (1983) research with hemodialysis patients assessed them in relation to their assertiveness and found assertiveness to be a significant correlate of positive response to treatment. Campbell, Mullins, and Colwell (1984) also found a positive correlation between assertiveness and Spiritual Well-Being.

Enders (1985) stated that "many chronic pain patients appear to be fairly passive or often even submissive and have difficulty

asserting themselves in a direct and constructive fashion" (p. 591). Fordyce (1979) pointed out that patients with very low Minnesota Multiphasic Personality Inventory (MMPI) Pd scales (T score below 50) would be good candidates for assertion training.

Psychopathology and Coping

There is a considerable background of researchers attempting to make correlations between psychopathology and chronic pain. Freeman, Calsyn, and Louks (1976) and McCreary, Turner, and Dawson (1977) have found that there is a difference between functional pain patients and organic pain patients on the MMPI neurotic scales: Hypochondriasis, Depression, and Hysteria.

McCreary, Turner, and Dawson (1977) have demonstrated that high scores on the MMPI Hs scale "significantly identified patients who would be poor responders to conservative orthopedic care for their low-back pain" (p. 73). From this same study McCreary went on to say that although the Hs scale was the only one to reach significant levels, three other scales demonstrated strong trends towards correlation with poor outcome to treatment. These other scales were: depression, hysteria, and social introversion. In their research with 144 pain patients Naliboff, Cohen, and Yellen (1982) found significant elevations in these same scales. In a study of 112 chronic pain patients Strassberg (1981) also found the MMPI to be a successful predictor

of response to treatment with the strength of correlation varying with sex, type of pain, and type of treatment received. Brandwin and Kewman (1982) similarly found the MMPI to be of positive predictive value for response to treatment with chronic pain patients.

In terms of predicting for treatment outcome Strassberg (1981) found that K-scale elevations negatively correlated with outcome, indicating that the lower the defensiveness the better the outcome. Strassberg also demonstrated that high Mf (masculine/feminine) scores positively correlated with treatment outcome, indicating the higher one's educational level the more likely he/she would be able to utilize help for their pain condition.

In contrast with these positive findings of MMPI predicting response to treatment, there have been a number of other studies that have resulted in negative results. Watson (1982) found only the Hs scale to be significantly elevated above those of control groups indicating that "the pain group exhibited the vague and diffuse somatic complaining characteristic of hypochondriasis" (p.365). Stone and Pepitone-Arreola-Rockwell (1983) found the MMPI not to be of significant usefulness in differentiating between functional and organic pain groups.

Woodforde and Merskey (1972) found that both organic and psychogenic pain patients were comparable to psychoneurotic outpatients and that the group with demonstrable lesions showed the greatest likelihood of having phobias and obsessional thinking. Sternbach (1982) has frequently asserted the position that the MMPI or any other test can't really distinguish between psychogenic and somotogenic pain as meaningful labels since the two groups are never mutually exclusive.

Several other researchers found the MMPI to be of mixed predictive value in relation to chronic pain. Long (1981) found basic MMPI scores to only weakly relate to outcome but when patients were placed into subgroups based on MMPI scores a much stronger outcome correlation emerged. His work with 44 surgery patients found that conversion-V profiles on the Hs, D, and Hy scales correlated with unfavorable response to surgery. Long also reported that elevations on the Pd scale in conjunction with conversion-V profiles were charaterized by surgery failure.

Parker, Doerfler, Tatten, and Hewett (1983) also found only mixed results in correlating the MMPI with other pain measures. Trief and Yuan (1983) seemed to best summarize the mixed results with the finding that throughout the literature the strength of the relationship between MMPI scores and response to treatment depends on outcome measure used, the type of analysis used on the data, and many other variables already mentioned. They concluded

"that although the MMPI is an interesting research tool, it is not a consistently valid clinical tool for predicting response to rehabilitation efforts in chronic low back pain patients" (Trief & Yuan, 1983, p. 46.).

Outcome Measures

Chronic pain is measured in a variety of ways with varying degrees of relevance for this study. The McGill Pain Questionnaire (Melzack, 1975) is probably one of the most widely used and well established of the pain assessment instruments. It is especially helpful in quantifying pain and in increasing precision in pain location and identification. It is often used in Multimodal Pain Centers (MPC's) on a pre and post treatment basis to evaluate treatment effectiveness (Reading, 1979; Reading, 1982; Parker, Doerfler, Tatten, & Hewett, 1983).

Other pain measures reported in the literature include the Low Back Pain Questionnaire (Leavitt, & Garron, 1979), the Back Pain Classification Scale (Leavitt, & Garron, 1979) which grew out of their first scale.

With the relatively recent advent of Multimodal Pain Centers in America, Canada and Europe there is not an abundance of treatment outcome studies reported in the literature. The majority of current outcome studies are descriptive in nature, explaining the treatment setting and program used. Even though specific assessment tools, methodology and statistics vary, there

is considerable consistency in the measures of outcome. The most common of these measures are: 1) reduction of addictive medications (narcotic analgesics and minor tranquilizers), 2) subjective report of the patient's pain level, 3) increase in the number of functional activities in which the patient can participate, and 4) number of patients returning to work (Smith, in press). The first three of these items are taken from the McGill Pain Questionnaire and all four are widely referred to in the literature as essential assessment measures for treatment outcome (Aronoff, Evans, & Enders, 1983; Hebben, 1985). These four measures have been combined for this study on a self-report form referred to as the Pain Treatment Outcome Questionnaire (PTOQ).

Hypotheses

The following questions are of special interest to this study of coping among chronic pain patients. Do coping styles predict treatment outcome with chronic pain patients? Do personal characteristics such as assertiveness and spiritual well-being meaningfully predict for treatment outcome with this population? Is positive outcome of treatment for chronic pain predictable in terms of MMPI profiles? Are there significant demographic variables that will correlate with response to treatment for chronic pain? The intention is to investigate these questions so

that the methods of coping with chronic pain will be better understood in both practical and theoretical terms.

The pursuit of these questions is aimed at applying Lazarus' cognitive phenomenological model to the treatment of chronic pain. If successful responders to treatment for chronic pain differ significantly from poor responders in their style of coping then this would lend credence to Lazarus' model. Also, if factors such as MMPI scores, assertiveness, and spiritual well-being predict for outcome then Moos' model of dealing with physical illness will be further substantiated. A second aim is to broaden our understanding of chronic pain patients so as to better serve them in a combined medical-psychological community. The third goal is to establish a firm theoretical relationship between chronic pain and styles of coping and personal background factors so that research of more experimental nature can be undertaken.

Ways of Coping

H1. Emotion Focused Coping from the Ways of Coping will negatively predict for treatment outcome.

Rationale for H1. Folkman and Lazarus (1980) demonstrated that people tend to utilize Emotion Focused Coping more in relation to health situations. Campbell (1983) found that although people with health problems tended to use Emotion Focused coping this did not serve as a predictor of positive response to

treatment for hemodialysis, and therefore will correlate negatively with outcome.

H2. Problem Focused Coping from the Ways of Coping will positively predict for treatment outcome.

Rationale for H2. Based on Folkman and Lazarus' (1980) finding that Problem Focused Coping is a highly effective means of dealing with stressful situations, it would follow that positive responders to treatment of chronic pain will have used it to a significant degree.

H3. Religious Coping from the Ways of Coping will positively predict for treatment outcome.

Rationale for H3. Garvin, Hollandsworth, and Gersch (1982) found that being prayed for, praying, and being in church were the three most reinforcing activities for hemodialysis patients. Campbell (1983) found a similarly positive tendency for hemodialyais patients to use these religious coping techniques. This hypothesis will determine if religious coping is also used by chronic pain patients as indicated by Kotarba's (1983) finding that "sufferers who sought cognitive control of their pain often turned to organized religion" (p.681). Campbell's (1983) research with hemodialysis patients did not find this variable to be a meaningful predictor of treatment outcome.

Spiritual Well Being

H4. Spiritual Well-Being will positively predict for treatment outcome.

Rationale for H4. Based on Garvin et al.'s (1982) finding that religious activities were reinforcing for positive response to hemodialysis and Campbell's (1983) finding that Spiritual Well-Being was a significant predictor of response to treatment for hemodialysis it can be infered that these same factors will apply to chronic pain patients. Paloutzian and Ellison (1979) describe spiritual well-being as a positive indicator of quality of life, and would therefore be related to adjustment.

Minnesota Multiphasic Personality Inventory (MMPI)

H5. Psychopathology, as measured by the MMPI, will predict for treatment outcome. Five indicators of pathology will be examined in relation to the four measures of treatment outcome.

Depression. Elevations on the MMPI D scale will negatively predict for treatment outcome.

Rationale for Depression. Elevations on all three of the MMPI neuroticism scales tend to predict for poor treatment outcome among chronic pain patients (Bradley, 1963; Brandwin & Kewman, 1982; McCreary, Turner & Dawson, 1979; Merskey, & Hester, 1972; Strassberg, 1981; Taub & Collins, 1974).

Hostility. Elevations on the MMPI Pd scale will negatively predict for treatment outcome.

Rationale for Hostility. Fordyce (1976) suggested that the impulsivity and hostility measured by the Pd scale negatively predict for treatment outcome with chronic pain patients. Fordyce (1976), and Enders (1985) also suggested a negative correlation between Pd scores and assertiveness. This correlation will be tested in this study.

Masculinity/Femininity. Elevations on the MMPI Mf scale will predict for treatment outcome.

Rationale for Masculinity/Femininity. Strassberg (1981) found strong correlation between elevations on the Mf and treatment outcome. He suggested that because elevations on the Mf correlated with education and sophistication his findings could be interpreted as indicating that higher education and sophistication helped patients utilize help for their condition.

Somatization. Subjects with conversion V profiles will negatively predict for treatment outcome.

Rationale for Somatization. Long (1981) found that the conversion V profile negatively correlated with treatment outcome. This represents a special example of the more general finding that elevations on the neurotic triad predict for negative outcome (Bradley, 1963; Brandwin & Kewman, 1982; McCreary, Turner &

Dawson, 1979; Merskey & Hester, 1972; Strassberg, 1982; Taub & Collins, 1974).

Manipulative Reaction Profile. Elevations on the MMPI manipulative reaction scales (Hs, D, Pd, Ma) will negatively predict for treatment outcome.

Rationale for Manipulative Reaction Profile. Sternbach (1982) found that patients with elevations on the manipulative reaction scales tended to respond poorly to treatment for chronic pain.

Interpersonal Behavior Survey (IBS)

H6. The general assertiveness scale from the IBS will positively predict for treatment outcome.

Rationale for H6. With the understanding that chronic pain presents obstacles to daily living it would then hold that assertiveness, that quality which helps people strive for adjustment in spite of stressful circumstances, would help them in their adjustment to their pain syndrome. Campbell found that the General Assertiveness Scale (SGR) of the IBS positively correlated with response to treatment for hemodialysis patients (1983). It has also been found that assertiveness positively correlates with other measures of personal well-being such as measured by the Religious, Existential, and Spiritual Well-Being scales (Campbell, Mullins, & Colwell, 1984).

H7. Frequency of Church Attendance will positively predict for treatment outcome.

Rationale for H7. This follows from Garvin et al.'s (1982) finding that religious activities were reinforcing for adjustment to hemodialysis and is an attempt to find if the same is true for chronic pain patients.

H8. Number of Months Since Last Worked will predict negatively for treatment outcome.

Rationale for H8. Smith (1984) found that Number of Months Since Last Worked was a significant predictor of treatment outcome with lower back pain patients. Patients who had worked within the past 24 months tended to have better treatment outcomes than those who had not worked in more than 24 months.

Questions

Functional Activity Level

Q1. asks whether pretreatment Functional Activity Level will predict for treatment outcome.

Rational for Q1. There is a logical consistency in assuming that those patients who are more active before treatment will continue to be so after treatment.

Subjective Pain Rating

Q2. asks whether pretreatment Subjective Pain Rating will predict for treatment outcome.

Rationale for Q2. It is logically consistent to assume that the level of pretreatment subjective pain will predict for treatment outcome.

Use of Analgesic Medications

Q3. asks whether pretreatment Use of Analgesic Medications will predict for treatment outcome.

Rationale for Q3. There is, again, a logical consistency is assuming that pretreatment Use of Analgesic Medications will predict for treatment outcome.

Summary

This introductory chapter has presented research data on current and historical understandings of pain and coping. Of primary importance to this study is the interaction between chronic pain and coping strategies. Pain has been defined as an unpleasent sensory experience that is influenced by physiological, psychological, and cultural factors. Chronic pain is that pain which persists for over six months after the disease or injury has been treated. This studies operational definition of pain is measured by four factors: Subjective Pain Rating, Use of Analgesic Medications, Functional Activity Level, and Return to

Work. Issues related to pain have been presented as have the historical understandings of coping theory. Primary emphasis has been given to the cognitive phenomenological perspective. In addition to these two primary issues spiritual well-being, assertiveness, and pathology have all been discussed as relevant factors related to treatment outcome for chronic pain.

Chapter two will deal with the methodology of this study. It will include a description of the study sample, the instruments used, the procedure followed, and the research designs used to statistically analyze the data. Chapter three is a description of the statistical analysis and results of the study. Chapter four is a discussion of the results including possible explanations and implications for the outcomes, and future research possibilities that could evolve from it.

CHAPTER TWO

METHOD

Subjects

Forty-one chronic pain patients were used in this study. Participants ranged in age from 25 to 67 (mean = 41.878, S.D. = 9.44). The group was comprised of twenty six males (63.4%) and 15 females (36.6%). All subjects were in-patient volunteers from a population of chronic pain patients at the Portland Pain Center.

Demographic Data

A self-report questionnaire was used to gain the following information: age, sex, marital status, church affiliation, frequency of church attendance, types of help sought, ethnic background, employment status, types of reimbursements received, educational level and annual income (see Appendix A).

Instruments

Interpersonal Behavior Survey (IBS)

This survey was used to determine the patients assertiveness. It was designed by Mauger and Adkinson (1980) to assess both assertiveness and aggressiveness. The scales are such that

passive and passive-aggressive styles are also observable. Mauger and Adkinson (1980) offer the following definitions:

> Assertivness has been conceptualized as behavior directed toward reaching some desired goal which continues in the direction of that goal in spite of some obstacles in the environment or the opposition of others. The attitude of the assertive person is positive towards other people. Aggressive behavior is seen as behavior that originates from attitudes and feelings of hostility towards others. The purpose of aggressive behavior is to attack other individuals or to exert power over them in some fashion. Aggressive behavior is only incidentally directed toward some instrumental goal and often the attaining of that supposed goal is merely a rationalization for the aggressive actions (p.2).

The IBS is composed of four general clusters of scales including: validity scales, aggressiveness scales, assertiveness scales, and relationship scales. Each of these is comprised of a number of subscales. The total scale contains 272 true/false questions. The modal retest reliability for this scale is greater than .90, and coefficient alpha internal consistency measures were also quite good (range: .11 - .90, median: .69).

Factor analysis studies of the IBS have demonstrated that its measures of assertiveness and aggressiveness are essentially independent response sets and support its construct validity. Convergent and discriminant validity has been established by

correlating the IBS with a number of other well known personality inventories such as the MMPI, the California Psychological Inventory, the Edwards Personal Preference Schedual, the Eysenck Personality Questionnaire, and the Buss-Durkee Hostility Inventory. In general the IBS had good convergent and discriminant validity in relation to these other tests. Mauger and Adkinson (1980) point out that it is helpful to use the IBS in conjunction with the MMPI in that it "samples a domain of behavior that is not covered very well by the MMPI" (p. 20).

The scales of the IBS fall into four catagories: validity, aggressiveness, assertiveness, and relationship. Following is a brief description of each of the scales.

Validity Scales.

1. Denial (DE), "indicates a hesitancy to admit to common but socially undesirable weaknesses and feelings" (Mauger & Adkinson, 1980, p. 2).

2. Infrequency (IF), "indicates a tendency to endorse items that less than 10% of the normative sample endorsed" (Mauger & Adkinson, 1980, p.2).

3. Impression Management (IM), detects a more sophisticated form of denial than does the Denial scale.

Aggressiveness Scales.

1. General Aggressiveness, Rational (GGR), is a general measurement of aggressive behaviors, feelings, and attitudes.

2. Hostile Stance (HS), is an assessment of an antagonistic orientation towards life that justifies aggression.

3. Expression of Anger (EA), "is an indication of the tendency to lose one's temper and express one's anger in a direct, forceful manner" (Mauger & Adkinson, 1980, p. 4).

4. Disregard for Rights (DR), "measures the tendency to ignore the rights of others in order to protect oneself or to gain an advantage" (Mauger & Adkinson, 1980, p. 4).

5. Verbal Aggressiveness (VE), "gives an indication of the using of words as weapons by doing such things as making fun of others, criticizing, and putting others down" (Mauger & Adkinson, 1980, p. 4).

6. Physical Aggressiveness (PH), "reflects the tendency to use or fantasize using physical force" (Mauger & Adkinson, 1980, p. 4).

7. Passive Aggressiveness (PA), reflects "behaviors such as stubbornness, negativism, procrastination, and complaining" (Mauger & Adkinson, 1980, p. 4).

Assertiveness Scales.

1. General Assertiveness Rational (SGR), gives a general measure of assertive behaviors, feelings, and attitudes.

2. Self-Confidence (SC), measures a person's expression of positive feelings and self-assurance in relationship skills.

3. Initiating Assertiveness (IA), "is an indication of leadership potential and the tendency to take an ascendant role in groups" (Mauger & Adkinson, 1980, p. 5).

4. Defending Assertiveness (DA), "reflects behaviors related to standing up for one's rights" (Mauger & Adkinson, 1980, p. 5).

5. Frankness (FR), "samples the willingness to clearly communicate one's true feelings and opinions" (Mauger & Adkinson, 1980, p. 5).

6. Praise (PR), "reflects one's degree of comfort in giving and receiving praise" (Mauger & Adkinson, 1980, p. 5).

7. Requesting Help (RE), "measures the willingness to ask for reasonable favors and help when they are legitimately needed" (Mauger & Adkinson, 1980, p. 5).

8. Refusing Demands (RF), "indicates the willingness to say 'no' to unreasonable or inconvenient demands from others" (Mauger & Adkinson, 1980, p. 5).

Relationship Scales.

1. Conflict Avoidance (CA), is indicative of people that tend to avoid conflicts, arguments, or open disagreement with others.

2. Dependency (DP), includes behaviors such as "relying on others for help in decision making, feelings of powerlessness and helplessness, fear of losing the support of others, and attention seeking" (Mauger & Adkinson, 1980, p. 5).

3. Shyness (SH), "samples social behaviors such as friendliness, participation in social events, and the enjoyment of social interaction" (Mauger & Adkinson, 1980, p. 5).

Spiritual Well-Being Inventory (SWB).

This scale was used to assess the subject's perception of his/her spiritual well-being. Ellison conceptualizes spiritual well-being on two planes "having one vertical dimension (connecting one's perception of relationship to God) and one horizontal dimension (connecting one's perception of life meaning or purpose, or satisfaction with one's existence)" (Paloutzian & Ellison, 1979, p. 1). These two subscales, refered to respectively as the Religious Well-Being (RWB) subscale, and the Existential Well-Being (EWB) subscale are each comprised of 10 Likert-type items. The SWB has a test-retest reliability of .934 and an internal consistency coefficient alpha of .89 (Paloutzian & Ellison, 1979).

The SWB has been positively correlated with such key variables as social skill, self-esteem, and perceived social competence and negatively correlated with depression and loneliness (Ellison & Economos, 1981). Paloutzian and Ellison (1982) reported that the Spiritual Well-Being Scale correlated negatively with the UCLA Loneliness Scale, and positively with the Purpose of Life Test, intrinsic religious orientation, self-

esteem, and social skills. Campise, Ellison and Kinsman (1979) found positive correlations between spiritual well-being and perceived quality of parent-child relationships and family togetherness. Campbell (1983) reported a postive correlation between spiritual well-being and assertiveness and response to treatment for hemodialysis. Quinn (1985) reported a positive correlation between Spiritual Well-Being and marital satisfaction. These relationships between spiritual well-being and other psychological constructs demonstrate the efficacy of the Spiritual Well-Being Scale as an indicator of quality of life or life satisfaction and therefore useful as an instrument to predict treatment outcome for chronic pain.

Minnesota Multiphasic Personality Inventory (MMPI).

The MMPI was utilized to assess personality profiles and to test for predictive value in response to treatment. "The MMPI has been designed to provide an objective assessment of some of the major personality characteristics that affect personal and social adjustment" (Hathaway & McKinley, 1983, p. 1). Hathaway and McKinley (1983) report a test-retest reliability range of .57 to .93 and a median of .75.

The MMPI consists of three validity scales which determine response set patterns and ten clinical scales: Hypochondriasis (Hs), Depression (D), Hysteria (Hy), Psychopathic Deviate (Pd),

Masculinity-Femininity (Mf), Paranoia (Pa), Psychasthenia (Pt), Schizophrenia (Sc), Hypomania (Ma), and Social Introversion (Si). In addition to these standard scales a number of additional research scales are available for investigation. One of these, the Lower Back Pain (LB) has been selected for this study based on its direct relevence to it.

The Ways of Coping (WOC).

This scale was used as the primary assessment tool to determine styles of coping. Folkman and Lazarus (1981) developed this test as a clinical tool to test their cognitive-phenomenological view of coping. According to Folkman and Lazarus, (1980) the test includes:

> items from the domains of defensive coping (e.g., avoidance, intellectualization, isolation, suppression), information-seeking, problem-solving, palliation, inhibition of action, direct action, and magical thinking. The checklist is binary, yes or no, and is always answered with a specific stressful event in mind (p. 224).

The internal consistency was determined by a coefficient alpha and was determined to be .80 for the P-scale (Problem Focused) and .81 for the E-scale (Emotion Focused). In their research data Folkman and Lazarus (1980) pointed out that although these two scales are theoretically independent, they are in fact somewhat overlapping and have considerable shared variance.

Factor analysis of the test items loaded on seven factors: problem focused, wishful thinking, mixed growth, minimizes threat, emotional support, and blames self.

Since The Ways of Coping reflects no specifically religious coping stratagies, five additional questions were used to assess this area. These religious coping questions have been used previously with The Ways of Coping checklist to evaluate coping and adjustment among hemodialysis patients and were found to be widely used by these patients (Campbell, 1983). These additional questions are: 1) Prayed about this situation, 2) Asked someone to pray with you or for you about this situation, 3) Searched the Bible for spiritual insight or comfort, 4) Read spiritual literature for inspiration and encouragement, 5) Reflected on spiritual thoughts such as "God is in control of my life in this situation".

Pain Treatment Outcome Questionnaire (PTOQ).

This tool has been developed by the Portland Pain Center and was used to assess each of the dependent variables. This device is a pre and post treatment questionnaire comprised of: demographic data, Subjective Pain Rating, Use of Analgesic Medication, Functional Activity Level, and employment status. These pre and post treatment measures have been individually evaluated as measures of treatment outcome. Each of these items

has been widely used in pain outcome research (Aronoff, Evans, & Enders, 1985; Smith, in press) and are the same or similar to those used on the McGill Pain Questionnaire (Melzack, 1975).

Procedure

Upon acceptance into the program at the Portland Pain Center patients were given the opportunity to participate in this research study. Approximately ten percent of the intakes into the program did not participate in the study. A few of the new patients chose to not involve themselves in the study while the remainder where unavailable to come to the orientation meeting which introduced them to the study. Sixty-eight volunteers initially agreed to complete the test materials. The first forty-one participants to complete all the materials comprised the population sample. The remaining 27 volunteers did not complete their post treatment evaluation in time to be included in the final data analysis. Data collection lasted from November, 1984 through August of 1985.

During the first twenty-four hours in the program a nurse presented a brief description of the study to each of the new patients (see Appendix C). If they were willing to participate she then read to them an informed consent form (see Appendix D) and had them sign it. At the time of signing each participant was given a test packet including the background information sheet

(see Appedix E), the P (see Appendix F), the SWB (see Appendix G), and the WOC (see Appendix H). Completion of these items took approximately one hour. The MMPI was given earlier to each of the patients prior to their acceptance into the program.

Most participants returned to the Pain Center six weeks after completion of the program. It was at this-follow up evaluation that the second Pain Treatment Outcome Questionnaire was completed. Patients unable to return to the Pain Center for their six week evaluation were sent the outcome questionnaires by mail. Nine of the respondents completed the post-treatment evaluation by phone interview.

Summary

Forty-one male and female in-patient volunteers from the Portland Pain Center participated in this study of chronic pain. Each patient completed the MMPI, the IBS, the WOC, the SWB, the PTOQ, and a demographic information sheet. After filling out the testing packet each subject participated in the treatment program at the Portland Pain Center. Six weeks after completion of the pain program the patients returned to the hospital for a post treatment follow up evaluation. As part of the post treatment evaluation each subject filled out a second PTOQ.

CHAPTER THREE

RESULTS

This chapter presents the statistical analysis of the data gathered in this study. A presentation of the demographics of the sample will be offered first, followed by an analysis of the descriptive statistics. Next, a correlational matrix will be presented which will be followed by the results of the statistical analysis of the hypotheses. This is followed by a presentation of additional statistical tests. For all data analysis $p < .05$ was used as the probability level of acceptable significance.

Demographics

Forty-one chronic pain in-patients volunteered for this research study. Data concerning their sex, age, marital status, church affiliation, frequency of church attendance, types of help sought, ethnic background, employment status, reimbursements, education, and income are presented in this section.

Sex and Ethnicity

Of the 41 volunteers for this study, 26 were male (63.4%) and 15 were female (36.6%). The ethnic mix was predominantly Caucasian with 36 (87.8%) of the participants coming from white

backgrounds. Two of the sample were black (4.9%), and one each from Asian, American Indian, and Hispanic backgrounds.

Age

The 41 volunteers ranged in age from 25 to 67. The mean age for subjects was 41.65 years, the median age was 46, and the modal age was 37 years.

Marital Status

Of the 41 participants, 27 (65.9%) were married, eight (19.5%) were divorced, one was separated (2.4%), and five classified themselves as single living as married (12.2%). None of the subjects identified themselves as widowed or never married.

Church Affiliation

Of this sample, 18 (43.9%) reported no church affiliation. None of the participants were of Jewish affiliation. Six (14.6%) were Catholic, and 13 (31.7%) identified themselves as Protestant. Four (9.8%) of the group identified themselves with "other" in relation to church affiliation.

Frequency Of Church Attendance

Of the 41 participants, 23 (56.1%) stated that they attended church less than once a year. Six (14.6%) subjects reported attending church between once and twice a year. Five (12.2%) stated that they were involved in church activities between once a week and once a month while four (9.8%) attended weekly and two (4.9%) attended more than once a week. This variable is important to this study because the infrequency of church attendance, 70% report attending once a year or less, is so much less than national norms which indicate that over 40% of Americans attend on a regular basis. This extreme low figure will certainly scew all other religious and spiritual variables in this study.

Types of Help Sought

Subjects were questioned as to various types of help they may have sought in relation to their pain syndrome. Included in this list of types of help sought were dietary changes, religious practitioners or faith healers, mega vitamin therapy, copper jewelry, and a category called "other". Thirty (73.9%) of the participants reported not having tried any of these in relation to their pain condition. Eight (19.5%) of the subjects reported making dietary changes to help their condition, three (7.3%) indicated having used either religious practitioners or faith healers, and

three (7.3%) indicated having made both dietary changes and having consulted faith healers.

Employment Status

At the time of admission to the program 31 (75.6%) subjects indicated that they were not employed at all. Two (4.9%) reported being employed part-time and eight (19.5%) stated that they were employed full-time.

Reimbursement

Of the 41 participants, 37 (90.2%) reported receiving some form of reimbursement such as Social Security Insurance (S.S.I.), insurance benefits, or Workman's Compensation. Only four (9.8%) indicated that they received no reimbursements.

Education

The educational level of the participants in this research sample covered a broad scope ranging from seventh grade through college graduates. The mean was 12.17 years and the modal was 12 years with a standard deviation of 2.16. Ten of the participants had completed less than a high school diploma while 20 reported having graduated from high school. Eleven of the participants reported at least one year of college and five reported being college graduates.

Income

Income for the subjects ranged from under $5,000 dollars gross annual income to over $40,000 dollars a year. Four (9.8%) reported an annual income under $5,000 thousand dollars while seven (17.1%) earned between $5,000 and $10,000 a year. The modal income for this group was between $10,000 and 20,000 dollars a year with 16 (39%) of the subjects falling in this range. Nine (22%) reported income between $20,000 and $30,000 dollars, two (4.9%) had incomes between $30,000 and $40,000 dollars, and three (7.3%) reported income over $40,000 dollars a year.

Descriptive Statistics

This section presents the descriptive statistics for each of the variables examined in this study. These figures are presented in the following order; IBS, MMPI, WOC, SWB, Pain Treatment Outcome Questionnaire (Pretreatment), and Pain Treatment Outcome Questionnaire (Post Treatment).

Interpersonal Behavior Survey (IBS)

Table 1 presents the descriptive statistics for each of the IBS subscales. Included in these statistics are the mean, standard deviation, minimum and maximum scors, and number of respondents.

Table 1

Descriptive Statistics for the Interpersonal Behavior Survey

Variable	Mean	Std. Dev.	Minimum	Maximum	N
Denial	57.90	8.18	37.00	73.00	41
Infrequency	43.76	5.84	40.00	65.00	41
Impres. Mgt.	54.41	11.12	36.00	77.00	41
Gen. Aggres.	41.76	8.25	26.00	65.00	41
Hostile Stnc.	42.17	9.00	28.00	63.00	41
Express Anger	46.63	9.23	34.00	71.00	41
Disregd. Rts.	46.39	6.53	33.00	62.00	41
Verb. Aggres.	41.44	7.37	34.00	64.00	41
Phys. Aggres.	46.07	8.78	31.00	68.00	41
Pass. Aggres.	44.56	8.39	34.00	69.00	41
Gen. Assrt.	50.98	9.01	27.00	64.00	41
Self. Conf.	50.98	11.00	20.00	66.00	41
Init. Assrt.	48.46	11.02	28.00	66.00	41
Def. Assrt.	52.15	8.74	28.00	67.00	41
Frankness	49.39	8.90	26.00	69.00	41
Praise	53.10	10.30	28.00	66.00	41
Req. Help	48.83	10.50	30.00	63.00	41
Ref. Demands	52.56	7.50	35.00	65.00	41

Table 1 (cont.)

Descriptive Statistics for the Interpersonal Behavior Survey

Variable	Mean	Std. Dev.	Minimum	Maximum	N
Conf. Avoid.	53.24	9.37	31.00	75.00	41
Depencency	49.02	9.98	33.00	71.00	41
Shyness	56.78	11.22	41.00	80.00	41

Minnesota Multiphasic Personality Inventory (MMPI)

Table 2 presents the descriptive statistics for each of the MMPI subscales and includes the mean, standard deviation, minimum and maximum scores, and number of respondents.

Table 2

Descriptive Statistics for the MMPI

Variable	Mean	Std. Dev.	Minimum	Maximum	N
L	53.46	8.68	40.00	76.00	41
F	56.41	9.39	44.00	90.00	41
K	54.80	8.65	40.00	74.00	41
MMPI1	81.17	13.38	58.00	111.00	41
MMPI2	75.68	14.48	44.00	123.00	41
MMPI3	77.51	10.23	52.00	96.00	41
MMPI4	63.05	13.69	36.00	104.00	41
MMPI5-MALE	61.88	8.85	43.00	88.00	26
MMPI5-FEMALE	48.13	8.86	34.00	63.00	15
MMPI6	58.49	10.23	38.00	85.00	41
MMPI7	64.93	12.99	42.00	95.00	41
MMPI8	66.29	13.82	45.00	107.00	41
MMPI9	55.44	9.93	30.00	75.00	41
MMPI0	55.37	10.47	37.00	80.00	41
LBP	58.05	11.81	14.00	74.00	41

Ways of Coping (WOC)

Table 3 presents the descriptive statistics for each of the WOC subscales and includes the mean, standard deviation, minimum and maximum scores, and number of respondents.

Table 3

Descriptive Statistics for the Ways of Coping

Variable	Mean	Std. Dev.	Minimum	Maximum	N
PROBFOC	14.51	4.57	7.00	23.00	41
EMOTFOC	22.61	6.46	8.00	35.00	41
WOC1	8.20	3.30	2.00	13.00	41
WOC2	12.59	3.55	4.00	18.00	41
WOC3	6.05	2.45	2.00	11.00	41
WOC4	3.61	2.21	0.0	7.00	41
WOC5	3.73	1.75	1.00	8.00	41
WOC6	2.37	.86	0.0	3.00	41
WOC7	1.05	.95	0.0	3.00	41
WOC8	2.12	1.86	0.0	5.00	41

Spiritual Well-Being Inventory (SWB)

Table 4 presents the descriptive statistics for each of the SWB subscales and includes the mean, standard deviation, minimum and maximum scors, and number of respondents.

Table 4

Descriptive Statistics for the Spiritual Well-Being Scale

Variable	Mean	Std. Dev.	Minimum	Maximum	N
RWB	43.93	10.89	16.00	60.00	41
EWB	41.66	11.13	17.00	60.00	41
SWB	85.34	19.75	33.00	120.00	41

Pretreatment Pain Treatment Outcome Questionnaire (PTOQ)

Table 5 presents the descriptive statistics for the Pretreatment PTOQ. This table includes means, standard deviations, range, and number of respondents for each of the PTOQ subscales. These subscales are: number of Months Since Last Worked at the time of admission, Subjective Pain Level at admission, Functional Activity Level at admission, and number of Analgesic Medications Used at time of admission.

Table 5

Pretreatment Descriptive Statistics for the Pain Treatment Outcome Questionnaire

Variable	Mean	Std. Dev.	Minimum	Maximum	N
PAIN	70.05	16.08	30.0	100.00	40
MONTHS	25.73	32.15	0.0	99.00	41
ACTIVITIES	16.59	5.41	3.0	27.00	41
MEDICATIONS	4.61	5.43	0.0	24.00	38

Number of Months Since Last Worked. This measure has a mean of 25.73, a standard deviation of 32.15, and a range of from zero to 99 months. Thirty-one of the sample were not working at all at the time of admission, two were working part-time, and eight were working full-time.

Subjective Pain Rating. This is measured on a scale of zero to 100 with zero equal to no pain at all and 100 equal to the worst pain imaginable. The range of scores is between 30 and 100. The mean is 70.05 with a standard deviation of 16.08. The modal score is 80.

Functional Activity Level. This is determined by summing the responses of three categories of questions related to typical

daily activities. Responses of "I do this without pain", "I tend to do this despite the pain", and "This activity relieves the pain" are each counted as one functional activity. Responses of "I tend to avoid this activity" are counted as zero. Pretreatment functional activity scores have a mean of 16.59 with a standard deviation of 5.41. The range of scores has a minimum of three and a maximum of 27.

Use of Analgesic Medication. These are measured by the number of analgesics used per day by the subject. Other types of medication are not counted for this measure. The range of pretreatment analgesics is between zero and 24 a day. The mean score is 4.61 with a standard deviation of 5.43.

Table 6 presents the descriptive statistics for PTOQ (Post Treatment). These statistics are presented according to subscales and include mean, minimum and maximum scores, and standard deviation.

Table 6

Post Treatment Descriptive Statistics for the Pain Treatment Outcome Questionnaire

Variable	Mean	Std. Dev.	Minimum	Maximum	N
PAIN	54.50	23.69	0.00	90.00	40
WORK	1.85	.58	1.00	3.00	40
ACTIVITIES	18.28	5.81	1.00	27.00	40
MEDICATIONS	1.54	2.92	0.00	9.00	39

Subjective Pain Rating. At the post treatment evaluation Subjective Pain Rating had a mean score of 54.5, a range of between zero and 90, and a standard deviation of 23.6. From pre to post treatment evaluation the overall Subjective Pain Rating decreased 13.8 points (see Table 7).

Table 7

Subjective Pain Rating

Variable	Mean	Std. Dev.	Range	N
Pretreatment	70.05	16.08	30-100	40
Post Treatment	54.50	23.69	0-90	40

Return to Work. This is the measure of how many of the test subjects have returned to work either part-time or full-time at a minimum of six weeks after discharge from the treatment program. Ten (24.4%) of the subjects had returned to work full-time by the time of the follow up evaluation while four (9.8%) had returned to work part-time. The combined scores of full and part-time return to work scores equals 14 (34.2%) and represents a 9.8% increase over pretreatment.

Functional Activity Level. This is measured the same as pretreatment activity scores. The mean functional activity score is 18.28, up 1.69 from the pretreatment mean of 16.59 which represents a 9.8% increase at the post treatment evaluation (see Table 8). The standard deviation is 5.81 and the range is between 1 and 27.

Table 8

Functional Activity Level

Variable	Mean	Std. Dev.	Range	N
Pretreatment	16.5	5.4	3-27	41
Post Treatment	18.2	5.8	1-27	40

Analgesic Medications Use. These were measured the same way as the pretreatment medications were. The mean score for post treatment analgesic use was 1.54 with a standard deviation of 2.92 and a range of zero to nine. The mean difference from pretreatment to post treatment was 3.1 pills per subject per day which represents a 66.6% decrease in use of analgesic medications for this group (see Table 9).

Table 9

Analgesic Medication Use

Variable	Mean	Std. Dev.	Range	N
Pretreatment	4.6	5.4	0-24	40
Post Treatment	1.5	2.9	0-09	39

Table 10

Correlational Matrix of Pretreatment Variables

Correlations:	PREPAIN	PREMONTH	PREFUNCT	PREMEDS
PREPAIN	-	-.0085	-.2398	-.0013
PREMONTH	-.0085	-	-.0662	.0162
PREFUNCT	-.2398	-.0662	-	-.0486
PREMEDS	-.0013	.0162	-.0486	-

Table 11

Correlational Matrix of Pre and Post Treatment Variables

Correlations:	PREPAIN	PREMONTH	PREFUNCT	PREMEDS
POSTPAIN	.4564**	-.0282	-.1137	-.0748
POSTWORK	.1351	.2279	.0217	-.1703
POSTFUNC	-.3750**	-.2798	.6050***	-.1002
POSTMEDS	.1809	.0504	-.0823	.0200

Table 12

Correlational Matrix of Post Treatment Variables

Correlations:	POSTPAIN	POSTWORK	POSTFUNCT	POSTMEDS
POSTPAIN	-	.1921	.3211*	.0405
POSTWORK	.1921	-	-.0044	.0458
POSTFUNC	-.3211*	-.0044	-	-.2089
POSTMEDS	.0405	-.0458	-.2089	-

Hypotheses

A linear regression statistic was used on each of the following hypothesis to determine whether treatment outcome (the dependent variables) could be predicted from the various independent variables. Treatment outcome was operationally defined as the scores for each of the four post treatment measures: Subjective Pain Rating, Functional Activity Level, Use of Analgesic Medications, and Return to Work.

Ways of Coping

Emotion Focused Coping. H1 stated that Emotion Focused coping from the WOC would negatively predict for treatment outcome. A linear regression statistic was used to test this hypothesis. The results were not significant (see Table 13) thus the hypothesis was not supported. These results indicated that the use of Emotion Focused coping did not predict for any treatment outcome measures for this sample.

Table 13

Linear Regression of Emotion Focused Coping and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	.577	.4519
Activities	1, 34	2.805	.1031
Work	1, 34	.001	.9706
Medications	1, 34	.002	.9593

Problem Focused Coping. H2 stated that Problem ocused coping from the WOC would positively predict for treatment outcome. A linear regression statistic was used to test this hypothesis. The hypothesis was partially supported (see Table 14) in that Problem Focused Coping predicted Post Treatment Subjective Pain Rating, but not Functional Activity Level, Medication Use, or Return to Work.

Table 14

Linear Regression of Problem Focused Coping and Outcome Measures

Variable	d/f	F	p
Pain	1, 38	4.725	.0360
Activities	1, 34	2.369	.1330
Work	1, 34	.523	.4744
Medications	1, 34	.006	.9387

Religious Coping. H3 stated that Religious Coping from the WOC would positively predict for treatment outcome. A linear regression statistic was used to test this hypothesis. The results were not supported (see Table 15) indicating that using Religious Coping did not predict for treatment outcome for this sample and that the hypothesis was not supported.

Table 15

Linear Regression of Religious Coping and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	1.408	.2427
Activities	1, 34	.029	.8644
Work	1, 34	2.718	.1084
Medications	1, 34	.028	.8674

Spiritual Well-Being Inventory (SWB)

Spiritual Well-Being. H4 stated that Spiritual Well-Being would positively predict for treatment outcome. A linear regression statistic was used to test this hypothesis. The hypothesis was partially supported (see Table 16) in that Spiritual Well-Being did predict for Post Treatment Use of Medications. It did not, however, predict for Functional Activity Level, Subjective Pain Rating, or Return to Work.

Table 16

Linear Regression of Spiritual Well-Being and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	.022	.8804
Activities	1, 34	.063	.8024
Work	1, 34	.075	.7853
Medications	1, 34	4.052	.0521

Minnesota Multiphasic Personality Inventory (MMPI)

H5 stated that psychopathology would predict for treatment outcome. There were five psychopathology indicators examined and each of these was tested as a predictor of the outcome measures.

Depression. H5 predicted that the MMPI D scale would positively predict for treatment outcome. A linear regression statistic was used to test this hypothesis. The hypothesis was partially supported (see Table 17) in that the MMPI D scale positively predicted for Post Treatment Use of Medications. It did not, however, predict for Subjective Pain Rating, Return to Work, or Functional Activity Level.

Table 17

Linear Regression of the MMPI D Scale and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	.523	.4739
Activities	1, 34	.607	.4412
Work	1, 34	3.918	.0559
Medications	1, 34	5.027	.0316

Hostility. H5 also predicted that elevations on the Pd scale would negatively predict for treatment outcome as well as negatively correlate with General Assertiveness. A linear regression statistic was used to test this hypothesis. The hypothesis was partially supported (see Table 18) in that the MMPI Pd scale predicted Post Treatment Use of Medications, but not for Functional Activity Level, Subjective Pain, or Return to Work. Hostility also negatively correlated with assertiveness as measured by the IBS General Assertiveness scale ($r = -.34$, $p < .05$).

Table 18

Linear Regression of the MMPI Pd Scale and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	1.366	.2496
Activities	1, 34	.084	.7727
Work	1, 34	.029	.8648
Medications	1, 34	6.334	.0167

Femininity. The third hypothesis related to H5 was that the MMPI Mf scale would positively predict for treatment outcome. Due to being scored in opposite directions this hypothesis had to be evaluated independently for male and female subjects. A linear regression statistic was used to test this hypothesis for both males and females. The male part of the hypothesis was partially supported (see Table 19) in that the MMPI Mf scale positively predicted for Post Treatment Use of Analgesics. It did not, however, predict for Subjective Pain Rating, Return to Work, or Functional Activity Level. The female part of the hypothesis did not predict for any of the outcome variables (see Table 20).

Table 19

Linear Regression of the MMPI Mf Scale (Male) and Outcome Measures

Variables	d/f	F	p
Pain	1, 23	.386	.5400
Activities	1, 23	.583	.4520
Work	1, 23	.288	.5963
Medications	1, 22	30.888	.0000

Note. N = 25

Table 20

Linear Regression of the MMPI Mf Scale (Female) and Outcome Measures

Variables	d/f	F	p
Pain	1, 13	.015	.9031
Activities	1, 13	.541	.4747
Work	1, 13	2.789	.1188
Medications	1, 13	1.437	.2519

Note. N = 15

Somatization. The fourth hypothesis related to H5 was that subjects whose profiles were marked by a conversion V on the Hs, D, and Hy scales would negatively predict for treatment outcome. A linear regression statistic was used to test this hypothesis (see Table 21). The hypothesis was partially supported in that the conversion V profiles on the MMPI predicted for Post Treatment Use of Medications, but not for Functional Activity Level, Subjective Pain Rating, or Return to Work.

Table 21

Linear Regression of MMPI Conversion V Profiles and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	.363	.5500
Activities	1, 34	.237	.6290
Work	1, 34	.189	.6664
Medications	1, 34	6.023	.0194

General Pathology. The fifth hypothesis related to H5 was that subjects who's profiles were marked by elevations on the Hs, D, Pd, and Ma scales would predict negatively for treatment outcome. A linear regression statistic was used to test this hypothesis. The results were not significant thus the hypothesis was not supported (see Table 22).

Table 22

Linear Regression of MMPI Hs, D, Pd, and Ma Scales and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	.381	.5403
Activities	1, 34	.666	.4198
Work	1, 34	.241	.6262
Medications	1, 34	.290	.5935

Interpersonal Behavior Survey (IBS)

Assertiveness. H6 stated that the General Assertiveness scale of the IBS would positively predict for treatment outcome. A linear regression statistic was used to test this hypothesis. The General Assertiveness scale did not predict any of the four outcome measures, thus the hypothesis was not supported (see Table 23).

Table 23

Linear Regression of General Assertiveness and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	.337	.5648
Activities	1, 34	.714	.4038
Work	1, 34	.407	.5277
Medications	1, 34	3.764	.0607

Demographics

Frequency of Church Attendance. H7 stated that the Frequency of Church Attendance would positively predict for treatment outcome. A linear regression statistic was used to test this hypothesis. Frequency of Church Attendance did not predict any of the four outcome variables, thus the hypothesis was not supported (see Table 24).

Table 24

Linear Regression of Church Frequency and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	.375	.5434
Activities	1, 34	2.992	.0927
Work	1, 34	1.991	.1673
Medications	1, 34	.239	.6278

Dependent Variables

Months Since Last Worked. H8 stated that the number of Months Since Last Worked would predict negatively for treatment outcome. A linear regression statistic was used to test this hypothesis. The results were partially significant in that this variable strongly predicted for Post Treatment Return to Work. It did not, however, predict for Subjective Pain Rating, Functional Activities, or Medication Use (see Table 25).

Table 25

Linear Regression of Months Since Worked and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	.030	.8627
Activities	1, 34	3.049	.0898
Work	1, 34	39.991	.0000
Medications	1, 34	.055	.8151

Questions

In addition to these correlations and hypotheses a number of additional questions have been investigated in this study. These questions have to do with the relationship between the pretreatment and post treatment variables, and are essentially the same in nature as H8.

Functional Activity Level

Q1. Question one asked whether Pretreatment Functional Activity would significantly predict for treatment outcome as measured by the four post treatment variables. A linear regression statistic was used to test for this question. The results were partially significant in that Pretreatment Functional Activity Level predicted Post Treatment Functional Activity. Pretreatment Functional Activity Level did not predict Subjective Pain Rating, Return to Work, or Medication Use (see Table 26).

Table 26

Linear Regression of Pretreatment Functional Activity Level and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	.497	.4849
Activities	1, 34	17.893	.0002
Work	1, 34	.290	.5934
Medications	1, 34	.314	.5784

Subjective Pain Rating

Q2. Question two asked whether Pretreatment Subjective Pain rating would significantly predict for treatment outcome. A linear regression statistic was used to test for this question. The results were not significant. Therefore, for this study, Pretreatment Subjective Pain Rating did not significantly predict for treatment outcome (see Table 27).

Table 27

Linear Regression of Pretreatment Subjective Pain Rating and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	3.255	.0795
Activities	1, 34	2.437	.1277
Work	1, 34	.068	.7956
Medications	1, 34	.718	.4025

Use of Analgesic Medications

Q3. Question three asked whether Pretreatment Use of Analgesic Medications would predicts for treatment outcome. A linear regression statistic was used to test for this question. The results were not significant. Therefore, for this study, Pretreatment Use of Analgesic Medications did not significantly predict for treatment outcome (see Table 28).

Table 28

Linear Regression of Pretreatment Use of Analgesic Medications and Outcome Measures

Variables	d/f	F	p
Pain	1, 38	.202	.6553
Activities	1, 34	1.062	.3099
Work	1, 34	.093	.7611
Medications	1, 34	.055	.8146

Summary

This chapter has presented the statistical analysis of the results of this study. These results have been divided into four primary sections and are summarized in the order of their presentation. These four categories consist of a description of the subjects and their demographic makeup, descriptive and correlational statistics, hypotheses, and questions.

Subjects

Forty-one patients from the Portland Pain Center participated in this study of coping among chronic pain patients. Of these predominantly Caucasian patients 26 were male, and 15 female with a mean age of 41 years. Twenty-seven of the subjects were married, eight were divorced, one was separated, and five reported living together as married. None of the subjects were widowed.

Forty-three percent of this group reported no church affiliation while 14% were Catholic, 31% Protestant, 4% were "other", and there were no Jewish participants. Seventy percent of this sample reported attending church no more than once or twice a year while 25% indicated attending church more than once a month.

The majority of these patients (73%) reported not using any of the alternative types of help presented such as copper jewelery, faith healers, or mega vitamin therapy. Seventy-five

percent of them were unemployed at the time of admission and 90% were receiving some form of reimbursement in relation to their pain. Educationally the majority of this group were high school graduates with both the mean and modal score being 12 years of education. The average income for this group was between $10,000 and $20,000 dollars per year.

Descriptive and Correlational Statistics

This chapter presented tables for all of the descriptive statistics for this study. A complete correlational matrix for all variables used in this study is located in Appendix I. Brief summaries of each of these correlations are located in Appendix J. Demographic variables tended to not correlate strongly with each other. The correlations between demographics and the independent variables were mixed and tended to be in the predicatable direction. Demographic variables correlated powerfully with the dependent variables.

The IBS aggression and assertion scales did not correlate with each other; however, they strongly correlated with themselves. The aggression scales tended to correlate positively with the MMPI validity and clinical scales, and negatively with the WOC Growth scale and the Spiritual Well-Being scales. Aggression did not tend to correlate with the dependent variables. The assertion scales correlated negatively with the MMPI validity and clinical

scales as well as with the WOC scales, and Post Treatment Use of Medications. The assertiveness scales positively correlated with the Spiritual Well-Being scales.

There was a high degree of correlation among MMPI scales. The MMPI scales positively correlated with the IBS aggression scales, and negatively with its assertiveness scales. The correlations between MMPI and WOC scales were very low. The MMPI scales tended to negatively correlate with Spiritual Well-Being. There were very mixed correlations between the MMPI and post treatment measures.

The WOC scales correlated highly with themselves. They tended to correlate positively with the aggression scales and negatively with the assertion scales from the IBS. The WOC scales did not correlate highly with the MMPI scales. The only WOC scale to correlate with the Spiritual Well-Being scales was the Religious Coping. The WOC did not tend to correlate with the post treatment outcome variables.

The Spiritual Well-Being scales correlated strongly with themselves. They tended to correlate negatively with the IBS aggression scales, and with the MMPI clinical scales. Spiritual Well-Being tended to positively correlate with the religious demographic questions, the IBS asertiveness scales, and the WOC Religious Coping scale. Spiritual Well-Being negatively correlated with Post Treatment Use of Medications.

The post treatment outcome measures tended to not correlate among themselves, nor with the IBS aggression or assertiveness scales. The outcome measures had mixed correlations with the MMPI scales and tended to not correlate with the WOC scales. The only outcome measure to relate with Spiritual Well-Being was a negative correlation with Post Treatment Use of Medications.

Hypotheses

A linear regression statistic was used to test the hypotheses in this section. Each of the hypotheses were aimed at predicting treatment outcome as measured by four dependent variables; Functional Activity Level, Subjective Pain Rating, Use of Analgesic Medications, and Return to Work.

Statistical analysis demonstrated that the following variables did not predict for treatment outcome and therefore these hypotheses were not supported: Emotion Focused Coping and Religious Coping from the Ways of Coping; combined elevations on the MMPI Hs, D, Pd, and Ma; General Assertion from the Interpersonal Behavior Survey; Frequency of Church Attendance; Pretreatment Subjective Pain Rating; and Pretreatment Use of Analgesic Medications.

Statistical analysis also demonstrated that the following hypotheses predicted for at least one of the outcome variables and were therefore partially fulfilled. Problem Focused Coping from

the Ways of Coping predicted for post treatment subjective pain rating. Spiritual Well-Being predicted for Post Treatment Use of Analgesic Medications. The D, Pd, and conversion V scales from the MMPI each predicted for Post Treatment Use of Medications. The MMPI Mf scale predicted for Post Treatment Return to Work. The number of Months Since Last Worked prior to treatment predicted for Post Treatment Return to Work.

Questions

Besides the above mentioned hypotheses, three questions were asked that also had to do with predicting treatment outcome as measured by the four post treatment variables. Pretreatment Functional Activity predicted for treatment outcome as measured by Post Treatment Functional Activity. Neither Pretreatment Subjective Pain Rating nor Pretreatment Use of Analgesic Medications predicted for treatment outcome.

CHAPTER 4

DISCUSSION

This chapter discusses the results of the statistics presented in Chapter Three. The discussion contains three sections: interpretation and implications of the hypotheses and questions, recommendations for further research, and conclusion.

Interpretation and Implication of the Results

This section interprets the statistical results presented in Chapter Three. The implications of these results are discussed in light of the theories and research presented in Chapter One.

Discussion of the Hypotheses

Before moving into each of the hypotheses it is important to discuss an overarching finding from the results. In the early stages of this research project it was planned to utilize one global score for treatment outcome. The treatment staff at the Portland Pain Center recommended against this design on the grounds that outcome measures are distinct in nature and often measured in opposite directions.

Their recommendations were incorporated into the design of this study which resulted in using four independent measures of treatment outcome: Subjective Pain Rating, Functional Activities

Level, Return to Work, and Use of Analgesic Medications. Positive treatment outcome was determined by an increase in Functional Activities, Returning to Work, and by decreases in Subjective Pain Rating and Use of Analgesic Medications.

The results of this study clearly demonstrated the independence of these four outcome measures. This independence was seen in two different ways. The first was that each of the four pretreatment measures predicted only the comparable post treatment measure and were unrelated to the other three dependent measures. The second indicator of independence was that even the most strongly supported hypotheses predicted for only one of the outcome variables. These findings will be evident throughout the discussion of hypotheses and will be only briefly mentioned each time rather than discussed repetitively.

One of the most important implications of this finding is that treatment outcome for chronic pain patients is not a global factor. Instead, it is a multifaceted measure that has several different components. A patient may decrease their use of medications but not report any decrease in subjective pain and may not return to work or increase their functional activities. Clearly, an individual patient that improved in more than one of these measures would experience a more satisfactory treatment outcome. However, in terms of predicting treatment outcome from

the pretreatment measured in this study no more than one outcome variable was predictable from any given pretreatment measures.

Ways of Coping (WOC)

Emotion Focused Coping. H1 stated that Emotion Focused Coping from the WOC questionnaire would negatively predict for treatment outcome. H1 was not supported. The results indicate that even though chronic pain patients utilized Emotion Focused Coping, as expected from Folkman and Lazarus (1980), the use of these coping responses did not predict treatment outcome as measured by the four outcome measures. This finding is consistent with Campbell's (1983) study which demonstrated that even though subjects with chronic health problems utilize Emotion Focused Coping there is no evidence that it is a good predictor of treatment outcome.

Problem Focused Coping. H2 stated that Problem Focused Coping from the WOC would positively predict for treatment outcome. H2 was partially supported in that Problem Focused Coping predicted Post Treatment Subjective Pain Rating; it did not, however, predict Functional Activity Level, Medication Use, or Return to Work. These findings are partly consistent with Folkman and Lazarus' (1980) study which demonstrated that Problem Focused Coping was a highly effective means of dealing with stressful situations.

Three initial implications can be drawn from these findings. The first is that this finding indicates that subjects scoring high on Problem Focused Coping before treatment can be expected to decrease their subjective pain rating after receiving treatment for chronic pain. The second implication is that this variable does not provide a strong pretreatment predictor of outcome in that its predictive value only reached a $p < .03$ level with subjective pain rating. The third implication refers to the previously discussed independence among outcome measures.

Religious Coping. H3 stated that Religious Coping from the WOC would positively predict for treatment outcome. H3 was not supported. Chapter One cited previous research which indicated Religious Coping was a widely used and helpful means of coping with chronic illness. This study confirmed that Religious Coping is commonly used, but did not find a direct linkage between it and the four outcome measures.

Even though it did not predict treatment outcome, Religious Coping strongly correlated with all other measures of religiosity such as: Frequency of Church Attendance, Church Affiliation, and Religious, Existential, and Spiritual Well-Being. The consistent correlation between these measures confirms Gorsuch's (1984) conclusion that there is a general dimension of religiosity in our culture that distinguishes religious from nonreligious people.

Spritual Well-Being Inventory (SWB)

Spritual Well-Being. H4 stated that Spritual Well-Being would positively predict treatment outcome. H4 was partially supported in that Spiritual Well-Being predicted decreased Post Treatment Use of Analgesic Medications at the $p < .05$ level. It did not predict for any of the other dependent variables which is consistent with the finding of outcome measure independence previously discussed. The chronic pain finding is partly consistent with those of Garvin, Hollandsworth, & Gersch (1982) and Campbell (1983) which indicate that religious activities in general and Spiritual Well-Being in particular are good predictors of response to treatment for chronic illness.

In addition to predicting decreased Use of Medications after treatment, Spiritual Well-Being positively correlated with almost all of the IBS assertiveness scales. Spiritual Well-Being negatively correlated with most of the IBS aggression scales and MMPI clinical scales. These correlations are valuable to this study in that each of them add to the body of research discussed in Chapter One which demonstrated Spiritual Well-Being's efficacy as an indicator of general health and well-being.

Minnesota Multiphasic Personality Inventory (MMPI)

H5 stated that psychopathology would predict for treatment outcome. There were five indicators of pathology examined and

each of these were tested as predictors of the four dependent variables.

Depression. H5 stated that the MMPI D scale would negatively predict for treatment outcome. This hypothesis was partially supported in that elevated Depression scores predicted for ongoing Post Treatment Use of Analgesics. It did not, however predict for changes on the Subjective Pain Rating, Return to Work, or Functional Activity Level.

These results are partly consistent with the common finding that the MMPI neuroticism scales (Hs, D, and Hy) predict for poor treatment outcome among chronic pain patients (Bradley, 1963; Brandwin & Kewman, 1982; McCreary, Turner, & Dawson, 1979; Merskey & Hester, 1972; Naliboff, Cohen, & Yellen, 1982; Sternbach & Timmermans, 1975; Strassberg, 1982; Taub & Collins, 1974). This current study found that elevations on pretreatment Depression scores predict for poor response to treatment as measured by ongoing use of analgesic medications after treatment though depression was unrelated to changes on Subjective Pain Rating, Functional Avtivity Level, or Return to Work. Painter, Seres, and Newman's (1980) study accurately suggested that pain centers need to develop more aggressive treatment of depression in order to maintain gains made during therapy.

Hostility. H5 also stated that elevations on the Pd scale would negatively predict for treatment outcome. This hypothesis

was partially supported in that, similar to Depression, elevations on the Pd scale predicted ongoing use of analgesic medications after treatment. The Pd scale did not predict for Subjective Pain Rating, Return to Work, or Functional Activity Level.

The findings of this hypothesis are partly consistent with those of Fordyce (1976) which suggested that the impulsivity and hostility measured by the Pd scale would negatively predict for outcome. Fordyce (1976) also suggested that there would be a negative correlation between Pd scores and assertiveness. This prediction was supported in this current study by a negative correlation between the Pd and the General Assertiveness scale of the IBS ($\underline{r} = -.34$, $\underline{p}$, .05). These findings indicate that high Pd scores, which suggest impulsivity and hostility, provide a poor prognosis for treatment outcome as measured by Post Treatment Use of Medication, as well as a negative correlation with assertiveness.

Masculinity/Femininity. H5 also hypothesized that elevations on the Mf scale would positively predict for treatment outcome. Due to being scored in opposite directions it was necessary to evaluate male and female responses separatly. The male portion of this hypothesis was partially supported in that elevations on the Mf-Male scale predicted greater likelihood of Post Treatment Use of Analgesics. It did not, however, predict Subjective Pain Rating, Functional Activity Level, or Return to Work. The female part of this hypothesis did not predict any of the outcome

variables. These findings are partially consistent with those of Strassberg (1982) which suggested a strong correlation between Mf scores and outcome to treatment for chronic pain. Strassberg (1982) suggested that, because elevations on the Mf correlated positively with education and sophistication, his findings could be interpreted as indicating that higher education and sophistication helped patients utilize help for their pain condition. These current findings run contrary to Strassberg's, however, in that Mf-Male elevations here predicted for poor treatment outcome as measured by elevations on Post Treatment Use of Analgesics and female Mf scores did not predict for any of the outcome measures.

Somatization. The fourth hypothesis related to H5 stated that subjects whose profiles were marked by a conversion V on the Hs, D, and Hy scales would show poorer response to treatment outcome. This hypothesis was partially supported in that the conversion V profiles predicted for ongoing Post Treatment Use of Analgesic Medications. It did not, however, predict for Return to Work, Subjective Pain Rating, or Functional Activity Level.

These findings are partially consistent with other research that has investigated elevations on the "neurotic triad" (Bradley, 1963; Brandwin & Kewman, 1982; McCreary, Turner, & Dawson, 1979; Merskey & Hester, 1972; Naliboff, Cohen, & Yellen, 1982; Sternbach & Timmermans, 1975; Strassberg, 1982; Taub & Collins, 1974).

Although the conversion V profile has not been consistently reliable in predicting outcome for chronic pain (Brandwin & Kewman, 1982) the findings of this study indicate that those who tend to somaticize psychological stress, as indicated by the conversion V profile, tend to continue usage of analgesic medications after treatment.

General Psychopathology. The fifth hypothesis related to H5 stated that subjects whose profiles were marked by elevations on the Hs, D, Pd, and Ma scales would predict negatively for treatment outcome. This hypothesis was not supported in that the "manipulative reaction profile" did not predict for any of the four outcome measures.

Sternbach and Timmermans (1975) suggested that this manipulative reaction profile provided a good predictor for negative outcome to treatment for chronic pain. There is strong logical connection between poor treatment outcome and elevations on these measures. However, for this sample no predictable relationship was demonstrated. One possible explanation for this difference could be related to the attentuated range of scores on these scales as compared to other normative samples. The fact that subjects in this study had consistently high scores on these scales tended to diminish their predictive value.

General Assertivness. H6 stated that the General Assertiveness scale of the IBS would positively predict treatment outcome. This hypothesis was not supported in that the IBS General Assertiveness scale did not predict for any of the four outcome measures.

Previous research has indicated that assertivness in general (Heinrich, Cohen, & Naliboff, 1982; Hudgens, 1979), and the IBS General Assertiveness in particular (Campbell, 1983; Campbell, Mullins, Colwell, 1984) have predicted positively for treatment outcome with other chronic diseases. This study did not replicate these earlier findings.

One possible explanation of this failure to replicate could relate to differences in the nature of the populations used, i.e. the differences between chronic pain patients and hemodialysis patients. A second possibility could come from the fact that mean scores on the General Assertiveness scale were slightly higher for this study than those reported in the normative samples of the IBS, thus lowering its predictive ability. A third possibility could come from the fact that the measures used to operationally define treatment outcome (Return to Work, increased Functional Activities, decreased Pain Rating, and decreased Use of Analgesic Medications) are substantially different than those used to measure treatment outcome in the other studies (i.e. Campbells' Hemodialysis outcome measures included: the Acceptance of

Disability scale, Productive Use of Time scale, Beck Depression Inventory, and a Compliance With Treatment evaluation).

Demographic Questionnaire

Frequency of Church Attendance. H7 stated that the Frequency of Church Attendance would positively predict for treatment outcome. This hypothesis was not supported in that this pretreatment demographic variable did not predict for any of the four outcome measures.

Although previous research (Garvin et al. 1982) indicated that Frequency of Church Attendance positively correlated with response to treatment for chronic illness, this study did not replicate these earlier findings. One explanation for this is the possibility that either this study or Garvin et al's. (1982) findings are spurious. With so little research specifically relating to Frequency of Church Attendance it is difficult to make definitive statements as to conflicting data.

A second possibility for this failure to replicate earlier findings is, again, the difference between outcome measures from study to study. A third explanation of these findings could be that the four outcome measures are of such a nature that church attendance has little or no relationship to them. This possibility is supported by the fact that not only did church

attendance not predict treatment outcome, but it did not correlate with any of the dependent variables either.

A fourth possible explanation of this hypothesis is that demographically this sample is somewhat unique. One of the factors related to this uniqueness is the fact that, as a whole, this group is unusually non-religious. This is noted by their low church affiliation, 43.9% reported no church attendance, and 70% attend church no more than once a year. These figures are in stark contrast to national norms which suggest that over 41% of Americans attend church or synagogue on a regular basis.

To account for such an overwhelming difference between this sample and national norms is not easy, however a few tenuous suggestions might be considered. First, religiously active people tend to have fewer pain producing accidents or injuries due to their decreased likelihood of abusing alcohol and drugs which account for a large number of both industrial and automobil accidents. Second, the religious community has always advocated a hard work philosophy which tends to push people to return to work sooner after an injury. This return to work would make them less likely to utilize the services of a pain treatment program. A third possible explanation would derive from the fact that increased spiritual well-being decreases use of analgesics in this population. This would tend to keep them from developing some of

the problems attached to ongoing use of potentially addictive medications and therefore not need hospitalization.

Number of Months Since Last Worked. H8 stated that the number of Months Since Last Worked would predict negatively for treatment outcome. This hypothesis was partially supported in that Months Since Last Worked predicted for Post Treatment Return to Work. It did not, however, predict for Subjective Pain Rating, Use of Analgesic Medications, or Functional Activity Level.

This finding is partially consistent with those of Smith (1983) which demonstrated that subjects who had worked within the past 24 months tended to have better treatment outcomes than for those who had not worked in over two years. Months Since Last Worked was the statistically strongest predictive measure of all those tested in this study. But even with the overwhelming strength of this relationship the independence of the four outcome measures is still seen in that the number of Months Since Last Worked did not predict for any of the other three outcome variables.

Discussion of Questions

Functional Activity Level.

Q1 asked whether Pretreatment Functional Activity Level would predict for treatment outcome. The answer to this question was mixed in that Pretreatment Functional Activity Level predicted

Post Treatment Activity Level. It did not, however, predict Return to Work, Subjective Pain Rating, or Use of Analgesic Medications.

Similar to Number of Months Since Last Worked, Pretreatment Functional Activity Level was a very strong predictor for post treatment outcome. When combined together these two demographic variables provide a good and easily attained predictive measures for treatment outcome. This finding is partly consistent with Skivington's (1983) research which demonstrated that reported activity level is a valuable diagnostic indicator in outcome studies of chronic pain. It is also valuable to see the overall increase in Functional Activities (1.7) from pre to post treatment (see Table 8).

Subjective Pain Rating.

Q2 asked whether Pretreatment Subjective Pain Rating would predict for treatment outcome. The answer for this study is "no" in that Subjective Pain Rating did not predict for any of the outcome variables.

This indicates that even though Pretreatment Pain Rating can be helpful in determining the severity of pain at the time of entrance into a pain treatment program, it has not been here demonstrated to be effective in predicting any of the post treatment outcome variables. It is interesting to note that even

though Subjective Pain Rating did not predict any of the outcome variables there was a significant decrease in mean pain rating (13.8 points) for the total sample from pre to post treatment (see Table 7). So, even if not a significant predictive variable, Subjective Pain Rating is still a valuable indicator to the patient and treatment staff that subjective pain has decreased over the course of treatment.

Analgesic Medication Use.

Q3 asked whether Pretreatment Use of Analgesic Medications would predict treatment outcome. This question was not supported in that the number of analgesic medications used before treatment did not predict for any of the four outcome measures.

Even though number of analgesics used did not offer a significant predictive value for this study, it still has a very meaningful clinical value. Table 9 illustrates the significant decrease in use of analgesic medications from pre to post treatment evaluation, a mean decrease of 3.1 pills per patient per day. Objective measures such as this provide a reliable means by which the patient and treatment staff can evaluate progress both for the individual or, as in this case, for a whole group.

Recommendations for Future Research

This study has presented a wide range of data to increase our understanding of coping with chronic pain. A number of variables have been presented as either predicting or not predicting for treatment outcome. Each one of these raises questions suitable for future research. Specific recommendations for further research are:

1. Problem Focused Coping from the WOC checklist predicted for decreased Subjective Pain Rating. It would therefore be helpful to use this instrument in further research with chronic pain patients to obtain norms for this population and for the WOC.

2. Questions pertaining to Religious Coping were added to the end of the WOC. This was done so as to measure religious coping without compromising the reliability of the WOC. For further research it would be helpful to revise the WOC such that the Religious Coping questions were mixed throughout the test. This would serve to make these items less obtrusive than the form used for this study and would also add this as a meaningful contribution to the WOC which currently does not measure religious coping.

3. Spiritual Well-Being predicted for post treatment decrease in use of analgesics. However, none of the other religious variables predicted for any measures of treatment outcome. Based on Gorsuch's (1984) findings of a generalized

religious variable it would be helpful to gather together a clustered measure of religiosity to determine if their combined predictive value would be stronger than that of their individual measures. Included in such a cluster could be demographic items such as Church Affiliation, and Frequency of Church Attendance, religious coping questions from the WOC, and Spiritual Well-Being scores.

4. Since Spiritual Well-Being successfully predicted for decreased use of medications it follows that chaplains and pastoral counselors could have an active and productive role with chronic pain patients. An experimental research design could be used to evaluate the impact of a chaplaincy program on treatment outcome.

5. As measured by the IBS General Assertiveness scale, assertiveness did not successfully predict any of the measures of treatment outcome. However, assertiveness did correlate with a number of the variables that predicted treatment outcome. It would be helpful to devise an experimental research design that utilized a specific asertivness training program to evaluate its impact on treatment outcomes.

6. Certain MMPI profiles successfully predicted a number of outcome variables. For future research it would be helpful to evaluate which combination of MMPI elevations provided the most

reliable predictor of treatment outcome. It would also be valuable to devise MMPI norms for chronic pain patients.

7. Months Since Last Worked proved to be the single strongest predictor of treatment outcome for this study. A logical implication of this finding is that specific career counseling and job placement services could provide a powerful adjunct to a pain treatment program. Painter, Seres, and Newman's (1980) research suggested that pain centers focus more actively on employment for injured workers to maintain gains made during treatment. An experimental research design could be used to test the impact of these services on the various measures of treatment outcome.

Conclusion

This section has presented discussion and possible interpretations of the results from Chapter Three. It also presented a number of recommendations for future research.

One of the most meaningful findings of this study was to confirm the complete independence of the four outcome measures used; Subjective Pain Rating, Functional Activity Level, Return to Work, and Use of Analgesic Medications. Because of this independence none of the hypotheses or questions predicted for more than one post treatment variable.

Emotion Focused Coping and Religious Coping from the WOC failed to predict for treatment outcome. The MMPI "manipulative reaction profile" (Hs, D, Pd, and Ma) failed to predict treatment outcome as did the General Assertiveness from the IBS, and Frequency of Church Attendance from the demographic variables. Neither Subjective Pain Rating nor Use of Analgesic Medications positively predicted treatment outcome.

However, it is encouraging to note that each of the outcome measures were successfully predicted. A decrease in subjective pain was predicted by elevations on the WOC Problem Focused Coping scale. A positive Return to Work was predicted by the personal background variable of Number of Months Since Last Worked. An increase in Post Treatment Functional Activities was predicted by elevations on the personal background variable of Pretreatment Functional Activities. A failure to reduce Use of Analgesic Medications was predicted by elevations on the MMPI D, Pd, male Mf, and conversion V scales. A Post Treatment reduction of Analgesics was predicted by elevations on the Spiritual Well-Being scale.

In conclusion, it is important to note that these findings are based on research with a mixed population of chronic pain patients. It is hoped that the results and implications of this study would be applicable to other studies with chronic pain patients. It would also be hoped that these findings might prove

useful in predicting treatment outcome for other health related conditions. However, as discussed earlier, the measures used to assess treatment outcome in this study, Return to Work, Use of Analegesic Medications, Subjective Pain Rating, and Functional Activity Level, may not be useful or desirable as measures for outcome with other populations. This study has demonstrated the usefulness of a cognitive phenomenological perspective in approaching treatment of chronic pain patients in that the integrated Moos and Lazarus model provided the foundation upon which this study was conducted. This model has been helpful in its use of personal and background information, social environmental factors, and coping behaviors which gave enough breadth and specificity to meaningfully use each of the independent variables. This same model has been shown useful also with hemodialysis patients (Campbell, 1983) and could therefore be predictably useful in studying other health related populations.

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APPENDIX A

VITA

VITA

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APPENDIX B

RAW DATA

APPENDIX B

RAW DATA

Key of Raw Data By Columns

1 = Subject
2 = Marital Status
3 = Church Affiliation
4 = Frequency of Church Attendance
5 = Types of Help Sought
6 = Ethnic Background
7 = Employment Status
8 = Reimbursement
9 = Education
10 = Income
11 = IBS Denial
12 = IBS Infrequency
13 = IBS Impresion Management
14 = IBS General Aggression
15 = IBS Hostile Stance
16 = IBS Expression of Anger
17 = IBS Disregard of Rights
18 = IBS Verbal Agression
19 = IBS Physical Aggression
20 = IBS Passive Aggression
21 = IBS General Assertiveness
22 = IBS Self-Confidence
23 = IBS Initiating Assertiveness
24 = IBS Defending Assertiveness
25 = IBS Frankness
26 = IBS Praise
27 = IBS Requesting Help
28 = IBS Refusing Demands
29 = IBS Conflict Avoidance
30 = IBS Dependency
31 = IBS Shyness
32 = MMPI L
33 = MMPI F
34 = MMPI K
35 = MMPI K
36 = MMPI 1
37 = MMPI 2
38 = MMPI 3
39 = MMPI 4
40 = MMPI 5
41 = MMPI 6
42 = MMPI 7
43 = MMPI 8
44 = MMPI 9
45 = MMPI 0
46 = MMPI LBP
47 = WOC Problem Focused
48 = WOC Emotion Focused
49 = WOC 1
50 = WOC 2
51 = WOC 3
52 = WOC 4
53 = WOC 5
54 = WOC 6
55 = WOC 7
56 = WOC 8
57 = RWB
58 = EWB
59 = SWB
60 = Age
61 = Sex
62 = Pretreatment Pain
63 = Pretreatment Months Worked
64 = Pretreatment Activities
65 = Pretreatment Medication
66 = Post Pain
67 = Post Work
68 = Post Activities
69 = Post Medication

01,6,1,1,0,1,1,1,09,1,61,41,64,41,40,52,37,42,46,35,60,61,46,67,66,
02,2,5,5,0,1,1,1,14,2,62,40,58,31,33,40,38,34,44,39,54,51,58,59,38,
03,3,1,1,0,1,3,2,16,6,62,50,41,55,56,49,43,53,56,39,57,60,41,59,61,
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APPENDIX C

NURSING INSTRUCTIONS

Nursing Instructions

Pain patient vlunteers will be told:

Your medical history qualifies you for participation in a reaserch project concerning the role of various types of coping on pain conditions like yours. Participation in this study is purely voluntary. I would like to tell you about the goals of the study, what it asks you to do, and the risks and benefits that might be gained from your participation. Please feel free to ask any questions which come to your mind. The purpose of this study is to determine in what ways different coping styles influence pain patient's treatment outcomes. Even though the results of this study will have no immediate impact on the treatment you receive for your pain it is our hope that by better understanding how patients cope with pain we will be able to develope improved treatment methods in the future. Participation in this study will simply entail filling out several test questionnairs. Completion of these items will require approximately one hour and entails no risk to the patient beyound the normal strain of filling out psychological questionnairs. The data collected in this study may be published; however, your name will not be used and you will not be personally identifiable from the results. The information gathered in this study will not in any way affect your status or treatment in the pain center program.

Have the patient complete the test materials in the following order:

1. The two background information sheets.
2. The Interpersonal Behavior Survey (IBS)
3. The Spiritual Well-Being Inventory (SWB)
4. The Ways of Coping (WOC)

APPENDIX D

INFORMED CONSENT

INFORMED CONSENT

PORTLAND PAIN CENTER

EMANUEL HOSPITAL

CONSENT TO PARTICIPATION IN RESEARCH PROJECT

Patient name: _____ Date: _____

Time: _____

Title of Research Project: Chronic Pain: a Study of Treatment Outcome as it Relates to Coping Behaviors, Assertiveness, Spiritual Well-Being, and MMPI Scores.

I. I hereby agree and consent to my participation in the study designed to assess the effects of coping behavior, assertiveness, spiritual well-being and personality variables as measured on the MMPI and treatment outcome at the Portland Pain Center.

I understand the goals of the study to be as follows:

The goal of the study is to assess whether improvement in a pain management program such as the Portland Pain Center are associated with improved coping behaviors, improved assertiveness and a feeling of spiritual well-being. Additionally, the goal of the study is to assess whether certain personality types will have better treatment outcomes in a pain management program such as the Portland Pain Center than other personality types. Other research studies done in other pain programs have shown that people who have a favorable or positive treatment outcome in a pain management program also have improved coping behaviors and improved assertiveness skills. Other research has also shown that certain personality types will do better than other personality types in a pain management program as well. Spiritual well-being has been shown in other studies to be an important contributor to positive change in treatment programs of other medical problems such as renal dialysis and eating disorders. Consequently, we would like to see if both improved coping behaviors and assertiveness skills also correlate highly with good outcome in the Portland Pain Center and to also see if certain personality types show more improvement in the Portland Pain Center than others. Additionally, we would like to see what the affect of spiritual well-being has on improved outcome in treatment at the Portland Pain Center as well.

II. I understand that improved coping behaviors wi-l be measured by the "Ways of Coping" test, that the measure of improved assertiveness skills will be measured by the "Interpersonal Behavior Survey (IBS)," that the measure or spiritual well-being will be taken from the "Spiritual Well-Being Inventory (SWBI)," and the personality types will be measured from the "Minnesota Multiphasic Personality Inventory (MMPI)." The Ways of Coping test, the Interpersonal Behavior Survey, and the Spiritual Well-Being Inventory will all be given to me separately from other tests that the Portland Pain Center requires. One of the other tests that the Portland Pain Center requires is the Minnesota Multiphasic Personality Inventory. I understand that the time to take the tests will be approximately one hour and that my name will not be used to identify the results on these tests. Further, I understand that my test results will not be made available to anyone on the Portland Pain Center treatment team or anyone else. All test results will be kept in confidence and no names will be used to identify particular tests.

I understand and agree to take these tests under the above conditions and to compare the results of my tests with the results of treatment outcome six weeks after I leave the Portland Pain Center and come back for the regularly scheduled follow-up evaluation. I understand that the results of these tests or my outcome will in no way affect the treatment I will be receiving at the Portland Pain Center.

III. I understand that the only risk involved in my participation in this study are the potential stress related effects of answering questions on psychological tests. However, many psychological tests are routinely required of all patients coming to the Portland Pain Center who are not involved in this study. There has been no known adverse reaction to taking psychological tests here at the Portland Pain Center. Additionally, there is nothing unusual about the questionnaires that could potentially provide psychological distress. There is no reason why any of these procedures should make my pain worse or my stress higher.

IV. The alternative to not participating in this study has been explained to me. I can at any time before and during the study, decide not to participate and it will not influence my treatment at the Portland Pain Center or will any of the information collected in the study be shared with the treatment and evaluation staff.

V. I understand that the benefits of this study are the hope that the results will contribute to the understanding of chronic pain problems like mine and to the understanding that will help to develop and improve treatment methods in the future.

VI. I understand that the results of this research project will be disseminated nationally, however, precautions will be made to insure the confidentiality of my participation in this study. I further understand that no names will be used.

VII. I understand it is not the policy of the Department of Health and Human Resources or any other agency funding the research project in which I am participating to compensate or provide medical treatment for human subjects in the event the research results in physical injury. I further understand that should I suffer any injury from the research project, compensation would be available only if established that the injury occurred through the fault of the hospital, its officers, or employees or my physician. I understand that further information regarding this policy may be obtained from Dr. Keith Hansen, Chairman, Human Research Committee at 280-4154.

XI. Dr. Smith, or Mr. Williams H. Mullins have agreed to answer any questions I might have.

Gregory T. Smith, Ph.D.
Associate Director
Portland, Pain Center
3001 N. Cantenbein Ave.
Portland, Oregon 97227
503-280-4404

William H. Mullin, M.A.
10836 N.E. Klickitat Street
Portland, Oregon 97220
503-256-0636

X. I understand I am free to refuse to participate or withdraw from participation in this study at any time and it will in no way effect my relationship with, or treatment at the Portland Pain Center at Emanuel Hospital. I have read the foregoing.

(Witness)	(Participant)
(Date)	(Date)
(Time)	(Time)

APPENDIX E

BACKGROUND INFORMATION

Background Information

Marital Status:

Indicate which of the following best describes your current living situation:

_____Never married
_____Married
_____Divorced
_____Widowed
_____Separated
_____Single living as married

Show number of times in your life you have experienced each of the following:

_____Married
_____Divorced
_____Widowed
_____Separated
_____Single living as married

Church Affiliation:

_____None
_____Jewish
_____Other: please specify
_____

_____Catholic
_____Protestant: indicate denomination_____

Frequency of Attendance:

A. Church or synagogue
_____Less than once/year
_____Once or twice/year
_____Between once/month and once/week
_____Weekly
_____More than once/week

B. Other religious groups
_____Less than once/year
_____Once or twice/year
_____Between once/month and once/week
_____Weekly
_____More than once/week
Nature of group(s)_____

Have you sought help for your pain syndrome in any of the following manners?

_____Dietary changes
_____Religious practitioners or faith healers
_____Mega vitamine therapy
_____Copper jewelry
_____Other: please specify:
_____

State what predominant ethnic and/or national origin you come from:
_____

State what predominant ethnic and/or national origin each of your parents came from: Mother_____ Father_____

Are you currently employed?
_____No _____Part time _____Full time

Are you currently receiving money related to your pain syndrome or disability (SSI, Insurance, Workman's Compensation, etc.)?
_____Yes _____No

Education: specify number of years completed in each catagory:
_____Grades 1-12 _____College _____Post college

Income: per year
_____Less than $5,000
_____$5,000 to $9,999
_____$10,000 to $19,999
_____$20,000 to $29,999
_____$30,000 to $39,999
_____$40,000 or more per year

APPENDIX F

PAIN TREATMENT OUTCOME QUESTIONNAIRE

On a scale of 0 - 100, with 100 equal to the worst pain you can imagine, and 0 equal to no pain at all, how would you rate your average day-to-day level of pain? _____

I am currently:

_____ unemployed _____ employed part-time _____ employed full-time

Months since last worked _____

For each activity listed below, please check the category that best describes the effect your pain has on it.

	I do this without pain	I tend to avoid this activity	I tend to do this despite the pain	This activity relieves the pain
Walking				
Standing				
Bending				
Sitting				
Running				
Sleeping				
Reclining				
Eating				
Pushing				
Pulling				
Sexual Activities				
Working				
Lifting light objects				
Lifting heavy objects				
Driving in automobile				
Riding				
Dressing				
Reading				
Watching TV				
Going out to dinner				
Going to a movie				
Gardening				
Visiting friends				
Child care				
Cooking				
Sports				
Attending church				
Knitting				
Typing				
OTHERS (Is there any important activity I have left out?)				

APPENDIX G

SPIRITUAL WELL-BEING INVENTORY

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

SA=Strongly Agree
MA=Moderately Agree
A=Agree
D=Disagree
MD=Moderately Disagree
SD=Strongly Disagree

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

APPENDIX H

WAYS OF COPING

WAYS OF COPING

Chronic pain patients face many stressful situations such as the actual discomfort of the pain itself, the inability to work, reduced activity levels, financial stress, depression and fear of the future. Thinking about these painful stressors put a check in the "yes" or "no" column for each item, depending on whether that item applies to you.

		YES	NO
1.	Just concentrated on what you had to do next - the next step.	___	___
2.	You went over the problem again and again in your mind to try to understand it.	___	___
3.	Turned to work or substitute activity to take your mind off things.	___	___
4.	You felt that time would make a difference, the only thing to do was wait.	___	___
5.	Bargained or compromised to get something positive from the situation.	___	___
6.	Did something which you thought wouldn't work, but at least you were doing something.	___	___
7.	Got the person responsible to change his or her mind.	___	___
8.	Talked to someone to find out more about the situation.	___	___
9.	Blamed yourself.	___	___
10.	Concentrated on something good that could come out of the whole thing.	___	___
11.	Criticized or lectured yourself.	___	___
12.	Tried not to burn your bridges behind you, but leave things open somewhat.	___	___
13.	Hoped a miracle would happen.	___	___
14.	Went along with fate; sometimes you just have bad luck.	___	___
15.	Went on as if nothing had happened.	___	___
16.	Felt bad that you couldn't avoid the problem.	___	___
17.	Kept your feelings to yourself.	___	___
18.	Looked for the "silver lining", so to speak; tried to look on the bright side of things.	___	___
19.	Slept more than usual	___	___
20.	Got mad at the people or things that caused the problem.	___	___
21.	Accepted sympathy and understanding from someone.	___	___
22.	Told yourself things that helped you to feel better.	___	___
23.	You were inspire to do something creative.	___	___
24.	Tried to forget the whole thing.	___	___
25.	Got professional help and did what they recommended.	___	___
26.	Changed or grew as a person in a good way.	___	___
27.	Waited to see what would happen.	___	___
28.	Did something totally new that you never would have done if this hadn't happened.	___	___

		YES	NO
29.	Tried to make up to someone for the bad thing that happened..	___	___
30.	Made a plan of action and followed it.	___	___
31.	Accepted the next best thing to what you wanted.	___	___
32.	Let your feelings out somehow.	___	___
33.	Realized you brought the problem on yourself.	___	___
34.	You came out of the experience better than you went in.	___	___
35.	Talked to someone who could do something concrete about the problem.	___	___
36.	Got away from it for a while; tried to rest or take a vacation.	___	___
37.	Tried to make yourself feel better by eating, drinking, smoking, taking medication, etc.	___	___
38.	Took a big chance or did something very risky.	___	___
39.	Found a new faith or some important truth about life.	___	___
40.	Tried not to act too hastily or follow your furst hunch.	___	___
41.	Joked about it.	___	___
42.	Maintained your pride and kept a stiff upper lip.	___	___
43.	Rediscovered what is important in life.	___	___
44.	Changed something so things would turn out all right.	___	___
45.	Avoided being with people in general.	___	___
46.	Didn't let it get to you; refused to think too much about it.	___	___
47.	Asked someone you respect for advice and followed it.	___	___
48.	Kept others from knowing how bad things were.	___	___
49.	Made light of the situation; refused to get too serious about it.	___	___
50.	Talked to someone about how you were feeling.	___	___
51.	Stood your ground and fought for what you wanted.	___	___
52.	Took it out on other people.	___	___
53.	Drew on your past experience; you were in a similar situation before.	___	___
54.	Just took things one step at a time.	___	___
55.	You knew what had to be done, so you doubled your efforts and tried harder to make things work.	___	___
56.	Refused to believe that it had happened.	___	___
57.	Made a promise to yourself that things would be different next time.	___	___
58.	Came up with a couple of different solutions to the problem.	___	___
59.	Accepted it, since nothing could be done.	___	___
60.	Wished you were a stronger person--more optimistic and forceful.	___	___
61.	Accepted your strong feelings, but didn't let them interfere with other things too much.	___	___
62.	Wished that you could change what had happened.	___	___
63.	Wished you could change the way you felt.	___	___
64.	Changed something about yourself so that you could deal with the situation better.	___	___
65.	Daydreamed or imagined a better time or place than the one you were in.	___	___

		YES	NO
66.	Had fantasies or wishes about how things might turn out.	___	___
67.	Thought about fantastic or unreal things (like the perfect revence or finding a million dollars) that made you feel better.	___	___
68.	Wished that the situation would go away or somehow be over with.	___	___
69.	Prayed about the situation.	___	___
70.	Asked someone to pray with you or for you in the situation.	___	___
71.	Searched the Scripture (or other religious literature) for spiritual insight or comfort.	___	___
72.	Reflected on spiritual thoughts such as "God is in control of my life in this situation."	___	___
73.	Talked with a priest, minister, or rabbi about the situation.	___	___

APPENDIX I

CORRELATIONAL MATRIX

APPENDIX I

CORRELATIONAL MATRIX

Tables 29 through 34 present a matrix of the correlations of all the variables measured in this study. The single tailed acceptable level of significance used is .05, which is noted by a single asterisk (*). The .01 level is marked by a double asterisk (**), and the .001 level is marked by a triple asterisk (***).

Table 29

Correlational Matrix of Demographic Variables

Correlations:	MARIT	CHURAFF	CHURFREQ	TYPEHELP	ETHNIC
MARIT	-	.041	-.064	-.178	-.174
CHURAFF	.041	-	.527***	-.036	-.090
CHURFREQ	-.064	.527***	-	.088	.213
TYPEHELP	-.178	-.036	.088	-	.501***
ETHNIC	-.174	-.090	.213	.501***	-
EMPLOY	-.059	-.021	.063	.104	.056
REIMBURS	-.124	-.213	-.092	.070	-.112
EDUC	-.172	.010	.045	.354*	.018
INCOME	-.334*	.137	.001	.024	-.084
AGE	-.238	.196	-.030	.140	-.183
SEX	.289	.098	.088	.060	-.107

Table 29 (cont.)

Correlational Matrix of Demographic Variables

Correlations:	EMPLOY	REIMBURS	EDUC	INCOME	AGE
MARIT	-.059	-.124	-.173	-.335*	-.239
CHURAFF	-.021	-.213	.011	.137	.196
CHURFREQ	.064	-.092	.045	.001	-.030
TYPEHELP	.104	.071	.354*	.025	.141
ETHNIC	.057	-.112	.018	-.084	-.183
EMPLOY	-	.334*	.242	.239	-.062
REIMBURS	.334*	-	.358*	.280*	.145
EDUC	.242	.358*	-	.403***	.052
INCOME	.239	.280*	.403**	-	.049
AGE	-.061	.145	.052	.049	-
SEX	.216	.091	.176	-.262	.048

Table 29 (cont.)

Correlational Matrix of Demographic Variables

Correlations:	SEX
MARIT	.289
CHURAFF	.099
CHURFREQ	.088
TYPEHELP	.060
ETHNIC	-.107
EMPLOY	.217
REIMBURS	.092
EDUC	.176
INCOME	-.262
AGE	.048
SEX	-

Table 29 (cont.)

Correlational Matrix of Demographics and IBS Scales

Correlations:	MARIT	CHURAFF	CHURFREQ	TYPEHELP	ETHNIC
DENIAL	.018	-.075	.159	.095	-.041
INFREQ	-.1814	.055	.068	-.045	.073
IMPRESMG	.310*	.324*	.256	.079	-.114
GENAGRES	-.061	-.111	-.103	-.002	.138
HOSTIL	-.083	-.218	-.135	.135	.083
EXPRSANG	.031	.103	-.011	-.196	.069
DISRIGHT	-.252	-.127	-.125	.263*	.051
VERBAGG	-.099	-.089	-.110	-.161	.033
PHYSAGG	.060	.008	-.012	-.326*	.003
PASSAGG	-.234	-.251	-.186	-.050	.147
GENASSRT	.149	-.036	-.029	-.056	-.204
SELFCONF	.166	.115	-.050	.066	-.183
INIASST	-.114	.024	.138	.039	-.057
DEFASST	.341*	-.099	-.142	-.227	-.226
FRANK	.312*	-.210	-.186	-.033	.073
PRAISE	.100	.141	.010	.015	-.195
REQHELP	.118	.183	-.060	.001	-.162
REFDEMAN	.193	-.029	-.009	.015	.096

Table 29 (cont.)

Correlational Matrix of Demographics and IBS Scales

Correlations:	MARIT	CHURAFF	CHURFREQ	TYPEHELP	ETHNIC
CONFAVOD	-.099	.021	.099	.207	.148
DEP	-.061	-.044	.230	.070	.120
SHY	-.005	.010	-.098	-.082	.035

Table 29 (cont.)

Correlational Matrix of Demographics and IBS Scales

Correlations:	EMPLOY	REIMBURS	EDUC	INCOME	AGE
DENIAL	.113	.075	-.112	.080	.044
INFRE	-.051	-.043	-.007	-.027	-.185
IMPRESMG	.010	-.020	-.337*	-.116	.228
GENAGRES	-.077	.091	.018	.056	-.243
HOSTIL	-.017	.086	.100	.047	-.163
EXPRESANG	-.263*	-.095	-.185	.007	-.173
DISRIGHT	-.104	.082	.055	.025	-.056
VERBAGG	-.121	.048	-.039	.246	-.176
PHYSAGG	-.163	.073	-.005	-.010	-.194
PASSAGG	-.130	-.241	-.076	-.058	.000
GENASSRT	-.043	.139	-.043	.186	.047
SELFCONF	-.109	.076	.004	.099	.122
INIASST	-.015	.144	.055	.349*	-.120
DEFASSRT	-.031	.014	-.197	.074	.087
FRANK	.118	.079	-.044	.156	-.370**
PRAISE	-.099	-.019	-.122	.044	.152
REQHELP	.115	.101	.124	.279*	.141
REFDEMAN	.177	.153	.014	-.062	-.161

Table 29 (cont.)

Correlational Matrix of Demographics and IBS Scales

Correlations:	EMPLOY	REIMBURS	EDUC	INCOME	AGE
CONFAVOD	.019	-.124	.126	-.205	.178
DEP	.051	-.093	.236	-.041	-.104
SHY	-.053	-.364**	-.015	-.235	-.140

Table 29 (cont.)

Correlational Matrix of Demographics and IBS Scales

Correlations:	SEX
DENIAL	.015
INFREQ	.032
IMPRESMG	.193
GENAGRES	.041
HOSTIL	-.066
EXPRSANG	-.036
DISRIGHT	.033
VERBAGG	-.032
PHYSAGG	-.018
GENASSRT	.025
SELFCONF	-.059
INIASST	.033
DEFASST	.016
FRANK	.012
PRAISE	-.221
REQHELP	.071
REFDEMAN	.107

Table 29 (cont.)

Correlational Matrix of Demographics and IBS Scales

Correlations:	SEX
CONFAVOD	.029
DEP	-.022
SHY	-.103

Table 29 (cont.)

Correlational Matrix of Demographic Variables and MMPI Scales

Correlations:	L	F	K	MMPI1	MMPI2
MARIT	-.014	-.098	-.168	-.164	-.049
CHURAFF	.128	-.061	.207	-.037	-.156
CHURFREQ	.148	.224	.099	-.133	-.028
TYPEHELP	-.097	.069	.147	.119	-.039
ETHNIC	.035	.370**	-.041	.113	.118
EMPLOY	-.129	.048	.220	-.067	-.212
REIMBURS	-.248	-.103	.036	-.023	-.131
EDUC	-.424**	.046	-.046	-.025	-.084
INCOME	-.079	.052	.116	.214	.055
AGE	-.120	-.310	.263	.375*	-.016
SEX	-.094	-.258	.106	-.381**	-.280

Table 29 (cont.)

Correlational Matrix of Demographic Variables and MMPI Scales

Correlations:	MMPI3	MMPI4	MMPI5-MALE	MMPI5-FEMALE	MMPI6
MARIT	.137	-.275*	-.101	.458*	.002
CHURAFF	.029	-.134	-.344*	-.106	-.268*
CHURFREQ	-.032	.099	-.003	-.203	-.033
TYPEHELP	.003	-.052	.248	-.318*	-.219
ETHNIC	-.022	.274	.316*	.037	.079
EMPLOY	-.243	-.088	.018	-.630**	.070
REIMBURS	-.057	-.080	.070	-.441*	.033
EDUC	-.079	-.149	.294	-.645**	-.121
INCOME	.099	.115	.202	-.741***	-.033
AGE	.172	-.130	-.074	-.305*	-.280
SEX	-.224	-.126	-	-	-.190

Table 29 (cont.)

Correlational Matrix of Demographic Variables and MMPI Scales

Correlations:	MMPI7	MMPI8	MMPI9	MMPI0	LBP
MARIT	-.169	-.154	-.224	-.024	.166
CHURAFF	-.036	.103	.197	.088	.093
CHURFREQ	.051	.119	.005	.182	-.039
TYPEHELP	-.064	.047	-.088	-.046	-.055
ETHNIC	.078	.324*	.037	.117	-.346
EMPLOY	-.176	-.054	.025	-.043	-.063
REIMBURS	-.088	-.152	.128	-.298	-.037
EDUC	-.072	-.105	.147	.083	-.124
INCOME	.065	.118	.369**	-.251	-.121
AGE	-.027	-.134	.203	-.231	.054
SEX	-.200	-.257	-.034	.110	.032

Table 29 (cont.)

Correlational Matrix of Demographic Variables and WOC Scales

Correlations:	PROBFOC	EMOTFOC	WOC1	WOC2	WOC3
MARIT	.009	-.054	.111	-.063	-.124
CHURAFF	.219	.111	.188	.095	.069
CHURFREQ	.232	.172	.155	.191	.218
TYPEHELP	.289	.270	.283	.256	.273
ETHNIC	.301	.135	.203	.179	.174
EMPLOY	.114	.029	.192	-.057	-.011
REIMBURS	-.110	-.276	-.171	-.172	-.109
EDUC	.105	.198	.089	.100	.253
INCOME	.168	.035	.157	-.061	.133
AGE	.150	.135	.103	.086	-.073
SEX	.093	.174	.094	.234	-.120

Table 29 (cont.)

Correlational Matrix of Demographics and SWB Scales

Correlations:	RWB	EWB	SWB
MARIT	.053	.026	.051
CHURAFF	.461**	.446**	.491***
CHURFREQ	.343*	.347*	.383**
TYPEHELP	.091	.185	.160
ETHIC	-.142	-.003	-.076
EMPLOY	-.030	.117	.025
REIMBURS	-.067	.099	.024
EDUC	-.107	.026	-.025
INCOME	.028	.228	.136
AGE	.497***	.296	.427**
SEX	.009	.019	.026

Table 29 (cont.)

Correlational Matrix of Demographics and Pretreatment Variables

Correlations:	PREPAIN	PREMONTH	PREFUNCT	PREMEDS
MARIT	.188	-.182	-.062	.124
CHURAFF	.029	.035	.049	-.174
CHURFREQ	.006	-.116	-.038	-.061
TYPEHELP	.032	.025	-.108	-.011
ETHIC	.108	-.172	-.269	-.002
EMPLOY	-.105	-.412**	.151	.146
REIMBURS	.008	-.007	-.005	-.215
EDUC	-.090	-.123	.223	-.306
INCOME	.049	.024	.222	-.329
AGE	-.057	.637***	-.051	-.098
SEX	.139	-.236	-.083	.097

Table 29 (cont.)

Correlational Matrix of Demographics and Post Treatment Variables

Correlations:	POSTPAIN	POSTWORK	POSTFUNC	POSTMEDS
MARIT	.000	.004	-.036	-.066
CHURAFF	.258	.135	.168	-.282
CHURFREQ	.099	-.077	.259	-.013
TYPEHELP	-.038	-.081	-.119	-.073
ETHIC	-.014	-.085	-.038	.021
EMPLOY	-.149	-.374**	.234	-.018
REIMBURS	-.258	-.081	-.129	.280
EDUC	-.105	-.049	.249	.137
INCOME	.175	.314	.127	.077
AGE	-.208	.118	-.131	-.042
SEX	.050	-.304	.125	.017

Table 30

Correlational Matrix of IBS Scales

Correlations:	DENIAL	INFREQ	IMPRESMG	GENAGRES	HOSTIL
DENIAL	-	-.266*	.544***	-.502***	-.362
INFREQ	-.266*	-	-.460**	.569***	.349*
IMPRESMG	.544***	-.460**	-	-.486***	-.426**
GENAGRES	-.502***	.569***	-.486***	-	.859***
HOSTIL	-.362*	.349*	-.426**	.859***	-
EXPRSANG	-.505***	.463**	-.409**	.603***	.257
DISRIGHT	-.172	.399**	-.303*	.657***	.699***
VERBAGG	-.351*	.605***	-.4489**	.825***	.691**
PHYSAGG	-.636***	.425**	-.441**	.686***	.494***
PASSAGG	-.362*	.547***	-.573***	.659***	.607***
GENASSRT	.496***	-.384**	.372**	-.309*	-.203
SELFCONF	.234	-.435**	.463**	-.363**	-.257
INIASST	.380**	-.187	.163	-.073	-.039
DEFASST	.423**	-.351*	.329*	-.351	-.268*
FRANK	.235	-.202	.152	-.089	-.073
PRAISE	.245	-.300*	.509***	-.304*	-.120
REQHELP	-.094	-.278*	.207	-.238	-.212

Table 30 (cont.)

Correlational Matrix of IBS Scales

Correlations:	DENIAL	INFREQ	IMPRESMG	GENAGRES	HOSTIL
REFDEMAN	.177	-.169	.038	-.104	-.105
CONFAVOD	.035	.064	.053	-.129	-.079
DEP	-.499***	.252	-.399**	.157	.083
SHY	-.444**	.306*	-.338*	.203	.186

Table 30 (CONT.)

Correlational Matrix of IBS Scales

Correlations:	EXPRSANG	DISRIGHT	VERBAGG	PHYSAGG	PASSAGG
DENIAL	-.505***	-.172	-.350*	-.636***	-.362
INFREQ	.463**	.399**	.605***	.425**	.547***
IMPRESMG	-.409**	-.303*	-.449**	-.441**	-.573***
GENAGRES	.603***	.657***	.825***	.686***	.659***
HOSTIL	.257*	.699***	.691***	.494***	.607***
EXPRSANG	-	.223	.587***	.567***	.448**
DISRIGHT	.223	-	.599***	.239	.599***
VERBAGG	.587	.544***	-	.599***	.603
PHYSAGG	.567***	.239	.599***	-	.414**
PASSAGG	.448**	.599***	.603***	.414**	-
GENASSRT	-.227	-.204	-.117	-.262*	-.474***
SELFCONF	-.211	-.442**	-.351	-.134	-.602***
INIASST	-.038	.068	.143	-.227	-.149
DEFASST	-.149	-.238	-.072	-.245	-.454**
FRANK	-.021	-.112	.045	-.084	-.185
PRAISE	-.319*	-.302*	-.284*	-.188	-.441**
REQHELP	-.069	-.485***	-.186	-.014	-.506***
REFDEMAN	.050	-.265*	-.065	-.155	-.465**

Table 30 (CONT.)

Correlational Matrix of IBS Scales

Correlations:	EXPRSANG	DISRIGHT	VERBAGG	PHYSAGG	PASSAGG
CONFAVOD	-.327*	.038	-.338*	-.158	.148
DEP	.283*	-.003	.049	.219	.368**
SHY	.102	.132	.078	.309*	.478***

Table 30 (cont.)

Correlational Matrix of IBS Scales

Correlations:	GENASSRT	SELFCONF	INIASST	DEFASST	FRANK
DENIAL	.496***	.234	.380**	.423**	.235
INFREQ	-.384**	-.435**	-.187	-.351*	-.202
IMPRESMG	.372**	.463**	.163	.329*	.152
GENAGRES	-.309	-.363**	-.073	-.351*	-.089
HOSTIL	-.203	-.257	-.039	-.268*	-.073
EXPRSANG	-.227	-.211	-.038	-.149	-.021
VERBAGG	-.117	-.442**	.068	-.238	-.112
PHYSAGG	-.262*	-.351*	.143	-.072	.045
PASSAGG	-.474***	-.134	-.227	-.245	-.084
GENASSRT	-	-.602***	-.149	-.454**	-.185
SELFCONF	.696***	-	.749***	.816***	.666***
INIASST	.749***	.269*	-	.489***	.362**
DEFASST	.816***	.489***	.527***	-	.393**
FRANK	.666***	.362**	.393**	.597***	-
PRAISE	.544***	.812***	.123	.390**	.208
REQHELP	.349*	.705***	.144	.254	.228
REFDEMAN	.355*	.310*	.207	.309*	.366**
CONFAVOD	-.586***	-.329*	-.472***	-.496***	-.662***

Table 30 (cont.)

Correlational Matrix of IBS Scales

Correlations:	GENASSRT	SELFCONF	INIASST	DEFASST	FRANK
DEP	-.570***	-.338*	-.369**	-.483***	-.388**
SHY	-.675***	-.457**	-.667***	-.407**	-.357*

Table 30 (cont.)

Correlational Matrix of IBS Scales

Correlations:	PRAISE	REQHELP	REFDEMAN	CONFAVOD
DENIAL	.245	-.094	.177	.036
INFREQ	-.300*	-.278*	-.169	.064
IMPRESMG	.509***	.207	.038	.053
GENAGRES	-.304*	-.238	-.104	-.129
HOSTIL	-.120	-.212	-.105	-.079
EXPRSANG	-.319*	-.069	.050	-.327*
DISRIGHT	-.302*	-.485***	-.265	.038
VERBAGG	-.283	-.186	-.065	-.338*
PHYSAGG	-.187	-.014	-.155	-.158
PASSAGG	-.441**	-.506***	-.465**	.148
GENASSRT	.545***	.349*	.355*	-.586***
SELFCONF	.812***	.705***	.310*	-.389*
INIASST	.123	.144	.207	-.472***
DEFASST	.390**	.254	.309*	-.496***
FRANK	.208	.228	.366**	-.662***
PRAISE	-	.385**	-.002	-.089
REQHELP	.385**	-	.327*	-.350*
REFDEMAN	-.002	.327*	-	-.507***

Table 30 (cont.)

Correlational Matrix of IBS Scales

Correlations:	PRAISE	REQHELP	REFDEMAN	CONFAVOD
CONFAVOD	-.089	-.350*	-.508***	-
DEP	-.213	-.113	-.388**	.385**
SHY	-.311*	-.228	-.518***	.425**

Table 30 (cont.)

Correlational Matrix of IBS Scales

Correlations:	DEP	SHY
DENIAL	-.499***	-.444**
INFREQ	.252	.306*
IMPRESMG	-.399**	-.338*
GENAGRES	.157	.203
HOSTIL	.083	.185
EXPRSANG	.283*	.102
DISRIGHT	-.003	.132
VERBAGG	.049	.078
PHYSAGG	.219	.309*
PASSAGG	.368**	.478***
GENASSRT	.570***	.675***
SELFCONF	-.338*	-.457**
INIASST	-.369**	-.667***
DEFASST	-.483***	-.407**
FRANK	-.388**	-.357*
PRAISE	-.213	-.311*
REQHELP	-.113	-.228
REFDEMAN	-.388**	-.518***

Table 30 (cont.)

Correlational Matrix of IBS Scales

Correlations:	DEP	SHY
CONFAVOD	.385**	.425**
DEP	-	.407**
SHY	.407**	-

Table 30 (cont.)

Correlational Matrix of IBS and MMPI Scales

Correlations:	L	F	K	MMPI1	MMPI2
DENIAL	.457**	-.109	.405**	-.056	-.071
INFREQ	-.235	.055	-.226	-.192	.047
IMPRESMG	.415**	-.286*	.414**	-.089	-.169
GENAGRES	-.481***	.248	-.508***	-.017	.119
HOSTIL	-.512***	.253	-.479***	-.005	.107
EXPRSANG	-.192	.105	-.406**	.015	.181
DISRIGHT	-.148	.173	-.439**	.002	.041
VERBAGG	-.399**	.115	-.474***	-.103	.020
PHYSAGG	-.476***	.193	-.475***	-.030	.156
PASSAGG	-.326*	.410**	-.608***	.159	.341*
GENASSRT	.181	-.415**	.335*	-.111	-.472***
SELFCONF	.055	-.384**	.409**	-.079	-.249
INIASST	.152	-.279*	.112	-.166	-.494***
DEFASST	.284	-.410**	.197	-.203	-.409**
FRANK	.122	-.077	.039	-.041	-.258*
PRAISE	.002	-.305*	.362*	-.017	-.087
REQHELP	-.066	-.315*	.225	-.169	-.298*

Table 30 (cont.)

Correlational Matrix of IBS and MMPI Scales

Correlations:	L	F	K	MMPI1	MMPI2
REFDEMAN	.201	-.145	.269*	-.246	-.413**
CONFAVOD	-.065	.237	-.032	.024	.360
DEP	-.388**	.306*	-.394**	-.038	.392**
SHY	-.205	.421**	-.372**	.177	.448**

Table 30 (cont.)

Correlational Matrix of IBS and MMPI Scales

Correlations:	MMPI3	MMPI4	MMPI5-Male	MMPI5-Female	MMPI6
DENIAL	.181	-.208	-.241	.246	-.159
INFREQ	-.353*	.287*	-.075	.341*	.079
IMPRESMG	.101	-.439**	-.331*	.066	-.157
GENAGRES	-.121	.441**	.061	.061	.169
HOSTIL	-.114	.340*	.222	-.011	.094
EXPRSANG	.088	.385**	-.059	.198	.143
DISRIGHT	-.049	.296*	.041	-.109	.033
VERBAGG	-.164	.435**	-.033	.054	.068
PHYSAGG	-.163	.345*	.233	.362*	.135
PASSAGG	-.005	.594***	.266*	.109	.268*
GENASSRT	.061	-.348*	-.276	.300*	-.412**
SELFCONF	-.015	-.437**	-.157	.248	-.411**
INIASST	.023	-.096	-.236	-.238	-.328*
DEFASST	-.009	-.413**	-.258	.429*	-.354*
FRANK	.047	-.157	-.128	.194	-.099
PRAISE	-.009	-.398**	-.224	.175	-.209
REQHELP	-.286*	-.379**	-.170	-.205	.418**
REFDEMAN	.005	-.147	-.036	.137	-.123

Table 30 (cont.)

Correlational Matrix of IBS and MMPI Scales

Correlations:	MMPI3	MMPI4	MMPI5-MALE	MMPI5-FEMALE	MMPI6
CONFAVOD	-.029	.002	.176	-.001	.257
DEP	-.138	.285*	.430*	-.523*	.406**
SHY	-.036	.276*	.217	.194	.225

Table 30 (cont.)

Correlational Matrix of IBS and MMPI Scales

Correlations:	MMPI7	MMPI8	MMPI9	MMPI0	LBP
DENIAL	-.242	-.309*	-.265*	-.429**	.261
INFREQ	.227	.130	.137	.335	-.138
IMPRESMG	-.324*	-.276*	-.231	-.373**	.188
GENAGRES	.256	.255	.387**	.267	-.123
HOSTIL	.141	.134	.203	.200	-.087
EXPRSANG	.301*	.291*	.358*	.256	-.027
DISRIGHT	.078	.055	.180	.171	-.139
VERBAGG	.134	.105	.381**	.152	-.143
PHYSAGG	.271*	.297*	.377**	.339	-.128
PASSAGG	.431**	.393**	.355**	.505***	-.050
GENASSRT	-.518***	-.480***	-.081	-.744***	.181
SELFCONF	-.391**	-.340*	-.139	-.549***	.211
INIASST	-.428**	-.378**	.278*	-.642***	.007
DEFASST	-.512***	-.520***	-.350*	-.531***	-.013
FRANK	-.328*	-.174	-.092	-.373**	.079
PRAISE	-.269*	-.270*	-.283*	-.450**	.169
REQHELP	.366**	.302*	.027	-.272	-.066
REFDEMAN	-.399**	-.252	-.140	-.373**	.147

Table 30 (cont.)

Correlational Matrix of IBS and MMPI Scales

Correlations:	MMPI7	MMPI8	MMPI9	MMPI0	LBP
CONFAVOD	.308*	.172	-.153	.393**	.013
DEP	.460**	.376**	.082	.570***	-.195
SHY	.463**	.369**	-.113	.803***	-.065

Table 30 (cont.)

Correlational Matrix of IBS and WOC Scales

Correlations:	PROBFOC	EMOTFOC	WOC1	WOC2	WOC3
DENIAL	-.105	-.303	-.113	-.300	-.284
INFREQ	.082	.218	.119	.194	.252
IMPRESMG	.071	-.114	.040	-.106	-.190
GENAGRES	-.011	.176	.054	.296	.219
HOSTIL	-.056	.093	.082	.152	.192
EXPRSANG	.008	.090	-.036	.225	.177
DISRIGHT	.008	.185	.074	.320	.186
VERBAGG	-.000	.080	.045	.100	.272
PHYSAGG	-.062	.153	-.059	.196	.123
PASSAGG	.073	.370**	.162	.369**	.318
GENASSRT	-.186	-.293	-.114	-.377**	-.407**
SELFCONF	-.039	-.194	-.022	-.290	-.296
INIASST	.109	.039	.111	-.019	-.096
DEFASST	-.243	-.396**	-.174	-.459**	-.401**
FRANK	-.199	-.196	-.091	-.291	-.241
PRAISE	-.093	-.223	-.030	-.337	-.175
REQHELP	.214	.073	.218	-.054	-.109

Table 30 (cont.)

Correlational Matrix of IBS and WOC Scales

Correlations:	PROBFOC	EMOTFOC	WOC1	WOC2	WOC3
REFDEMAN	-.143	-.425**	-.163	-.365**	-.373**
CONFAVOD	.217	.263	.192	.301	.209
DEP	.303	.446**	.292	.471***	.518***
SHY	-.073	.217	-.054	.177	.297

Table 30 (cont.)

Correlational Matrix of IBS and WOC Scales

Correlations:	WOC4	WOC5	WOC6	WOC7	WOC8
DENIAL	.170	-.175	-.119	-.341	-.109
INFREQ	-.127	.089	-.001	.268	.018
IMPRESMG	.176	.165	-.189	-.256	.195
GENAGRES	-.458**	-.013	-.004	.324	-.129
HOSTIL	-.422**	-.168	-.005	.177	-.223
EXPRSANG	-.351	.012	-.014	.416**	.127
DISRIGHT	-.233	-.168	-.093	.110	-.191
VERBAGG	-.439**	-.096	.064	.311	-.097
PHYSAGG	-.339	.148	.089	.204	.143
PASSAGG	-.167	.034	.015	.449**	-.135
GENASSRT	-.004	-.027	-.066	-.532***	.001
SELFCONF	.159	.155	-.044	-.467**	.176
INIASST	.098	.000	-.013	-.117	.093
DEFASST	-.026	-.143	-.070	-.523***	-.122
FRANK	-.226	-.036	.199	-.310	-.039
PRAISE	.080	.036	-.097	-.508***	.073
REQHELP	.224	.298	.167	-.107	.228

Table 30 (cont.)

Correlational Matrix of IBS and WOC Scales

Correlations:	WOC4	WOC5	WOC6	WOC7	WOC8
REFDEMAN	-.099	-.169	-.098	-.172	-.132
CONFAVOD	.356	.075	-.228	.083	-.053
DEP	.085	.115	-.001	.513***	.114
SHY	-.029	.040	.073	.203	.018

Table 30 (cont.)

Correlational Matrix of IBS and SWB Scales

Correlations:	RWB	EWB	SWB
DENIAL	.052	.293	.180
INFREQ	-.292	-.298	-.321
IMPRESMG	.499***	.592***	.585***
GENAGRES	-.361	-.447**	-.430**
HOSTIL	-.260	-.409**	-.354
EXPRSANG	-.180	-.285	-.248
DISRIGHT	-.227	-.405**	-.334
VERBAGG	-.248	-.300	-.293
PHYSAGG	-.090	-.248	-.168
GENASSRT	.357	.421**	.425**
SELFCONF	.491***	.533***	.557***
INIASST	.250	.379**	.353
DEFASST	.236	.298	.289
FRANK	.025	.117	.074
PRAISE	.468**	.414**	.475***
REQHELP	.338	.513***	.460**
REFDEMAN	-.055	.165	.053

Table 30 (cont.)

Correlational Matrix of IBS and SWB Scales

Correlations:	RWB	EWB	SWB
CONFAVOD	-.140	-.204	-.185
DEP	-.151	-.329	-.249
SHY	-.190	-.450**	-.359

Table 30 (cont.)

Correlational Matrix of The IBS and Pretreatment Variables

Correlations:	PREPAIN	PREMONTH	PREFUNCT	PREMEDS
DENIAL	-.194	.047	-.274	-.106
INFREQ	-.035	-.207	.076	.382**
IMPRESMG	.055	.143	-.109	-.225
GENAGRES	.129	-.222	.107	.186
HOSTIL	.016	-.189	.106	.125
EXPRSANG	.263	-.093	.119	.297
DISRIGHT	.054	-.159	-.128	.155
VERBAGG	.125	-.193	.126	.174
PHYSAGG	.138	-.092	.277	.228
PASSAGG	.104	-.079	.001	.330
GENASSRT	.152	-.001	-.056	-.285
SELFCONF	-.024	.180	.239	-.222
INIASST	.287	.002	-.116	-.274
DEFASST	.076	-.147	-.078	-.108
FRANK	.351	-.244	-.083	-.135
PRAISE	-.001	.120	.143	-.280
REQHELP	-.017	.171	.422**	-.120

Table 30 (cont.)

Correlational Matrix of The IBS and Pretreatment Variables

Correlations:	PREPAIN	PREMONTH	PREFUNCT	PREMEDS
REFDEMAN	-.201	-.100	.039	.053
CONFAVOD	-.235	.150	-.080	.004
DEP	.189	-.074	.267	.256
SHY	-.053	-.037	.015	.340

Table 30 (cont.)

Correlational Matrix of The IBS and Post Treatment Variables

Correlations:	POSTPAIN	POSTWORK	POSTFUNC	POSTMEDS
DENIAL	.122	.105	-.116	-.252
INFREQ	.149	-.078	.023	-.096
IMPRESMG	.016	-.019	-.101	-.288
GENAGRES	-.063	.033	.122	.063
HOSTIL	-.248	.002	.090	.105
EXPRSANG	.210	.316	.034	.046
DISRIGHT	-.133	-.144	-.049	.074
VERBAGG	-.025	.097	.144	.043
PHYSAGG	-.054	.011	.203	.176
PASSAGG	-.093	.110	.105	.231
GENASSRT	.093	.122	-.199	-.317
SELFCONF	-.002	.228	-.068	-.339
INIASST	.086	.168	-.028	-.146
DEFASST	.061	.085	-.210	-.315
FRANK	.180	-.080	-.303	-.139
PRAISE	-.022	.210	-.103	-.387**
REQHELP	-.071	.163	.106	-.179

Table 30 (cont.)

Correlational Matrix of The IBS and Post Treatment Variables

Correlations:	POSTPAIN	POSTWORK	POSTFUNC	POSTMEDS
REFDEMAN	.139	-.182	-.093	-.103
CONFAVOD	-.160	-.048	.145	.163
DEP	-.036	.075	.209	.451**
SHY	-.127	-.095	.001	.101

Table 31

Correlational Matrix of MMPI Scales

Correlations:	L	F	K	MMPI1	MMPI2
L	-	-.094	.374**	-.012	-.168
F	-.094	-	-.479***	.362**	.545***
K	.374**	-.479***	-	.076	-.240
MMPI1	-.012	.362**	.074	-	.492***
MMPI2	-.168	.545***	-.240	.492***	-
MMPI3	.154	.328	.050	.697***	.555***
MMPI4	-.203	.615***	-.292	.309	.569***
MMPI5-MALE	-.520**	.447*	-.383*	.052	.297*
MMPI5-FEMALE	.347*	-.269*	-.071	-.255	-.115
MMPI6	-.145	.445**	-.281	.083	.562***
MMPI7	-.262	.630***	-.214	.516***	.812***
MMPI8	-.165	.713***	-.196	.574***	.638***
MMPI9	-.280	.180	-.215	.293	.033
MMPI0	-.236	.613***	-.517***	.047	.491***
LBP	-.044	.192	.168	.123	.141

Table 31 (cont.)

Correlational Matrix of MMPI Scales

Correlations:	MMPI3	MMPI4	MMPI5-MALE	MMPI5-FEMALE	MMPI6
L	.154	-.203	-.520	.342*	-.145
F	.328	.615***	.447	-.269*	.445**
K	.050	-.292	-.382	-.071	-.281
MMPI1	.697***	.309	.052	-.255	.083
MMPI2	.555***	.569***	.296*	-.115	.562***
MMPI3	-	.366**	-.041	-.114	.298
MMPI4	.366**	-	.264	-.271*	.462**
MMPI5-MALE	-.041	.264*	-	-	.337*
MMPI5-FEMALE	-.114	-.271*	-	-	-.219
MMPI6	.298	.462**	.337*	-.219	-
MMPI7	.459**	.673***	.408*	-.243	.526***
MMPI8	.438**	.682***	.459**	-.374*	.450**
MMPI9	.112	.319	.123	-.452*	-.054
MMPI0	-.025	.415**	.332*	-.122	.274
LBP	.410**	.171	-.013	.232	.143

Table 31 (cont.)

Correlational Matrix of MMPI Scales

Correlations:	MMPI7	MMPI8	MMPI9	MMPI0	LBP
L	-.262*	-.165	-.280	-.236	-.044
F	.630***	.713***	.180	.613***	.192
K	-.214	-.196	-.215	-.517***	.168
MMPI1	.516***	.574***	.293	.047	.123
MMPI2	.812***	.638***	.033	.490***	.141
MMPI3	.459**	.438**	.112	-.025	.410**
MMPI4	.673***	.682***	.319	.414**	.171
MMPI5-Male	.408*	.459*	.123	.332*	-.013
MMPI5-FEMALE	-.243	-.374*	-.452*	-.122	.232
MMPI6	.526**	.450**	-.054	.274	.143
MMPI7	-	.868***	.274	.564***	.240
MMPI8	.868***	-	.393**	.491***	.154
MMPI9	.274	.393**	-	-.045	.068
MMPI0	.564***	.491***	-.045	-	-.050
LBP	.240	.154	.068	-.050	-

Table 31 (cont.)

Correlational Matrix of MMPI and WOC Scales

Correlations:	PROBFOC	EMOTFOC	WOC1	WOC2	WOC3
L	.082	-.204	-.014	-.153	-.318
F	.042	.168	-.022	.246	.350
K	-.089	-.296	-.121	-.382**	-.379**
MMPI1	-.019	.029	-.035	.005	.028
MMPI2	-.056	.032	-.163	.198	.333
MMPI3	-.190	-.243	-.255	-.101	-.042
MMPI4	-.020	.064	-.103	.205	.224
MMPI5-MALE	.073	.214	-.028	.173	.439*
MMPI5-FEMALE	-.313*	-.301*	-.275*	-.348*	-.567*
MMPI6	-.203	-.087	-.268	.126	.188
MMPI7	-.083	.132	-.175	.273	.358
MMPI8	.088	.192	.014	.283	.329
MMPI9	.421**	.437**	.349	.395**	.332
MMPI0	-.010	.291	-.026	.350	.408**
LBP	-.235	-.203	-.197	-.220	-.075

Table 31 (cont.)

Correlational Matrix of MMPI and WOC Scales

Correlations:	WOC4	WOC5	WOC6	WOC7	WOC8
L	.305	-.070	.057	-.334	.155
F	-.084	-.054	.117	.256	.070
K	.210	.039	.013	-.279	.170
MMPI1	.111	-.117	.198	.107	.235
MMPI2	-.138	-.256	.059	.190	.136
MMPI3	-.114	-.392**	-.073	-.064	.188
MMPI4	-.262	-.109	-.014	.410**	.118
MMPI5-MALE	.024	.093	.131	.495*	-.066
MMPI5-FEMALE	.032	.038	-.055	-.539*	-.019
MMPI6	-.345	-.289	-.074	.165	-.231
MMPI7	-.175	-.088	-.015	.386**	.202
MMPI8	-.070	.027	.072	.474***	.298
MMPI9	.154	.277	.074	.555***	.259
MMPI0	-.167	.116	.012	.348	.049
LBP	-.139	.034	-.410**	-.078	-.011

Table 31 (cont.)

Correlational Matrix of MMPI and SWB Scales

Correlations:	EWB	RWB	SWB
L	.073	.291	.191
F	-.290	-.390**	-.378**
K	.386**	.493***	.463**
MMPI1	.106	-.054	.020
MMPI2	-.207	-.478***	-.372**
MMPI3	.048	-.136	-.046
MMPI4	-.231	-.526***	-.415**
MMPI5-MALE	-.089	-.219	-.155
MMPI5-FEMALE	-.095	-.158	-.149
MMPI6	-.420**	-.572***	-.553***
MMPI7	-.202	-.492***	-.386**
MMPI8	-.148	-.303	-.253
MMPI9	.035	.065	.057
MMPI0	-.253	-.472***	-.393**
LBP	.079	-.076	-.015

Table 31 (cont.)

Correlational Matrix of the MMPI and Pretreatment Variables

Correlations:	PREPAIN	PREMONTH	PREFUNCT	PREMEDS
L	-.170	.019	-.241	.076
F	-.027	-.127	-.258	.076
K	-.139	.152	-.030	-.126
MMPI1	.043	.344	-.327	-.010
MMPI2	.161	.163	-.230	.193
MMPI3	.230	.230	-.474***	-.038
MMPI4	.208	-.012	-.235	.297
MMPI5-MALE	-.029	-.044	-.152	.004
MMPI5-FEMALE	.081	.004	-.008	.227
MMPI6	.181	-.164	-.020	-.023
MMPI7	.172	.160	-.286	.199
MMPI8	.183	.065	-.291	.155
MMPI9	.172	.172	-.023	-.019
MMPI0	-.016	-.125	-.024	.346
LBP	-.079	.203	-.117	-.017

Table 31 (cont.)

Correlational Matrix of the MMPI and Post Treatment Variables

Correlations:	POSTPAIN	POSTWORK	POSTFUC	POSTMEDS
L	.141	-.075	-.146	-.224
F	.070	.090	-.048	.500***
K	.197	-.117	-.111	-.429**
MMPI1	.049	.257	-.345	.102
MMPI2	.116	.329	-.171	.375**
MMPI3	.253	.350	-.367**	.201
MMPI4	.186	.093	-.025	.430**
MMPI5-MALE	-.128	.111	-.157	.764***
MMPI5-FEMALE	.034	.4203*	-.200	-.316*
MMPI6	.161	-.063	-.084	.532***
MMPI7	.273	.241	-.277	.532***
MMPI8	.309	.172	-.211	.472**
MMPI9	-.077	.264	.164	.170
MMPI0	.022	-.102	.116	.364
LBP	.140	.266	-.130	.060

Table 32

Correlational Matrix of WOC Scales

Correlations:	PROBFOC	EMOTFOC	WOC1	WOC2	WOC3
PROBFOC	-	.671***	.903***	.564***	.511***
EMOTFOC	.671***	-	.620***	.871***	.619***
WOC1	.903***	.620***	-	.448**	.348
WOC2	.564***	.871***	.448**	-	.563***
WOC3	.511***	.619***	.348	.563***	-
WOC4	.693***	.522***	.602***	.325	.146
WOC5	.418**	.642***	.391*	.453**	.126
WOC6	.129	.184	-.017	.034	.252
WOC7	.450**	.518***	.396**	.444**	.559***
WOC8	.369**	.380**	.232	.269	.256

Table 32 (cont.)

Correlational Matrix of WOC Scales

Correlations:	WOC4	WOC5	WOC6	WOC7	WOC8
PROBFOC	.693***	.418**	.129	.450**	.369**
EMOTFOC	.522***	.642***	.184	.518***	.380**
WOC1	.602***	.390**	-.017	.396**	.232
WOC2	.325	.453**	.034	.444**	.269
WOC3	.146	.125	.252	.559***	.256
WOC4	-	.412**	.063	.104	.388**
WOC5	.412	-	-.049	.264	.271
WOC6	.063	-.049	-	.131	.300
WOC7	.104	.264	.131	-	.223
WOC8	.388**	.271	.300	.223	-

Table 32 (cont.)

Correlational Matrix of WOC and SWB Scales

Correlations:	RWB	EWB	SWB
PROBFOC	.101	.321	.241
EMOTFOC	.110	.077	.119
WOC1	.076	.282	.205
WOC2	-.068	-.140	-.097
WOC3	-.029	-.044	-.030
WOC4	.291	.415**	.392**
WOC5	.227	.287	.292
WOC6	.072	.206	.147
WOC7	-.043	-.055	-.054
WOC8	.643***	.480***	.633***

Table 32 (cont.)

Correlational Matrix of the WOC and Pretreatment Variables

Correlations:	PREPAIN	PREMONTH	PREFUNCT	PREMEDS
PROBFOC	-.056	.032	-.028	.170
EMOTFOC	.132	.079	.088	.137
WOC1	-.029	-.028	.099	.203
WOC2	.186	.023	-.013	.172
WOC3	.098	-.047	-.090	.090
WOC4	-.246	.331	-.034	.119
WOC5	-.005	.061	.154	-.045
WOC6	-.034	-.095	.076	-.146
WOC7	.120	.029	.062	.298
WOC8	.261	.416**	-.089	.096

Table 32 (cont.)

Correlational Matrix of the WOC and Post Treatment Variables

Correlations:	POSTPAIN	POSTWORK	POSTFUNC	POSTMEDS
PROBFOC	-.332	.128	.319	-.043
EMOTFOC	-.122	-.042	.312	.042
WOC1	-.304	.120	.313	-.088
WOC2	-.060	-.052	.237	.206
WOC3	-.217	.082	.200	.144
WOC4	-.170	.068	.104	-.193
WOC5	.063	-.021	.309	-.201
WOC6	-.166	-.078	.102	.020
WOC7	-.021	.083	.253	.267
WOC8	.189	.117	-.090	-.020

Table 33

Correlational Matrix of SWB Scales

Correlations:	RWB	EWB	SWB
RWB	-	.650***	.901***
EWB	.650***	-	.909***
SWB	.901***	.909***	-

Table 33 (cont.)

Correlational Matrix of SWB and Pretreatment Scales

Correlations:	RWB	EWB	SWB
PREPAIN	.132	-.015	.089
PREMONTH	.352*	.236	.336*
PREFUNCT	.053	.093	.076
PREMEDS	-.051	-.218	-.142

Table 33 (cont.)

Correlational Matrix of SWB and Post Treatment Scales

Correlations:	RWB	EWB	SWB
POSTPAIN	-.068	-.001	-.024
POSTWORK	-.056	.120	.048
POSTFUNC	-.058	.089	.023
POSTMEDS	-.186	-.393**	-.318*

Table 34

Correlational Matrix of Pretreatment Variables

Correlations:	PREPAIN	PREMONTH	PREFUNCT	PREMEDS
PREPAIN	-	-.008	-.239	-.001
PREMONTH	-.008	-	-.066	.016
PREFUNCT	-.239	-.066	-	-.048
PREMEDS	-.001	.016	-.048	-

Table 34 (cont.)

Correlational Matrix of Pre and Post Treatment Variables

Correlations:	PREPAIN	PREMONTH	PREFUNCT	PREMEDS
POSTPAIN	.456**	-.028	-.114	-.075
POSTWORK	.135	.228	.022	-.170
POSTFUNC	-.375**	-.279	.605***	-.100
POSTMEDS	.181	.050	-.082	.020

Table 34 (cont.)

Correlational Matrix of Post Treatment Variables

Correlations:	POSTPAIN	POSTWORK	POSTFUNCT	POSTMEDS
POSTPAIN	-	.1921	.3211*	.0405
POSTWORK	.1921	-	-.0044	.0458
POSTFUNC	-.3211	-.0044	-	-.2089
POSTMEDS	.0405	-.0458	-.2089	-

APPENDIX J

DISCUSSION OF CORRELATIONS

APPENDIX J

Demographic Correlations

This section presents each of the variables as they correlate with each of the other 68 measures at the .05 level of significance.

Age

Age positively correlated with number of Months Since Last Worked prior to treatment, and Post Treatment Return to Work, but not with any of the other demographic or post treatment measures. The only IBS measure that significantly related to age was a negative correlation with the Frankness scale. Age correlated positively with the Hs and Pa scales on the MMPI, and negatively with Mf-Female scale. Age correlated positively with the Growth scale on the WOC, but not any of the other subscales. All three of the Spiritual Well-Being scales positively correlated with age for this sample.

Sex

For the participants in this study women were more likely than men to be married, and to report lower incomes. There were no significant correlations between gender and any of the IBS subscales. Men were more likely than women to score high on the

MMPI Hs, and D scales but not on the other MMPI subscales. Gender did not correlate with any of the WOC subscales except the Minimize Threat scale which women where more likely to endorse. The only pretreatment measure significantly related with gender was the Subjective Pain scale on which women scored higher. The only post treatment measure to reach significance with gender was work which indicates that the men of this group had a greater likelihood than women of returning to work.

Church Affiliation

Data on church affiliation has been gathered as a demographic variable for future interest but is not presented in this study.

Frequency of Church Attendance

Frequency of Church Attendance positively correlated with all of the religiously oriented measures. It correlated with the WOC Religious Coping scale and also with each of the Spiritual Well-Being scales.

Types of Help Sought

An overwhelming majority of the participants in this sample (73.9%) reported they did not use any of the alternative remedies presented for their pain condition. Because of so few positive

responses to this item, there were no significant correlations related to it, and it was therefore not used for further research.

Ethnic Background

The ethnic background of the subjects in this study did not correlate in any meaningful sense with any of the other variables due to the sample's predominantly Caucasian makeup (87.8%).

Employment

Work status positively correlated with whether or not subjects reported receiving reimbursement for their pain condition, but not with any of the other demographic measures. From the IBS the only measure that correlates with Employment was the Expression of Anger subscale which negatively correlated with Employment. The Mf-Female scale from the MMPI negatively correlated with Employment, but none of the other MMPI scales reached significance with it. Employment and Pretreatment Months Since Worked are related measures of work status and predictably had a negative correlation. Employment's only other correlation was also it's strongest, and that was with Post Treatment Return to Work.

Reimbursement

Among the demographic measures the only two that correlated with Reimbursement were Education and Income, and each of these were in a positive direction. Reimbursement correlated with only one IBS scale and that was a negative correlation with Shyness. Closely related to IBS Shyness was the fact that the MMPI Si scale also negativley correlated with Reimbursement as did the Mf-Female scale. The only other significant correlation with Reimbursement was a positive one with Post Treatment Medication Use. These correlations indicated that people receiving reimbursement for their pain tended to have more education, higher incomes, report being less shy, and tended to decrease use of medication after treatment.

Education

The educational level of participants in this sample positively correlated with their reported income. Education also correlated negatively with two measures of psychological defensiveness, the IBS Impression Managment scale, and the MMPI L scale as well as with the Mf-Male and Female scales. Willingness to Seek Social Support as measured by the WOC also correlated with Education. Education negatively correlated with Pretreatment Use of Analgesic Medications.

Income

Besides correlating with Education, Income for this sample positively correlated with two of the IBS scales; Initiating Assertiveness, and Requesting Help. Income correlated positively with the MMPI Ma scale, and the WOC Seek Social Support scale. Income negatively correlated with the MMPI-Female scale, Post Treatment Medication Use, and positively with Post Treatment Return to Work.

Interpersonal Behavior Survey (IBS)

Denial

The Denial scale negatively correlated with all the other IBS scales except Disregard for Rights, Self-confidence, Frankness, Praise, Requests Help, Refuses Demands, and Conflict Avoidance. Denial correlated with the MMPI L and K scales as well as the Sc, Ma, Si, and Lower Back Pain scales. The only WOC scales that reached significance with Denial were the Wishful Thinking, Mixed, and Blamed Self, and all of these were in a negative direction. Denial positively correlated with Religious Well-Being, but not the other well-being measures. Pretreatment Functional Activity was the only dependent variable to reach significance with Denial, and that was in a negative direction.

Infrequency

The Infrequency measure did not correlate with any of the demographic measures. It correlated positively with all of the IBS subscales except Initiates Assertiveness, Refuses Demands, Conflict Avoidance, and Dependency. Infrequency correlated with three of the MMPI scales; negatively with Hy, and positively with Pd, Mf-Female, and Si. Infrequency only correlated with the Blames Self scale from the WOC, and that in a positive direction. All three of the Spiritual Well-Being scales negatively correlated with Infrequency. Pretreatment Use of Analgesics positively correlated with Infrequency but none of the other pre or post treatment measures reached significance with it.

Impression Management.

Impression Management negatively correlated with Marital Status and Education, but none of the other demographic variables. It also negatively correlated with all of the IBS scales except Initiates Assertiveness, Requests Help, Refuses Demands, and Conflict Avoidance. Impression Management correlated positively with each of the MMPI validity scales as well as the Pd, Mf-Male, Pt, Sc, and Si scales. The Impression Management scale did not correlate with any of the WOC scales, but it positively correlated with all of the Spiritual Well-Being scales. There was a positive correlation between Impression Management and Pretreatment Use of

Medications, and a negative correlation with Post Treatment Use of Medications making it a key correlate of one of the most important dependent variables. It did not correlate with any of the other pre or post treatment measures.

General Aggression

The General Aggression scale did not correlate with any of the demographic variables. It correlated positively with the IBS Denial, Impression Managment, and all of the aggression scales. It correlated negatively with the IBS Infrequency scale and all of the assertiveness scales except Frankness, Requests Help, and Refuses Demands. It did not correlate with any of the IBS relational scales. General Aggression correlated positively with the MMPI Pd, Ma, and Si scales and not at all with any other of the MMPI scales. It correlated positively with the WOC Wishful Thinking, and Blames Self scales and negatively with the Growth scale. General Aggression correlated negatively with all three of the Spiritual Well-Being scales. General Aggression did not correlate with any of the pre or post treatment measures.

Hostile Stance

Hostile Stance did not correlate with any of the demographic variables. It correlated negatively with the IBS Denial, Impression Management, and Defends Assertiveness scales and

positively with Infrequency scale and all of the aggression scales. The only MMPI scales that reached significance with the Hostile Stance scale were the L, K, and Pd and all of these were in a positive direction. Hostile Stance correlates negatively with the WOC Growth scale but no others. All three of the SWB scales correlated negatively with the Hostile Stance. It did not correlate with any of the pre or post treatment measures.

Expression of Anger

The Expression of Anger scale negatively correlated with Employment, but not with any other of the demographic variables. It negatively correlated with the IBS Denial, Impression Management, Praise, and Conflict Avoidance scales and positively on the Infrequency, and all the aggression scales. Expression of Anger correlated negatively with the MMPI K scale and positively with the Pd, Pt, Sc, and Ma scales. From the WOC, the Expresses Anger scale negatively correlated with the Growth scale and positively with the Blames Self. It negatively correlated with only the Existential Well-Being scale from the Spiritual Well-Being Inventory. From the dependent variables, the Expression of Anger positivley correlated with Pretreatment Pain Rating, Medications Use, and Post Treatment Work.

Disregard for Rights

This scale did not correlate with any of the demographic scales. From the IBS, Disregards Rights positively correlated with Infrequency, and all of the aggression scales, and negatively with Impression Management, Self-Confidence, Praise, Requests Help, and Refuses Demands. On the MMPI, Disregards Rights positively correlated with the Pd scale, and negatively with the K scale. The only WOC scale that was significantly related with Disregard for Rights is the Wishful Thinking. Both the Existential Well-Being, and Spiritual Well-Being scales negatively correlated with Disregards Rights. This scale did not correlate with any of the pre or post treatment measures.

Verbal Aggression

This scale did not correlate with any of the demographic variables. It negatively correlated with the IBS Denial, Impression Management, Self-Confidence, Praise, and Conflict Avoidance scales, and positively with the Infrequency scale and all of the IBS aggression scales. Verbal Aggression positively correlated with the MMPI Pd, and Ma scales, and negatively with the L and K. From the WOC, Verbal Aggression positively correlated with Blames Self and negatively with Growth. Verbal Aggression negatively correlated with Existential Well-Being, and

Spiritual Well-Being. It did not correlate with any of the dependent variables.

Physical Aggression

Physical Aggression did not correlate with any of the demographic variables. It positively correlated with the IBS Infrequency scale, all of the aggression scales, and the Shyness scale. Physical Aggression negatively correlated with General Assertiveness. It negatively correlated with the MMPI L and K, and positively with the Pd, Mf-Female, Ma, and Si scales. The only WOC scale significantly related to Physical Aggression was a negative correlation between it and Growth. Physical Aggression did not correlate with any of the Spiritual Well-Being scales. The only pre, or post treatment measure that correlated significantly with Physical Aggression was Pretreatment Functional Activities, which was positively related to it.

Passive Aggression

Passive Aggression did not correlate with any of the demographic variables. Passive Aggression positively correlated with the IBS Infrequency scale, all of the aggression scales, Dependency, and Shyness. It negatively correlated with Denial, Impression Management, and all of the assertiveness scales except Initiates Assertiveness, and Frankness. From the MMPI, Passive

Aggression positively correlated with the F, D, Pd, Mf-Male, Pa, Pt, Sc, Ma, and Si scales, and negatively with the L and K scales. WOC scales that positively correlated with Passive Aggression were Emotion Focused Coping, Wishful Thinking, Mixed, and Blames Self. Passive Aggression negatively correlated with all three of the Spiritual Well-Being scales. Passive Aggression positively correlated with Pretreatment Use of Medications, but no other pre or post treatment measures.

General Assertiveness

The IBS General Assertiveness scale did not correlate significantly with any of the demographic variables. This general measure of assertiveness positively correlated with Denial, Impression Management, and all of the other assertiveness scales. It correlated negatively with the Infrequency scale, the General Aggression, Physical Aggression, Passive Aggression, and all three of the IBS relationship scales. General Assertiveness positively correlated with the MMPI K and Mf-Female scales, and negatively with the F, D, Pd, Mf-Male, Pa, Pt, Sc, and Si scales. General Assertiveness negatively correlated with the WOC Emotion Focused, Wishful Thinking, Mixed, and Blames Self scales. There was a positive correlation between all three of the Spiritual Well-Being scales and General Assertiveness. General Assertiveness negatively correlated with both Pretreatment and Post Treatment

Use of Medications which were key outcome variables. It did not correlate with any other of the pre or post treatment measures.

Self-Confidence

The IBS Self-Confidence scale did not significantly correlate with any of the demographic variables. It positively correlated with the Impression Management scale, and all of the other assertiveness scales. It negatively correlated with the Infrequency, General Aggression, Hostile Stance, Disregards Rights, Verbal Aggression, Passive Aggression, and all of the relationship scales. Self-Confidence positively correlated with the MMPI K scale, and negatively with the F, D, Pd, Pa, Pt, Sc, and Si scales. Self-Confidence negatively correlated with the WOC Wishful Thinking, Mixed, and Blames Self scales, and positively with all three of the Spiritual Well-Being scales. The only pre or post treatment measure to reach significance with Self-Confidence was Post Treatment Use of Medications which correlated negatively.

Initiating Assertiveness

The IBS Initiating Assertiveness scale positively correlated with Income, but no other demographic variables. It positively correlated with the IBS Denial scale, and all of the assertiveness scales except Praise, Requests Help, and Refuses Demands. It

negatively correlated with all three of the relationship scales. Initiating Assertiveness negatively correlated with the MMPI F, D, Pa, Pt, Sc, Ma, and Si scales, but not with any other MMPI scales. Initiating Assertiveness negatively correlated with the WOC Wishful Thinking, and Mixed scales. All three of the Spiritual Well-Being scales positively correlated with the Initiating Assertiveness. It negatively correlated with Post Treatment Medication Use.

Defending Assertiveness

The IBS Defending Assertiveness did not correlate with any of the demographic variables. It positively correlated with the IBS Denial, Impression Management, and all of the assertiveness scales except Requests Help. It negatively correlated with the IBS Infrequency, General Aggression, Hostile Stance, Passive Aggression, and all three of the relationship scales. Defending Assertiveness positively correlated with the L and Mf-Female and negatively with the F, D, Pd, Pa, Pt, Sc, Ma, and Si scales. It negatively correlated with the WOC Emotion Focused, Wishful Thinking, Mixed, and Blames Self scales. Defending Assertiveness positively correlated with Existential, and Spiritual Well-Being. The only pre or post treatment measure to significantly correlate with Defending Assertiveness was a negative correlation with Post Treatment Use of Medications.

Frankness

The IBS Frankness scale negatively correlated with Age, but not with any other other demographic variables. It positively correlated with all of the IBS assertiveness scales except the Praise and Requesting Help, and negatively with the three relationship scales. Frankness negatively correlated with the MMPI Pt and Si scales but not any of the others. It also negatively correlated with the WOC Wishful Thinking, and Blames Self scales. There were no significant correlations between Frankness and the Spiritual Well-Being scales. Of the pre and post treatment measures the only ones that correlated with Frankness were a positive relation to Pretreatment Pain Rating, and a negative relation to Post Treatment Functional Activities.

Praise

The IBS Praise scale did not correlate significantly with any of the demographic variables. It positively correlated with the IBS Impression Management, and all of the assertiveness scales except Frankness and Refuses Demands. It negatively correlated with the IBS Infrequency, all of the aggression scales except Physical Aggression and Hostile Stance. It also negatively correlated with the Shyness scale. Praise positively correlated with the MMPI K scale, and negatively with the F, Pt, Sc, Ma, and Si scales. Praise negatively correlated with the WOC Wishful

Thinking, and Blames Self scales. Praise positively correlated with all of the Spiritual Well-Being scales. Praise negatively correlated with both Pre and Post Treatment Use of Medications, but none other of the pre or post treatment measures.

Requesting Help

The IBS Requesting Help scale positively correlated with Income but no other demographics. It positively correlated with all of the IBS assertiveness scales except the Initiating Assertiveness, Defending Assertiveness, and Frankness scales. It negatively correlated with the IBS Infrequency, Disregards Rights, and Passive Aggression scales. The Requesting Help negatively correlated with the MMPI F, D, Hy, Pd, Pa, Pt, Sc, and Si scales. It positively correlated with the WOC Minimizes Threat scale and all three of the Spiritual Well-Being scales. It positively correlated with Pretreatment Functional Activity, but not with any other of the pre or post treatment variables.

Refusing Demands

The IBS Refusing Demands scale did not correlate with any of the demographic variables. It positively correlated with the IBS General Assertiveness, Self-Confidence, Frankness, and Requests Help scales, and negatively with the Disregard for Rights, Passive Aggression, and all three of the relationship scales. Refusing

Demands positively correlated with the MMPI K scale, and negatively with the D, Pt, and Si scales. It negatively correlated with the WOC Emotion Focused, Wishful Thinking, and Mixed scales. It did not correlate with any of the Spiritual Well-Being scales. Refusing Demands negatively correlated with Post Treatment Return to Work.

Conflict Avoidance

The IBS Conflict Avoidance scale did not correlate with any of the demographic variables. It positively correlated with the other two IBS relationship scales, and negatively with the Expression of Anger, Verbal Aggression, and all of the assertiveness scales except Praise. Conflict Avoidance positively correlated with the MMPI D, Pt, and Si scales. It positively correlated with the WOC Emotion Focused, Wishful Thinking, and Growth scales. It did not correlate with any of the Spiritual Well-Being scales, nor with any of the pre or post treatment measures.

Dependency

The IBS Dependency scale did not correlate with any of the demographic measures. It correlated positively with the IBS Expression of Anger and Passive Aggression as well as the other two relationship scales. It negatively correlated with the Denial, Impression Management, and all of the assertiveness scales

except Praise and Requests Help. Dependency positively correlated with the MMPI F, D, Pd, Mf-Male, Pa, Pt, Sc, and Si scales, and negatively with the L, K, and Mf-Female. Dependency positively correlated with the WOC Problem Focused, Emotion Focuses, Problem Centered, Wishful Thinking, Mixed, and Blames Self. It negatively correlated with Existential Well-Being from the Spiritual Well-Being scale. Dependency positively correlated with Pretreatment Functional Activity, and with Post Treatment Use of Medications.

Shyness

The IBS Shyness scale negatively correlated with Reimbursement, but not with any other demographic variables. It positively correlated with the IBS Infrequency, Physical Aggression, Passive Aggression, Conflict Avoidance, and Dependency. Shyness negatively correlated with the IBS Denial, Impression Management, and all of the assertiveness scales except Requesting Help. Shyness negatively correlated with the MMPI K scale, and positively with the F, D, Pd, Pt, Sc, and Si scales. Shyness positively correlated with the WOC Mixed scale, but not with any other WOC scales. It negatively correlated with Existential Well-Being and Spiritual Well-Being. Shyness positively correlated with Pretreatment Use of Medications, but not with any other of the pre or post treatment variables.

Minnesota Multiphasic Personality Inventory (MMPI)

Lie Scale

The MMPI L scale negatively correlated with Education, but not with any other of the demographic variables. It positively correlated with the IBS Denial, Impression Management, and Defends Assertiveness, and negatively with the Infrequency, General Aggression, Hostile Stance, Verbal Aggression, Physical Aggression, Passive Aggression, and Dependence. The L scale positively correlated with the MMPI K and Mf-Female scales, and negatively with the Mf-Male, Pt and Ma scales. It positively correlated with the WOC Growth scale and negatively with the Mixed. The L scale positively correlated with Existential Well-Being and did not significantly correlate with any of the pre or post treatment variables.

Infrequency Scale

The F scale from the MMPI negatively correlated with Age, but no other demographics. It positively correlated with the IBS Passive Aggression, Dependency, and Shyness scales, and negatively with the Impression Management, and all the assertiveness scales except Frankness, and Refusing Demands. The F scale negatively correlated with the MMPI K and Mf-Female scales, and positively with all others except the Ma, and LBP. The F scale positively correlated with the WOC Mixed scale, but not with any others. It

negatively correlated with all three of the Spiritual Well-Being scales. The F scale positively correlated with Post Treatment Use of Medications.

Defensiveness Scale

The MMPI K scale positively correlated with Age, but not with any other demographic variables. It positively correlated with the IBS Denial, Impression Management, General Assertiveness, Self-Confidence, Praise, and Refusing Demands. It negatively correlated with all the aggression scales, Dependency, and Shyness. The K scale positively correlated with the L scale, and negatively with the Pd, Mf-Male, Pa, and Si. The K scale negatively correlated with the WOC Emotion Focused, Wishful Thinking, Mixed, and Blames Self scales. It positively correlated with all three of the Spiritual Well-Being scales, and negatively with Post Treatment Use of Medications.

Hypochondriasis Scale

The Hs scale from the MMPI positively correlated with Age and the feminine gender but not with any other demographic measures. It did not reach significance with any of the IBS, WOC, or Spiritual Well-Being scales. It positively correlated with the MMPI F, D, Hy, Pd, Pt, Sc, and Ma scales. It also positively correlated with number of Months Since Worked before treatment,

and with Post Treatment Return to Work. The Hs correlated negatively with both Pretreatment and Post Treatment Functional Activities.

Depression Scale

The MMPI D scale negatively correlated with gender meaning women were more likely than men to score high on this scale. It positively correlated with the IBS Passive Aggression and all three relationship scales. It negatively correlated with all the assertiveness scales except Self-Confidence, Frankness, and Praise. The D scale positively correlated with all of the MMPI scales except L, K, Mf-Female, Ma, and LBP. It positively correlated with the WOC Mixed scale, and negatively with both the Existential and Spiritual Well-Being scales. The D scale positively correlated with Post Treatment Return to Work and Post Treatment Use of Medications.

Hysteria Scale

The Hy scale from the MMPI did not correlate significantly with any of the demographic variables nor with any of the Spiritual Well-Being scales. It negatively correlated with the IBS Infrequency, and Requesting Help. The Hy positively correlated with the MMPI F, Hs, D, Pd, Pa, Pt, Sc, and LBP. It negatively correlated with the WOC Minimizes Threat scale. The Hy

negatively correlated with Pretreatment Functional Activities, and negatively with Post Treatment Functional Activities, and Post Treatment Pain Rating.

Psychopathic Deviate

The MMPI Pd scale negatively correlated with Marriage and positively with Ethnicity from the demographic variables. It positively correlated with the IBS Infrequency, all the aggression scales, Dependency, and Shyness. It negatively correlates with the IBS Impression Management, and all the assertiveness scales except Initiating Assertiveness, Frankness, and Refusing Demands. The Pd negatively correlated with the MMPI K and Mf-Female and positively with all other scales except and LBP. The Pd positively correlated with the WOC Blames Self, and negatively with the Growth scale. It negatively correlated with both the Existential and Spiritual Well-Being scales. Pd positively correlated with both Pre and Post Treatment Use of Medications, but not with any other of the pre or post treatment measures.

Masculinity-Femininity-Male

The MMPI Mf-Male scale positively correlated with Ethnicity, and Education. The only IBS scales to reach a significant level with the Mf-Male were a negative correlations with Impression Management and General Assertivness and a positive correlation

with Passive Aggression. The Mf-Male positively correlated with the MMPI F, D, Pd, Pa, Pt, Sc and Si scales, and negatively with the K scale. The Mf-Male positively correlated with the WOC Wishful Thinking and Blames Self scales. The Mf-Male scale did not correlate with any of the Spiritual Well-Being scales. It positively correlated with Post Treatment Use of Medications.

Masculinity-Femininity-Female

The MMPI Mf-Female scale positively correlated with Marital Status and negatively with Age, Types of Help Sought, Employment, Reimbursement, Education, and Income. It positively correlated with the IBS Infrequency, Physicl Aggression, General Assertiveness, and Defends Assertiveness and negatively with the IBS Depency scale. The Mf-Female scale positively with the MMPI L scale and negatively with the F, Pd, Sc, and Ma scales. It negatively correlated with the WOC Problem Focused, Emotion Focused, Problem Centered, Wishful Thinking, Mixed, and Blames Self. The Mf-Female positively correlated with the Post Treatment Return to Work and negatively with Post Treatment Use of Analgesics.

Paranoia

The MMPI Pa scale negatively correlated with Age. It positively correlated with the IBS Passive Aggression, Conflict

Avoidance, and Dependency, and negatively with General Assertiveness, Self-Confidence, Initiating Assertiveness, Defending Assertiveness, and Requesting Help. The Pa negatively correlated with the MMPI K scale, but positively with the F, D, Hy, Pd, Mf-Male, Pt, Sc, and Si. It negatively correlated with the WOC Problem Focused, Growth, and Minimizes Threat. The Pa negatively correlated with all three of the Spiritual Well-Being scales. It positively correlated with Post Treatment Use of Medications.

Psychasthenia

The Pt scale from the MMPI did not correlate with any of the demographic variables from this study. It positively correlated with the IBS Expresses Anger, Physical Aggression, Passive Aggression, and all three of the relationship scales. The Pt negatively correlated with Impression Management, and all the assertiveness scales. It negatively correlated with the MMPI L and positively with all other MMPI scales except K, Mf-Female and LBP. The Pt positively correlated with the WOC Wishful Thinking, Mixed, and Blames Self. It negatively correlated with both the Existential and Spiritual Well-Being scales. The Pt positively correlated with Post Treatment Pain Rating, Medication Use and Return to Work. It negatively correlated with Pretreatment and Post Treatment Functional Activities.

Schizophrenia

The MMPI Sc scale positively correlated with Ethnicity, but not with any other demographic variables. It positively correlated with the IBS Physical Aggression, Passive Aggression, Dependency, and Shyness, and negatively with Impression Management, General Assertiveness, Self-Confidence, Initiating Assertiveness, Defending Assertiveness, Praise, and Requesting Help. The Sc scale positively correlated with all of the MMPI scales except L, K, and LBP; it negatively correlated with the Mf-Female. It positively correlated with the WOC Wishful Thinking, Mixed, Blames Self, and Religious Coping scales. The Sc negatively correlated with the Existential and Spiritual Well-Being scales. It negatively correlated with Post Treatment Pain Rating, and Use of Medications, and positively with Pretreatment Functional Activities.

Hypomania

The MMPI Ma scale positively correlated with Income but no other demographics. It positively correlated with all the IBS aggression scales except Hostile Stance and Disregard for Rights. It negatively correlated with the IBS Denial, Initiating Assertiveness, Defending Assertiveness, and Praise. The Ma scale negatively correlated with the MMPI L and Mf-Female scales, and positively with the Pd, Pt, and Sc scales. It positively

correlated with all of the WOC scales except Growth and Seeks Social Support. The Ma scale did not correlate with any of the Spiritual Well-Being scales, nor with any of the pre or post treatment variables.

Social Introversion

The MMPI Si scale negatively correlated with Reimbursement, but not with any other of the demographic variables. It positively correlated with the IBS Infrequency, General Aggression, Physical Aggression, Passive Aggression, and all three of the relationship scales. It negatively correlated with the IBS Denial, Impression Management, and all of the assertiveness scales. The Si scale positively correlated with the MMPI F, D, Mf-Male, Pd, Pa, Pt, and Sc scales, and negatively with the K scale. It positively correlated with the WOC Emotion Focused, Wishful Thinking, and Blames Self. The Si negatively correlated with Existential and Spiritual Well-Being. It positively correlated with both Pre and Post Treatment Use of Medications.

Lower Back Pain

The MMPI LBP scale correlated with only one of the demographic variables and that was a negative correlation with Ethnicity. The LBP positively correlated with the IBS Denial scale and with the MMPI Hy scale. It negatively correlated with

the WOC Seeking Social Support scale and not with any of the Spiritual Well-Being scales, nor with any of the pre or post treatment variables.

Ways of Coping (WOC)

Problem Focused

The WOC Problem Focused coping style positively correlated with Ethnicity, but not with any other demographic variables. It positively correlated with the IBS Dependency scale, the MMPI Ma scale, and the Existential Well-Being scale, but negatively with the Mf-Female scale. Problem Focused coping also correlated positively with all of the other WOC scales except Seeks Social Support. It positively correlated with two significant measures of treatment outcome, those were a positive correlation with Post Treatment Functional Activities, and a negative correlation with Post Treatment Pain.

Emotion Focused

The WOC Emotion Focused coping negatively correlated with Reimbursement. It positively correlated with the IBS Passive Aggression, Conflict Avoidance, and Dependency scales, and negatively with Denial, General Assertiveness, Defending Assertiveness, and Refusing Demands. Emotion Focused coping negatively correlated with the MMPI K and Mf-Female scales, but

positively with the Ma, and Si scales. It positively correlated with all of the WOC scales except Seeks Social Support, but did not correlate with any of the Spiritual Well-Being scales. Emotion Focused coping positively correlated with Post Treatment Functional Activities.

Problem Centered

The WOC Problem Centered coping did not correlate with any of the demographic variables. It positively correlated with the IBS Shyness scale, and negatively with the MMPI Mf-Female and Pa scales. Problem Centered coping positively correlated with all of the WOC scales except Seeks Social Support and Religious Coping. There was a positive correlation between Problem Centered coping and Existential Well-Being as well as Post Treatment Functional Activities. A negative correlation existed between Problem Centered coping and Post Treatment Pain.

Wishful Thinking

The Wishful Thinking scale from the WOC did not correlate significantly with any of the demographic variables, nor with any of the Spiritual Well-Being scales. It positively correlated with the IBS General Aggression, Disregards Rights, Passive Aggressive, Conflict Avoidance, and Dependence, and negatively correlated with the IBS Denial, General Assertiveness, Self-Confidence, Defending

Assertiveness, Frankness, Praise, and Refusing Demands. The Wishful Thinking negatively correlated with the MMPI K and Mf-Female scales, but positivley with the Pt, Sc, Ma, and Si scales. Wishful Thinking positively correlated with all of the WOC scales except Seeks Social Support. Wishful Thinking positively correlated with Pretreatment Pain Rating.

Mixed

The WOC Mixed Coping style scale did not correlate with any of the demographics, Spiritual Well-Being scales, nor pre or post treatment variables. It positively correlated with the IBS Verbal Aggression, Passive Aggression, Dependence, and Shyness scales, and negatively with Denial, General Assertiveness, Self-Confidence, Defending Assertiveness, and Refusing Demands. The Mixed coping scale negatively correlated with the MMPI L and K scales, but positively with the F, D, Pt, Sc, Ma, and Si. It positively correlated with the WOC Problem Focused, Emotion Focused, Problem Centered, Wishful Thinking, and Blames Self.

Growth

The only demographic variable to significantly correlate with Growth was Age, and that was a positive correlation. All of the IBS aggression scales negatively correlated with Growth except Disregard for Rights, and Passive Aggression. The IBS Conflict

Avoidance positively correlated with Growth. The MMPI L and Mf-Male scales positively correlated with Growth while the Pd Mf-Female and Pa negatively correlated with it. Growth positively correlated with all of the WOC scales except Mixed, Seeks Social Support, and Blames Self. All three of the Spiritual Well-Being scales positively correlated with Growth as did the number of Months Since Last Worked.

Minimizes Threat

From the demographic variables the only one to significantly correlate with Minimizes Threat was gender which indicated that women were more likely than men to acknowledge these items. The IBS Requesting Help positively correlated with Minimizes Threat as did Existential and Spiritual Well-Being. The MMPI Ma scale positively correlated with Minimizes Threat, but the Hy and Pa negatively correlated with it. Minimizes Threat positively correlated with all of the WOC scales except Mixed and Seeks Social Support. Minimizes Threat positively correlated with Post Treatment Functional Activity.

Seeks Social Support

Education and Income both positively correlatd with the WOC Seeks Social Support scale. This scale did not correlate with any of the IBS, Spiritual Well-Being, pre or post treatment variables.

Seeks Social Support negatively correlated with the MMPI LBP scale and positively with the WOC Religious Coping scale.

Blames Self

The WOC Blames Self scale did not correlate with any of the demographic variables or the Spiritual Well-Being scales. It positively correlated with the IBS Infrequency, General Aggression, Expression of Anger, Verbal Aggression, Passive Aggression, and Dependence. It negatively correlated with the IBS Denial, Impression Management, and all of the assertiveness scales except Initiating Assertiveness, Requesting Help, and Refusing Demands. Blames Self negatively correlated with the MMPI L, K, and Mf-Female scales, but positively with the Pd, Mf-Male, Pt, Sc, Ma, and Si. All of the WOC scales positively correlated with Blames Self except Growth, Seeks Social Support, and Religious Coping. Pre and Post Treatment Use of Medications both positively correlated with Blames Self.

Religious Coping

Religious Coping from the WOC positively correlated with Frequency of Church Attendance and all three of the Spiritual Well-Being scales. It did not correlate with any of the IBS scales, but positively correlated with the MMPI Sc and Ma scales. Religious Coping positively correlated with all of the WOC scales

except Problem Focused and Blames Self. Religious Coping positively correlated with Months Since Last Worked and Post Treatment Return to Work.

Spiritual Well-Being Inventory (SWB)

Religious Well-Being

Age and Frequency of Church Attendance both positively correlated with Religious Well-Being as did the other two Spiritual Well-Being scales. The IBS Impression Management, General Assertiveness, Self-Confidence, Praise, and Requesting Help all positively correlated with Religious Well-Being. The IBS Infrequency, General Aggression, Hostile Stance, and Passive Aggression scales negatively correlated with Religious Well-Being. Religious Well-Being positively correlated with the MMPI K scale, and negatively with the F and Pa scales. The WOC Growth and Religious coping scales both positively correlated with Religious Well-Being as did Months Since Last Worked.

Existential Well-Being

Existential Well-Being positively correlated with Age, Frequency of Church Attendance from the demographic variables, and with the other Spiritual Well-Being scales. It positively correlated with the IBS Denial, Impression Management, and all of the assertiveness scales except Frankness and Refusing Demands.

The Existential Well-Being positively correlated with the MMPI L and K scales, and negatively with the F, D, Pd, Pa, Pt, Sc, and Si scales. It positively correlated with the WOC Problem Focused, Problem Centered, Growth, Minimizes Threat, and Religious Coping scales. Existential Well-Being negatively correlated with Post Treatment Use of Medications.

Spiritual Well-Being

Age and Frequency of Church Attendance positively correlated with Spiritual Well-Being as did the other Spiritual Well-Being scales. The IBS Impression Management scale plus all of the assertiveness scales except Frankness and Refuses Demands positively correlated with Spiritual Well-Being. The IBS Infrequency, Shyness, and all of the aggression scales except Expresses Anger and Physical Aggression negatively correlated with Spiritual Well-Being. The MMPI K scale positively correlated with Spiritual Well-Being, but the F, D, Pd, Pa, Pt, and Si all negatively correlated with it. The WOC Growth, Minimizes Threat, and Religious Coping all positively correlated with Spiritual Well-Being. Spiritual Well-Being positively correlated with Months Since Last Worked, and negatively with Post Treatment Use of Medications.

Dependent Variables

Pretreatment Subjective Pain Rating

Pretreatment Pain Rating did not correlate with any demographic variables except for a positive correlation with gender, indicating that women reported more intense pain prior to treatment. None of the MMPI scales, nor any of the Spiritual Well-Being scales correlated with Pretreatment Pain Rating. It positively correlated with the IBS Expression of Anger and Frankness scales. Pretreatment Pain positively correlated with Wishful Thinking from the WOC. Pretreatement Pain Rating positively correlated with Post Treatment Pain, but negatively correlated with Post Treatment Functional Activities.

Pretreatment Months Since Worked

The Number of Months Since Last Worked positively correlated with Age, but negatively correlated with employment status prior to treatment. It did not correlate with any of the IBS or MMPI scales. Months Since Last Worked positively correlated with the WOC Growth and Religious Coping scales as well as Existential and Spiritual Well-Being. It negatively correlated with Post Treatment Functional Activities.

Pretreatment Functional Activity Level

Ethnicity negatively correlated with Pretreatment Functional Activities as did the MMPI Hs, Hy, Pt, and Sc scales. The IBS Physical Aggression, Requesting Help, and Dependency scales all positively correlated with Pretreatment Activity, and Denial negatively correlated with it. Neither the WOC, nor the Spiritual Well-Being scales correlated significantly with Pretreatment Activity. Pretreatment Activity positively correlated with Post Treatment Activity.

Pretreatment Use of Analgesic Medications

Pretreatment Use of Analgesics negatively correlated with both Education and Income. It positively correlated with the IBS Denial, Infrequency, Expresses Anger, Passive Aggression, and Shyness scales, and negatively with the General Assertiveness, Initiates Assertiveness, and Praise scales. Pretreatment Use of Medications positively correlated with the MMPI Pd and Si scales, and also with the WOC Blames Self scale. It did not correlate with any of the Spiritual Well-Being scales, nor with any of the other pre or post treatment measures.

Post Treatment Subjective Pain Rating

Post Treatment Pain Rating did not correlate with any of the demographic variables, IBS scales, or Spiritual Well-Being scales.

It positively correlated with the MMPI Pt and Sc scales. Post Treatment Pain negatively correlated with the WOC Problem Focused, and Problem Centered scales. It positively correlated with Pretreatment Pain, but negatively with Post Treatment Functional Activities.

Post Treatment Work Status

Post Treatment Work Status positivley correlated with Age but negatively with gender and Employment. It negatively correlated with the IBS Refusing Demands scale as well as the MMPI Hs, D, and Pt scales. Post Treatment Work Status positively correlated with the Mf-Female and the WOC Religious Coping scale, but not with any of the Spiritual Well-Being scales. It positively correlated with Number of Months Since Last Worked, but negatively with Post Treatment Functional Activity Level.

Post Treatment Functional Activity Level

Post Treatment Functional Activity Level did not correlate with any of the demographic variables, nor with any of the Spiritual Well-Being scales. It negatively correlated with the IBS Frankness scale, and negatively with the MMPI Hs, Hy, and Pt scales. The WOC Problem Focused, Emotion Focused, Problem Centered, and Minimizes Threat all positively correlated with Post Treatment Activity Level. Post Treatment Activity positively

correlated with Pretreatment Activity, and negatively with Pretreatment Pain Rating, Number of Months Since Worked, Post Treatment Return to Work, and Post Treatment Pain Rating.

Post Treatment Use of Analgesic Medications

Post Treatment Use of Analgesics positively correlated with Reimbursement, but not with any other demographics. It positively correlated with the IBS Shyness scale, but negatively with the Impression Management, General Assertiveness, Self-Confidence, Defending Assertiveness, and Praise. Post Treatment Use of Medications negatively correlated with the MMPI K and Mf-Female scales, but positively with the F, D, Pd, Mf-Male, Pa, Pt, Sc, and Si scales. The WOC Blames Self scale positively correlated with Post Treatment Use of Analgesics. The Existential and Spiritual Well-Being scales negatively correlated with Post Treatment Use of Medications. None of the other pre or post treatment variables correlated with Post Treatment Use of Analgesic Medications.