WOMEN WITH FIBROMYALGIA SYNDROME (FM):
RELATIONSHIP OF ABUSE AND TRAUMA, ANXIETY, AND COPING SKILLS
ON FM IMPACT ON LIFE

DISSERTATION

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

By
Amy Marzella Spiess, B.A., M.A.

*****

The Ohio State University
2003

Dissertation Committee:  Approved by
Professor Paul F. Granello
Professor Joe Wheaton                     Adviser
Professor Darcy Haag Granello            College of Education
ABSTRACT

This study examined whether female FM patients with high scores on the Fibromyalgia Impact Questionnaire (FIQ), exhibiting low levels of coping and high levels of anxiety, experienced more trauma and abuse than those who scored lower. Adult females (n=115) completed the FIQ, as well as the Coping Strategies Questionnaire (CSQ), State–Trait Anxiety Inventory (Trait Form), and a demographic questionnaire. The study showed a correlation between high FIQ scores and high anxiety expanding previous findings outlining the significant impact of specific components of abuse and trauma prior to the age of 16 associated with higher impact of FM. The study did not reveal a relationship between the CSQ and FIQ. Longitudinal research of children both with and without documented cases of victimization is recommended to assess the impact of trauma and abuse on FM, and provide healthcare professionals with the tools to empower patients in management of the syndrome.
DEDICATION

The experience of writing this dissertation has been an odyssey. Those who have supported me through the journey have earned my devotion and gratitude. As difficult as the process has been, they mended the many bumps in the road. I would like to dedicate this to my parents, Nick and Nancy, who supported and encouraged me throughout the entire journey, and to my husband, Aaron, who met me along the way. Without their love, I would not have met this challenge.
ACKNOWLEDGMENTS

I wish to thank the following people for their assistance in the preparation of this dissertation:

Dr. Paul Granello, my adviser, for his intellectual encouragement throughout the project.

Dr. Joe Wheaton and Dr. Darcy Granello, for their cooperation and time.

Drs. Stephen and Ellen Kay Douglas, Dr. John Mason, and the staff of the Association for Psychotherapy, Inc. for their unending support and assistance.

Martina Pavlicova whose advice and humor made this endeavor a smoother process.

Dr. William Salt whose wisdom and encouragement was most helpful.
VITAE

January 18, 1970……………………Born – Athens, Ohio

1988…………………………………Diploma, Columbus School for Girls

1992…………………………………B.A., Franklin and Marshall College
Lancaster, Pennsylvania
Major: Art History   Minor: English
Concentration: Italian Language

1991…………………………………Certificate, Lorenzo Di Medici
Florence, Italy
Concentration: Early Renaissance Art

1995…………………………………M.A. Counseling, The Ohio State University

1994-1997………………………….. Graduate Administrative Assistant
University College, The Ohio State University

1997-1998………………………….. Graduate Assistant to Assistant Dean Minnick
University College, The Ohio State University

1997-1999………………………….. Adjunct Faculty,
Columbus State Community College
Columbus, Ohio

1998-2000………………………….. Psychological Intern,
Ohio Pain Management Center, Inc.
Columbus, Ohio

2000-2001………………………….. Psychological Specialist, Ohio Institute of Pain
Management Columbus, Ohio

1996-present………………………… Behavioral Specialist,
Association for Psychotherapy, Inc.
Columbus, Ohio

FIELD OF STUDY

Major Field: Counselor Education
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>ii</td>
</tr>
<tr>
<td>Dedication</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>iv</td>
</tr>
<tr>
<td>Vita</td>
<td>v</td>
</tr>
<tr>
<td>List of Tables</td>
<td>x</td>
</tr>
<tr>
<td>List of Figures</td>
<td>xi</td>
</tr>
<tr>
<td>Chapters:</td>
<td></td>
</tr>
<tr>
<td>1. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Importance of the Study</td>
<td>4</td>
</tr>
<tr>
<td>Rational</td>
<td>7</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>8</td>
</tr>
<tr>
<td>Research Questions</td>
<td>9</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>10</td>
</tr>
<tr>
<td>Assumptions</td>
<td>13</td>
</tr>
<tr>
<td>Limitations</td>
<td>14</td>
</tr>
<tr>
<td>Summary</td>
<td>14</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>--------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>2. Literature Review</td>
<td>16</td>
</tr>
<tr>
<td>Fibromyalgia Syndrome</td>
<td>18</td>
</tr>
<tr>
<td>Psychological Effects of FM</td>
<td>24</td>
</tr>
<tr>
<td>Sexual and Physical Abuse and Trauma</td>
<td>27</td>
</tr>
<tr>
<td>Allostatic Loading</td>
<td>32</td>
</tr>
<tr>
<td>Counseling in Chronic Pain Treatment</td>
<td>34</td>
</tr>
<tr>
<td>Summary</td>
<td>41</td>
</tr>
<tr>
<td>3. Research Design and Methodology</td>
<td>43</td>
</tr>
<tr>
<td>Population and Sample</td>
<td>44</td>
</tr>
<tr>
<td>Data Collection</td>
<td>46</td>
</tr>
<tr>
<td>Variables</td>
<td>46</td>
</tr>
<tr>
<td>Instrumentation</td>
<td>48</td>
</tr>
<tr>
<td>Statistical Analysis</td>
<td>55</td>
</tr>
<tr>
<td>Summary</td>
<td>60</td>
</tr>
</tbody>
</table>
4. Results........................................................................................................61
   Participants...............................................................................................62
   Research Question One.............................................................................62
   Research Question Two.............................................................................82
   Research Question Three..........................................................................88
   Research Question Four...........................................................................91
   Summary.....................................................................................................94

5. Discussion and Recommendations.........................................................95
   Research Question One.............................................................................96
   Research Question Two.............................................................................96
   Research Question Three.........................................................................100
   Research Question Four..........................................................................102
   Summary of Data.......................................................................................105
   Limitations...............................................................................................106
   Future Research.......................................................................................107
   Implications for Clinical Practice and Education.................................108

List of References........................................................................................111
Appendices

A. Introduction and Inventory Instructions

The Fibromyalgia Questionnaire (FMQ) ........................................124

B. State-Trait Anxiety Inventory (STAI)........................................130

C. Fibromyalgia Impact Questionnaire (FIQ).................................132

D. Coping Strategies Questionnaire (CSQ)....................................135
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Descriptive statistics</td>
<td>70</td>
</tr>
<tr>
<td>4.2</td>
<td>Model summary of variables (with “all trauma”) predicting FM impact</td>
<td>86</td>
</tr>
<tr>
<td>4.3</td>
<td>Coefficients of independent variables in best model for step 1</td>
<td>87</td>
</tr>
<tr>
<td>4.4</td>
<td>Model summary of variables predicting FM impact</td>
<td>89</td>
</tr>
<tr>
<td>4.5</td>
<td>Coefficients of independent variables in best model for step 2</td>
<td>90</td>
</tr>
<tr>
<td>4.6</td>
<td>Pearson's Correlations</td>
<td>92</td>
</tr>
<tr>
<td>4.7</td>
<td>Coefficients for STAI and CSQ with FIQ</td>
<td>94</td>
</tr>
<tr>
<td>4.8</td>
<td>Model summary of important independent variables for best model</td>
<td>95</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Path diagram</td>
<td>57</td>
</tr>
<tr>
<td>4.1</td>
<td>Location of residence</td>
<td>65</td>
</tr>
<tr>
<td>4.2</td>
<td>Ethnicity</td>
<td>66</td>
</tr>
<tr>
<td>4.3</td>
<td>Highest level of education completed</td>
<td>67</td>
</tr>
<tr>
<td>4.4</td>
<td>Marital status</td>
<td>68</td>
</tr>
<tr>
<td>4.5</td>
<td>Count histogram for household income in dollars</td>
<td>69</td>
</tr>
<tr>
<td>4.6</td>
<td>Count histogram of amount weight gained since FM in pounds</td>
<td>72</td>
</tr>
<tr>
<td>4.7</td>
<td>Who made the diagnosis?</td>
<td>73</td>
</tr>
<tr>
<td>4.8</td>
<td>Count histogram of total scores on the State-Trait Anxiety Inventory</td>
<td>78</td>
</tr>
<tr>
<td>4.9</td>
<td>Count histogram of total scores on the Coping Strategies Questionnaire</td>
<td>79</td>
</tr>
<tr>
<td>4.10</td>
<td>Count histogram of total scores on the Fibromyalgia Impact Questionnaire</td>
<td>81</td>
</tr>
<tr>
<td>4.11</td>
<td>Frequency histogram of FIQ scores for groups of subjects with like levels of education completed</td>
<td>82</td>
</tr>
<tr>
<td>4.12</td>
<td>Frequency histogram of FIQ scores for groups of subjects with like numbers of comorbid disease</td>
<td>83</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>4.13</td>
<td>Scatter plot for STAI, CSQ and FIQ</td>
<td>93</td>
</tr>
<tr>
<td>5.1</td>
<td>Path diagram</td>
<td>107</td>
</tr>
<tr>
<td>5.2</td>
<td>Revised path diagram</td>
<td>108</td>
</tr>
</tbody>
</table>
CHAPTER 1

INTRODUCTION

For millions of individuals, chronic pain is a frequent cause of suffering and disability, which seriously impairs quality of life (Bonica, 1990). Assessing pain is a challenge for caregivers, and by definition pain is a symptom and a personal and subjective experience known only to the individual. Pain has no mass or size, and measuring the quality, intensity, and duration of pain is dependent on the patient for clarification. Objective tests, such as x-rays or MRI’s, do not measure pain, but merely look at anatomy to indicate abnormalities producing nociceptive or noxious signals which travel via nerve pathways to pain centers located in the brain. In the brain, these signals require interpretation, are given meaning, and the experience of pain is translated into behaviors, which represent the way an individual experiencing pain communicates the pain experience to the people and institutions around them. These behaviors are subsequently reinforced and maintained by their social consequences. Pain behaviors include emotional expressions such as depression, anger, and fear, as well as, behavioral expressions such as guardedness, limping, resting, taking analgesic
medication, the use of canes and braces, grimacing, and other facial gestures. These behaviors ultimately limit an individual’s ability to perform activities of daily living including their ability to work (Crook, J. & Tunks, E., 1990; Monsein, 1989), and are conceptualized as overt expressions or communications of pain (Fordyce, 1976).

Pain itself is not disabling. Evidence demonstrates individuals react to pain differently making the experience of chronic pain a complex phenomenon. Furthermore, a significant proportion of chronic pain sufferers have a constellation of symptoms involving affective, cognitive and behavioral factors, making chronic pain difficult to study for clinical researchers. White et al. (1997) confirmed chronic pain is a complex phenomenon suggesting the development of chronic pain is the result of an interaction of various pain, medical, psychological and cognitive factors. They further suggest the mechanisms underlying these associations are not entirely clear and require research. Their results however, are contrary to previous findings when a more linear model of chronic pain was assumed (Blumer & Heilbronn, 1982; Engel, 1959).

Currently, chronic pain treatment regimens may include some form of pharmacological, surgical, and cognitive behavioral intervention in order to reduce or eliminate the chronic pain (McCacken, 1998; Turner & Chapman, 1982a). Many patients participate in a seemingly endless quest to reduce their pain, and this quest often takes an extreme and vigorous form understood as a part of the chronic pain experience (Aronoff & McAlary, 1992). Moreover, it is not uncommon for patients seen in a multi-disciplinary practice to present with ten or more surgeries or procedures for pain. Many of these clients have visited multiple clinics and private practices, and have obtained inappropriate combinations and excessive doses of narcotic, sedative-
hypnotic and other medications. Unfortunately, treatments sometimes cause more harm than good (Aronoff, 1991; Waddell, 1987); for instance, futile surgeries may complicate the original pain problem by the impinging of scar tissue on a nerve. Given the diversity and variability among treatment protocols, little wonder treating chronic pain effectively is a complex, multifaceted, and expensive task.

Treatment costs of chronic pain are estimated at $60 billion annually, and as of 1980, eighty-six million Americans suffered from some form of chronic pain (Bonica, 1980). Chronic pain may be conceptualized as a stressor wherein individuals display a range of adaptations from minor disruptions in daily life to total disability. As is apparent, the cost of chronic pain not only has a physical effect on the lives of the afflicted, but also a financial effect on the individual and those affected by the individual’s loss of work productivity and income, disability payments, and litigation settlements (Bonica, 1980). To further complicate this matter, support exists suggesting most types of therapy are doomed to fail once financial compensation is or seems available (Keel et al., 1998), as some patients tend to resign themselves to a particular type of existence for fear of losing disability compensation. Fishbain et al. (1997) found a relationship between pre-injury job perceptions and actual return to work following treatment at a pain facility. Voiced intent of not returning to work was highly predictive of actually not returning to work. Although patients’ health perceptions, which may be influenced by psychological state, may seem subjective, they are reliably correlated with physicians’ assessment of health with mortality (Golding, 1999). Treatment efforts at some point should be directed toward other goals such as functional rehabilitation (Hazard, 1994; Brena & Sanders, 1992). Arnstein et al. (1999)
concluded individuals’ lack of belief in their ability to manage pain tends to cope and function despite persistent pain; however, their lack of belief in their ability to manage pain is a significant predictor of the extent to which people with chronic pain become disabled or depressed.

While chronic pain in general greatly impacts the treatment community, one disease taking a specific toll on the medical system is fibromyalgia syndrome (FM). FM is a chronic pain syndrome that predominately afflicts women, and has an unclear etiology despite intense research. It is characterized by widespread pain, insomnia, fatigue, and the presence of multiple tender points (Staud & Domingo, 2001; Wolfe, et al.1990). The ever increasing financial burden of FM in American industry (Bonica, 1980) is compounded by the high rate of disability among patients (Wolfe, 1996). Many people with widespread body pain and fatigue are often diagnosed with FM, due to the nonspecific complaints and lack of clear diagnostic verification, as well as, the lack of a known underlying pathophysiology. Subsequently, FM has generated much debate; in fact, many physicians question the existence of a specific FM, as some believe it a manifestation of multiple overlapping syndromes.

Importance of Study

Fibromyalgia syndrome affects two percent of people in the United States, and is ten times more common in women than men. While the disease only occurs in adults, there is a progressive increase in prevalence with age, as approximately seven percent of women 70 years of age are affected (Wolfe et al., 1995). Most of the millions of
Americans diagnosed with FM are women, according to Salt and Season (2000), and FM is the most common cause of generalized musculoskeletal pain in women between the ages of 22 and 55. Fitzcharles and Esdaile (1997) report FM as one of the most common rheumatologic diagnoses of women referred to rheumatologists. Salt and Season (2000) expand by further stating fibromyalgia syndrome is the second most common diagnosis made by rheumatologists.

There are investigators who emphasize psychosocial causes, while others suggest biochemical, physiologic, and genetic abnormalities (Long, 2000); still others suggest central dysfunction of the stress response and allostatic loading (Salt & Neimark, 2002; Mayer, 1999; McEwen, 1998; Clauw & Chrousos, 1997). Although FM and chronic pain do not have one common focus for treatment, components which must be evaluated include: pain intensity, functional capacity, mood and personality, coping and pain beliefs, medication use, behavioral analysis, psychosocial history, and possible adverse effects of treatment. An increasing body of literature suggests that symptoms associated with chronic pain and fibromyalgia may be ameliorated by the individual’s belief system and self-statements concerning disability (Jensen et al., 1999; Novy et al., 1995; Turk et al., 1983). This approach finds some empirical support as suggested by Sternbach (1978), who reports chronic pain patients do not respond to psychodynamic interpretations and typically lack psychological insight. According to Turner and Chapman (1982b), chronic pain patients tend to respond to the following five procedures frequently employed by behavioral scientists: relaxation training, biofeedback, cognitive-behavioral therapy, operant conditioning, and hypnosis. These
interventions are not mutually exclusive and are often used in combination with one another. Until a better regimen or a more specific understanding for the control of the controversial FM is understood, data suggest a multi-disciplinary approach with nonsteroidal anti-inflammatory drugs (NSAIDS) for pain management, as well as, treatment for depression and anxiety, restoration of sleep pattern, stress management, and exercise are beneficial.

Concerning treatment for depression and anxiety, cognitive-behavioral theory has played a significant role in understanding the treatment of chronic pain by aiding patients in their private suffering and overt pain behaviors. According to Chapman et al. (1979), many illness behavior patterns seem to be exaggerations of behaviors (i.e. pain behaviors) observed elsewhere. Methods such as deep relaxation, when taught as a coping skill in the context of a psychotherapeutic alliance, focus on helping the patient learn better ways to respond to life stressors which trigger or exacerbate pain, and can be a valuable therapeutic tool (Turner & Chapman, 1982b). Stress experienced by chronic pain patients frequently results in behavior that promotes additional distress, such as, increased anxiety, lack of patience, frustration and catastrophizing.

A great many FM patients have experienced psychiatric syndromes, predominately of the depressive or anxious character. Anxious and tense personality traits are common in many FM patients. Individuals with this personality may tend to have difficulty setting requirements and limits, and defending their integrity, traits which are essential to avoid victimization and abuse (Anderberg et al., 2000). As personality traits are partially hereditary based and partially environmentally based, experiences throughout life may modify personality accordingly.
McEwen (1998) asserts stressful events include major life events. Major life events include trauma and abuse, which are sometimes associated with the environment in the home, workplace and neighborhood. Individual responses to potentially stressful events are largely related to the following factors: the way in which a person perceives the situation, and a person’s general state of physical health, which is determined by genetic factors, behavioral and lifestyle choices. Kersh et al. (2001) found the best predictors for status as a patient were high level of pain intensity, negative affect, daily stressful events, low self-efficacy for managing pain, fatigue, distress, and activities of daily living. They further purported a model of abnormal pain sensitivity, in genetically predisposed individuals, that may acknowledge the negative affect and perceptions of stress for some persons with FM, which may motivate these individuals to seek treatment.

Rationale

The growing body of literature concerning patients with chronic pain has found significant association between measures of pain beliefs and measures of functioning (Jensen, et al., 1991a; Crook, J. & Tunks, E., 1990; Turner & Chapman, 1982). Recent studies reveal women with FM experience significantly more negative life events during childhood and adolescence than healthy women (Anderberg et al., 2000; Finestone, 2000). Further findings provide evidence that catastrophizing cognitions, and beliefs concerning the ability to control pain, may be associated with subsequent depressive symptoms in individuals with chronic pain (Asghari & Nicholas, 2001; Jensen et al., 1999; DeVillis & Blalock, 1992; Keefe et al., 1989). A psychological
component in the treatment of chronic pain is crucial, and cognitive-behavioral therapy is recommended as a part of a multi-disciplinary chronic pain treatment plan. According to Keel et al. (1998), psychological interventions should be considered not only after all other therapies have failed, but should be integrated as a part of mainstream treatment. By teaching patients diagnosed with FM how to function more effectively in their daily lives, and utilizing appropriate coping responses, helping professionals will be able to assist patients in reducing symptom severity of chronic pain associated with FM. Further investigation is necessary to explore why FM patients experience more physical and psychological abuse, disease or accidents, and various other negative life events.

Purpose of the Study

The purpose of this study is to contribute to the body of knowledge concerning chronic pain, specifically, factors associated with women diagnosed with fibromyalgia syndrome. To date, few studies have investigated the psychological constructs of anxiety, trauma, and coping with chronic pain patients diagnosed with fibromyalgia. It is theorized different kinds of stressors may lead to different kinds of health outcomes and different means of coping may reasonably be expected to be effective for different stresses. It is further predicted that patients may have less dependency on the healthcare system, when they have higher levels of self-efficacy (Asghari et al., 2001).

Three groups of women or treatment types, who have been diagnosed with FM, will be assessed as to their levels of coping skills and anxiety, and demographic information including trauma. The subject pools include women ages 18-65 from three
areas: (a) FM support group generated from an FM Support Group formed through the
central Ohio Arthritis Foundation, (b) individual counseling with a central Ohio
psychological group, and (c) no counseling or medical treatment only. The types of
treatment are to be treated simply as descriptive independent variables in this study. The
fundamental research hypothesis is: Women who have been diagnosed with
fibromyalgia syndrome, and have experienced significant trauma or abuse have lower
levels of coping, and higher levels of anxiety, than women who have experienced less
trauma or abuse. Further, women with lower levels of coping and higher levels of
anxiety will have an increased impact of FM on their lives as reflected by higher total
scores on the Fibromyalgia Impact Questionnaire.

Research Questions

Several specific research questions are of interest to this study, and are listed as
follows:

Research Question One: What demographic characteristics describe the female
subjects diagnosed with fibromyalgia, in the obtained sample?

Research Question Two: From the selected demographic information on the
Fibromyalgia Questionnaire, which variables can be identified as statistically significant
predictors of higher impact on the Fibromyalgia Impact Questionnaire?

Research Question Three: Which variables describing subjects’ current life
situation, strongly correlate with the Fibromyalgia Impact Questionnaire?
Research Question Four: Can the impact of fibromyalgia, as measured by the Fibromyalgia Impact Questionnaire, be predicted by the individuals’ scores on the Coping Strategies Questionnaire and State-Trait Anxiety Inventory (Trait form only)?

Definition of Terms

The following terms will be used in this research study, and therefore will be explained in terms of their operational definitions.

Abuse and Trauma: For purposes of this study, abuse and trauma are experiences, which may impact a person’s personality in a negative fashion. The same event could have a different degree of impact and sequelae in different individuals. Such situations may include physical or sexual abuse in childhood or adulthood, events perceived as stressful, illness, accidents, death of friends or relatives, disease, bullying, divorce, discordant home, and/or financial problems.

Allostasis and Allostatic Load: Allostasis, critical to survival, is the ability to achieve stability through change. McEwen (1993) refers to the long-term effect of the physiologic response to stress as the “allostatic load.” Allostatic load refers to the cost of adaptation to a stressful environment (McEwen, 1998), which elicits repeated and at times prolonged adaptive responses or allostasis in the short run but may cause wear-and-tear on the brain and body (Salt, 2001). Fibromyalgia, a functional syndrome, is related to allostatic load.

Anger: An emotion spawned by frustrations related to the persistence of symptoms, limited information on etiology, and repeated treatment failures, along with
anger toward employers, the insurance provider, the health care system, family members, and themselves, all contribute to the general dysphoric mood of patients with chronic pain (Gatchel & Turk, 1996).

**Anxiety:** According to Spielberger et al. (1969), state anxiety (A-State) is a transitory emotional state of condition of the human organism, characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity. Spielberger et al. (1969), refers to trait anxiety (A-Trait), as relatively stable individual differences in anxiety proneness, rather than, differences between people in the tendency to respond to situations perceived as threatening with elevations in A-State intensity. The trait scale will be used in this study, as this researcher is predominately concerned with the more stable trait than the transitory emotional state.

**Catastrophizing:** The self-statements, thoughts, and images anticipating negative outcomes or aversive aspects of an experience, or misinterpreting the outcome of an event as extremely negative (Gatchel & Turk, 1996).

**Coping Strategies:** Purposeful and intentional acts thought to alter both the perception of pain intensity and the ability to manage or tolerate pain and to continue everyday activities (Turk et al., 1983). Strategies may be overt (e.g., increased behavioral activities) or covert (e.g., diverting attention, coping self-statements, praying/hoping, ignoring sensations). Coping strategies will be measured through the participants’ scores on the Coping Strategies Inventory.

**Depression:** Depressed mood or loss of interest or pleasure in most activities for at least two weeks. The individual must also experience four additional symptoms
including changes in weight or appetite, sleep, psychomotor activity, decreased energy, feelings of worthlessness or guilt, difficulty thinking, concentrating, or making decisions, or recurrent thoughts of death or suicidal ideation, plans or attempts (DSM-IV, 1994).

**Pain Behavior:** Pain behavior is controlled by two major classes of variables: underlying injury/nociception and social/experiential factors. These behaviors are expressions, which signal to the environment that pain is occurring and are subsequently reinforced and maintained by their social consequences (Crook, J. & Tunks, E., 1990). Pain behaviors may include: crying, frequent doctor visits, over and/or under use of medication, limping, complaining, grimacing, rubbing, and withdrawal from daily living activities. These behaviors ultimately limit an individual’s ability to perform activities of daily living including their ability to work (Monsein, 1989).

**Self-Efficacy:** The principal assumption of this cognitive theory is psychological procedures effect behavioral change by serving as a means of creating and strengthening expectations of personal mastery or self-efficacy. An efficacy expectation refers to the conviction that one can successfully execute the behavior required to produce particular outcomes. Therefore, an individual’s self-efficacy expectation will determine his or her persistence and ultimate success in coping with threats (Bandura, 1977).
Assumptions

The primary assumption underlying this study is that functional symptoms and syndromes are often considered to be related to stress, depression, anxiety, emotional distress, negative thinking and beliefs. McEwen’s (1999) theoretical position of allostatic load refers to the cost of adaptation to a stressful environment, which elicits repeated and at times prolonged adaptive responses or allostasis in the short run but may cause wear-and-tear on the brain and body (Salt, 2001). Fibromyalgia syndrome is assumed to be a functional syndrome. Secondly, the Coping Strategies Questionnaire and the State-Trait Anxiety Inventory are assumed to accurately measure the level of coping and anxiety, as defined in this chapter (Stewart et al., 2001; Spielberger et al., 1999; Dozois et al., 1996; Spielberger et al., 1995; Spielberger & Rickman, 1991; Rosensteil & Keefe, 1883). Third, the Fibromyalgia Impact Questionnaire accurately measures the impact of fibromyalgia on an individual’s life. A final hypothesis is some degree of experienced or perceived abuse and trauma are pervasive underlying characteristics in women diagnosed with fibromyalgia (Anderberg, 2000; Finestone et al., 2000; Golding, 1999; Mayer, 1999; McEwen, 1998).

Limitations

Due to the preliminary nature of the study, findings will need to be interpreted with caution. The study will be correlational in nature and will not involve the direct manipulation of an independent variable, as no cause and effect relationship will be presumed. Comorbidity with other rheumatary diseases and number of trigger points or tender points on the body were not assessed due to the non-medical nature of this study.
Relying only on self-report is a limitation, as what individuals say they do and what they actually do in their daily life often do not match. However, as this study is anonymous and not simply confidential in nature, participants may tend to be more honest about their life experiences. Despite this possibility, any findings will need to be interpreted with caution.

Summary

This chapter discusses the complex phenomenon of chronic pain in the general population, specifically patients suffering from FM. Some investigators question the existence of FM, believing the syndrome to be a “wastebasket” term for conditions which otherwise defy explanation, while others purport a model of abnormal pain sensitivity. Although FM patients tend to have nonspecific complaints, and there seems to be no known underlying pathophysiology, these patients in fact suffer a host of difficulties. Considering FM patients as chronic pain patients has important implications for treatment, as treating them somatically may lead to fixation on the somatic aspect of the complaints. Research supports a growing opinion that a multidisciplinary approach seems to be the best way to deal with the complexity of the chronic pain patient’s situation (Salt and Season, 2000; Keel et al., 1998; Aaron et al., 1997; Crue, 1985).

In order to treat FM patients most effectively, helping professionals must look at the patient’s life in its entirety. Life stressors can impact and modify personality and therefore affect an individual’s perception of health and self. Coping skills may determine how positive or negative an individual’s perception may be. Maximizing a
patient’s ability to cope effectively with symptoms and psychological distress will assist both patients and healthcare givers in reducing reliance on the medical system and increase control over their own lives. Allostatic loading can be reduced, by having physicians and health care providers assist their patients in learning coping skills, personal limitations, and relaxation techniques (McEwen, 1998), ultimately, people with FM need to be empowered to manage their symptoms (Bernard et al., 2000; Clauw, 1995; Wilke, 1995; Bennett and McCain, 1995; Burckhardt et al., 1994). This study is important, as it will contribute to the research literature concerning coping skills, anxiety and impact of FM on life.
Pain is a private and subjective experience. Pain cannot be seen, heard, touched, objectively measured, or confirmed empirically by valid tests. Philosopher Bertrand Russell (1948) would describe the experience of pain in the terms of private data. An individual who claims, “I have pain” is giving a statement, which may be described as private data. As long as a person is telling the truth, we as observers cannot dispute their claim even if no external manifestations of pain are visible.

Merskey (1990) discusses the biological evidence of irritability and aggression in response to noxious stimuli shown by Ulrich et al. (1965) and Ulrich (1966) as being a part of the “fight or flight mechanism.” Fighting, once pain affects the viscera, is too late to be effective. Visceral pain is characteristically heavy, sickening and leads to immediate withdrawal from activity. However, cutaneous pain will arise with relatively minor bodily damage, is more behaviorally stimulating, may prepare the individual for fighting and even be sexually arousing.
Turner and Chapman (1982a) comment traditional medical and surgical interventions are largely unsuccessful in relieving chronic pain as they, in part, focus on the organic factors, ignoring the complexity of the syndrome. Pearce and Tunks (1990) explain chronic pain should be viewed in terms of two factors: the pain experience itself; and the psychological factors, as chronic pain also does not correlate well with the original injury. Merskey (1990) stresses that effects of pain depend upon the situation as well as the source of the pain. The researcher goes further into the discussion of chronic pain stating, “despite the best efforts at diagnosis and all reasonable investigation, the position is sometimes reached that it is uncertain whether the pain is primarily physical or primarily psychological in origin or is due to an approximately equal mixture of both causes” (pp. 17-18). In any case, individuals experience pain in ways unique unto themselves.

“Acute pain” is distinguished from “chronic pain”, simply on the basis of time, in that chronic pain is pain that outlasts the normal period of healing. The experience of pain may also be distinguished from pain behavior. Pain behaviors, such as depression, anger, anxiety and fear, may be manifested in the activities of the patient including: crying, limping, taking medication, visiting doctors, complaining, groaning, talking about their pain, and sleeping. With chronic pain patients, adjustments and improvements of illness do not correlate well with amount of pain relieved (Pearce & Tunks, 1990).

Psychological theories about chronic pain generally take the position that after a new injury, discomfort arises due to tissue damage, and the illness behavior is initially understood in terms of the responses to nociception. There is a “double-bind” cycle
between stress and illness, and pain is a continuation of a condition that will not go away; in fact, it can cause patients frustration and reduce their motivation to adapt. This in turn will affect all aspects of a person’s life.

The stress or wear and tear on the body has physical and emotional consequences; McEwen (1998) refers to this as allostatic load. Positive stress can lend itself toward a new awareness or perspective, but negative stress may result in feelings of distant anger, depression and/or various physical changes. The cycle compounds patients’ pain level and overall mental outlook. Many pain patients engage in anticipatory pain and activity avoidance, in that they have a great deal of anticipation of and apprehension about negative consequences. This behavior is not unlike that of patients with phobic or anxiety disorders, where undesirable outcomes are expected long before behaviors are even demonstrated (Philips, 1987). People who especially fear pain frequently avoid situations, movement or social interactions, which could trigger pain. With time and healing of the original injury, the illness behavior may be reinforced through responses from the environment or through harmful patterns of thinking; therefore, eventually chronic pain behavior is perpetuated. The longer a negative pattern of thinking or behaving is allowed, the more difficult intervention becomes.

Fibromyalgia Syndrome

Currently, preferred terms for functional syndromes with unexplained chronic pain and/or fatigue are fibromyalgia syndrome (FM) and chronic fatigue syndrome (CFS) names which describe prominent clinical illness without attempt to identify
cause. These conditions manifest a wide variety of medical and psychological symptoms. FM is a nonarticular rheumatologic disorder characterized by widespread pain, fatigue, stiffness and tenderness at multiple anatomic sites upon palpation of trigger points. There are many acceptable triggers or stressors of FM and CFS, and they include: physical trauma, emotional distress, and autoimmune and infectious illnesses, which may initiate or exacerbate these illnesses (Clauw & Chrousos, 1997). Though the etiopathogenesis is not well understood, the disorder is associated with biologic abnormalities such as dysregulation of sleep, neuroendocrine function and regional cerebral blood flow (Bradley and Alarcon, 1997; Pillemer, et al., 1997; Mountz et al., 1995; Crofford et al., 1994). Sir William Gowers first described Fibromyalgia in 1904. Since that time, terms used to describe the syndrome include: fibrositis, fibromyositis, myofibrositis, myofascial pain, muscular rheumatism, tension myalgia, myalgia, rheumatic myositis, and myellogelosis (Salt & Season, 2000). Prior to the 1990 classification, there appeared to be two directions in criteria sets.

Criteria Sets and Classification

Wolfe and colleagues suggested high counts of tender points as sufficient to diagnose the syndrome, without considering symptoms beyond widespread or generalized pain (Wolfe, 1986; Wolfe & Cathey, 1983). A tender point is an anatomic site where an individual complains of pain when approximately 4 kg of pressure is applied. However, potential problems may arise using tender points to substantiate a diagnosis, as this measure of tenderness may be susceptible to an individual’s level of distress. Although early studies suggest FM patients experience tenderness in discreet regions, more recent studies show individuals with FM display increased sensitivity to
pain throughout the entire body (Granges & Littlejohn, 1993; Yunus, 1992; Mikkleson, et al., 1992). Yunus et al. (1988, 1981) stressed the combination of symptoms and tender points (severe tenderness to palpation), and required as few as two tender points in the presence of symptoms. Smythe and Moldofsky (1977), would be proponents of the second criteria set, however, believed the patient must also have the symptom of “morning stiffness” as part of the defining characteristics for the FM diagnosis.

In 1990, the American College of Rheumatology published its criteria for the classification of FM. The purpose of the paper was to define the FM syndrome by the de facto recognition of its characteristics by interested investigators in multiple centers, both clinical and academic and among proponents and doubters (Wolfe et al., 1990). At that time, the committee consented to adopt the term *fibromyalgia*, as suggested by Hench in 1976, rather than the older term *fibrositis*. Primary fibromyalgia patients did not differ statistically on any major variable from secondary or concomitant fibromyalgia patients, therefore the diagnostic or classification level has been abandoned. Further, a diagnosis of fibromyalgia, according to Wolfe et al. (1990), remains a valid construct irrespective of other diagnoses; exclusionary tests such as radiographs, antinuclear titers, and T4 levels are not requisite for diagnosis. The proposed classifications for FM are 1) widespread pain in combination with 2) tenderness at 11 or more of the 18 specific tender point sites (Wolfe et al., 1990). Results from the study indicate FM can be identified with good sensitivity (88.4%) and specificity (81.1%), from other rheumatic conditions by the use of the American College of Rheumatology’s criteria (Wolfe et al., 1990). However, the recognition that FM’s pain threshold is globally diminished is important, as it helps to focus on the
pathogenesis of FM from the periphery to the central nervous system (Clauw & Chrousos, 1997). Until a better classification of FM is developed, the Wolfe et al. (1990) criteria are preferred and widely accepted in practice.

**Difficult Diagnosis**

Most individuals with FM also have symptoms including: fatigue, morning stiffness and sleep disturbance, tension headaches, irritable bowel syndrome, back pain, irritable bladder, chronic pelvic pain, modulations of symptoms by external factors, and local tenderness “tender points” or “trigger points” (Salt et al., 2000; Wolfe et al., 1990). As a consequence, patients often undergo repeated testing which is expensive and unnecessary. Such tests generally include: blood studies, X-rays, computerized axial tomographic scans (CT scan), magnetic resonance imaging (MRI), and electromyogram (EMG), and all results tend to show in the normal range. The fact that testing shows as normal tends to be highly frustrating to individuals with FM, as patients often require specific reasons for their symptoms and underlying illness.

Abnormal test results do not explain FM, as structural findings are most likely unrelated to any causation of fibromyalgia (Salt & Season, 2000). It is evident FM tends to occur in association with other rheumatic disorders (Wolfe et al., 1990). Salt and Season (2000), Fitzcharles and Esdaile (1997), and Wolfe et al. (1990), concur and stress the importance of not falsely attributing the symptoms of FM to a finding on testing. Not only could this interfere with healing, but also, effective treatment of a condition may influence the prognosis of FM.

Fitzcharles et al. (1997) caution rheumatologists against the over diagnosis of FM in patients with ill-defined pain. Some researchers and medical professionals
believe FM is a “wastebasket” term used to describe patients whose conditions otherwise defy explanation. For instance, symptoms of spondyloarthropathy in women may be subtle but do have considerable overlap with FM. The researchers emphasize the importance of heightened alertness for clinicians so as not to miss an underlying condition when considering a diagnosis of FM. By treating the wrong condition or by neglecting a condition, a physician may cause more harm than healing.

Kersh et al. (2001) attempted to differentiate individuals seeking medical care, specifically, patients with FM from individuals with FM who are nonpatients. They found the best indicators for prediction of patient status were high levels of pain intensity, negative affect, daily stressful events and low levels of self-efficacy for managing pain, fatigue, distress and activities of daily living. It is important to note that the relative importance of individual variables change as other variables are considered or removed from consideration by patients or nonpatients. Further, the researchers found psychosocial variables from different domains (cognitive, environmental, stress and support) to be relevant to status as patients or nonpatients, independently of background demographics, pain duration and psychiatric morbidity (Kersh et al., 2001). They discerned abnormalities shared by both groups were more likely to contribute to the etiopathogenesis of FM than factors found primarily in subgroups of persons with FM who receive treatment, particularly in tertiary care facilities. Kersh et al. (2001) found a model of pain sensitivity in FM that suggests both exogenous factors (e.g., physical trauma) and endogenous factors (e.g., neuroendocrine abnormalities), in genetically predisposed individuals, may lead to the development of central sensitization and functional alterations in the central nervous system that are involved in
the transmission of pain and modulation (Weigent et al., 1998). The model acknowledges that negative affect and perceptions of stress are endogenous variables that may contribute to the developments of abnormal pain sensitivity in some individuals with FM, but are not necessary to the development of FM.

Only since the 1970's have physicians and scientists studied FM, and confirmed it is not caused by inflammation or a known disease process. Medical care is now concentrating on this problem and interest is growing, as FM is a major women’s health problem (Salt & Season, 2000). Seventy-five to ninety-five percent of the millions of Americans suffering from FM are women; in other words, two to four percent of the population suffers from FM, and eighty percent of those individuals are female (Clauw & Chrousos, 1997). FM has been described in most countries of the world, and it does not appear to be related to ethnicity or colder climates.

The Danish Institute for Clinical Epidemiology in 1990 and 1991 conducted a National Health Survey, and found one hundred twenty-three persons fulfilled the screening criteria for questions concerning widespread muscle pain. The researchers concluded the prevalence of FM in the Danish population between the ages of 18 and 79, at a minimum, was found to be 0.66% (Prescott et al., 1993). Previous studies found the prevalence of FM to range from 2-6% depending on the referred population. Of patients seen in an outpatient rheumatology clinic, the prevalence was 14.6% (Wolfe & Cathey, 1983), but 47% for patients admitted to a hospital for rheumatic conditions (Rasmussen et al., 1990). Jacobsson et al. (1989) found a prevalence rating of 1.1% in a major Swedish city using 445 randomly selected males and females ages 50 to 70. Forseth & Gran (1992) found a 10.5% prevalence rating in a small Norwegian town
among women 20-49 years of age. Age groups and study designs may explain discrepancies in results. Using and applying the American College of Rheumatology 1990 (ACR-90) criteria in a uniform manner will allow future prevalence studies to be compared. Forseth and Gran (1992) note it is difficult to survey populations as FM has neither abnormal laboratory testing nor pathognomonic clinical signs or symptoms.

Psychological effects of FM

Birnie et al. (1991) researched the psychological aspect of patients with FM compared to patients with chronic and nonchronic pain. Using a standard interview and psychological questionnaires (Symptom Check List-90-R [SCL-90R], Illness Behavior Questionnaire [IBQ], and Chronic Illness Problem Inventory [CIPI]), they found no differences between the three groups regarding age and sex; however, the researchers were easily able to distinguish the chronic pain and nonchronic pain group. The FM and chronic pain group comparison found FM patients reported more painful localizations and scored higher on the somatization scale than did other chronic pain patients. Other variables showed no significant or statistical differences between the two groups. Considering FM patients as chronic pain patients has important implications for treatment, as treating them somatically may lead to fixation on the somatic aspect of the complaints. This research supports a growing opinion that a multidisciplinary approach seems to be the best way to deal with the complexity of the chronic pain patient’s situation, (Salt and Season, 2000; Keel et al., 1998; Aaron et al., 1997; Crue, 1985) as this approach treats patients in their entirety and not solely their medical symptoms.
Aaron et al. (1996) examined the relationship between psychiatric disorders and healthcare seeking behaviors in sixty-four individuals with FM, and twenty-three healthy individuals. Their FM patient group exhibited high rates of major mood disorders, such as, major depressive episode, and anxiety disorders, such as, panic disorder with agoraphobia. The researchers found FM patients to be characterized by a significantly greater number of lifetime psychiatric diagnoses than nonpatients and healthy controls. However, there was a low frequency of psychiatric diagnoses among FM nonpatients, suggesting psychiatric illness is not intrinsically associated with FM (Aaron et al., 1996). The researchers conclude psychological distress for those diagnosed with FM is strongly associated with symptom severity. Anxiety and mood disorders were the most commonly diagnosed conditions differentiating FM patients and healthy controls. Multiple lifetime psychiatric diagnoses may contribute to an individual’s decision to seek medical care for FM in tertiary care settings (Aaron et al., 1996). Emotional stress, as suggested by this study, may lead people to interpret sensations as symptoms of pain or simply prompt treatment seeking.

Many patients experiencing pain exist with insufficient evidence of physical illness and show limited response to psychiatric treatment (Merskey, 1990). These patients tend to have hypochondriacal or hysterical characteristics and some depression. Using the Minnesota Multiphasic Personality Inventory (MMPI-2), the “conversion V triad” is evidenced by elevations of one or two standard deviations on the hypochondriasis (Hs), Hysteria (Hy), and slightly less on Depression (D) scales. The
MMPI-2 is not widely accepted as proof of psychological origins of pain, as MMPI-2 results are only valid in the absence of physical illness, but this is not often excluded (Merskey, 1990).

Studies concerning idiosyncratic presentation of chronic pain regarding older people, to this point, have only been able to report subtle degrees of differences between varying ages. Corran et al. (1997) compared and contrasted empirically derived subgroups of chronic pain patients to identify distinguishing clusters. The researchers determined the chronic pain syndrome that may be identified in younger and middle-aged adults does not occur as frequently in older patients. Results in this study could possibly be explained in that increasing age is associated with different levels of functional and emotional consequence of chronic pain, as well as comorbidity (Farrell et al., 1995). Further, the risk of depression associated with chronic pain does not appear to change in relation to age (Magni et al., 1993), and the number of depressive symptoms endorsed by older patients may even be less than their younger counterparts (Benbow et al., 1995). Coping style and attribution may account for differences as well. The meaning ascribed to the experience of pain and the strategies used to ameliorate its impact may have a strong effect on the consequences of chronic pain. Corran et al. (1997) suggest the relationship between age and chronic pain is an area in need of further research.

Clauw and Chrousos (1997), comment despite the precise percentage of individuals with psychiatric comorbidities, at least 60 percent of FM patients have no identifiable concurrent psychiatric condition. Therefore, there must be a nonpsychiatric mechanism capable of causing the symptoms seen in the disorder. A number of
researchers (Hudson, et al., 1996; Ahles, et al. 1991; Boissevain & McCain, 1991) discuss the lifetime history of FM patients with mood disorders ranging forty to seventy percent. However, there is a myriad of psychosocial factors, which for some individuals play a significant role with this illness. These include behavioral pathways such as sick role behavior and maladaptive coping mechanisms, cognitive pathways such as victimization and loss of control, and social pathways such as interference with role functioning and deterioration of social or other support networks. These factors are important in determining how individuals report symptoms, how and when they seek healthcare, and how they respond to therapy. White and Nielson (1995), Speckens et al. (1995), and Nielson et al. (1992) believe the aforementioned factors may explain why cognitive-behavioral therapy is generally effective in the treatment of individuals with fibromyalgia. Such models of pain treatment propose perception of control as a critical moderator between adaptation and pain. Further, the therapy seeks to decrease emotional arousal and avoid negative emotion through the use of techniques including relaxation, distraction, guided imagery and positive self-statements.

Sexual and Physical Abuse and Trauma

According to Golding (1999), there exists a disproportionate share of medical costs generated by a small number of persons with chronic, treatment-resistant disorders including fibromyalgia. If sexual assault, which has a population prevalence rate for
women ranging from 13% to 27%, contributed to these disorders, this would suggest possible interventions for these difficult-to-treat patients, with favorable implications for both patients’ quality of life and costs of care (Golding, 1999).

Several researchers have noted a relationship between various chronic pain syndromes and a history of sexual or physical abuse (Schei et al., 1989; Drossman et al., 1990; Fry, 1993; Scarinci et al., 1994; Linton et al., 1996; Walker, 1997; Golding, 1999; McBeth et al., 1999; Finestone et al., 2000). Finestone et al. (2000) examining pain symptoms among individuals who self report histories of abuse, found women with a history of childhood sexual abuse reported more chronic pain symptoms and utilized more health care resources compared to nonabused control subjects. In this study of women who reported abuse, there was a significant association with the diagnosis of fibromyalgia. Researchers noted individuals with FM who reported sexual abuse had a greater severity of the illness than individuals with FM not reporting histories of abuse. Walker et al. (1997) estimated sexual abuse of women diagnosed with FM had a prevalence rate ranging 50% to 75%. Sexual abuse, as reported by Golding (1999), has a particularly strong relationship to FM if the abuse occurred in childhood, in both childhood and adulthood, or resulted in more invasive sexual contact. Physicians and mental health practitioners who have a holistic picture of a patient would be more effectively able to treat patients suffering from the symptoms of FM.

Linton et al. (1996) in a study of prevalence and psychological factors for patients reporting sexual abuse and chronic musculoskeletal pain, found 89% of the women who have been abused did not believe their abuse history negatively influenced their pain problem. However, the researchers also noted the same individuals in
comparison to their nonabused counterparts were shown to have more psychological symptoms related to their pain. The instruments used in the investigation included the Swedish version of the Coping Strategies Questionnaire, the Beck Depression Inventory, the Pain and Impairment Relationship Scale, the Multidimensional Pain Inventory, and an instrument under development, the Uppsala Type A Behavior Questionnaire. Findings did not show abuse causes back pain, but Linton et al. (1996) have determined it is associated with poorer ability to cope with pain. Further, the elevated depression scores were of particular concern as they are also associated with fewer attempts of active coping. These findings do support previous research. The researchers call for more studies replicating their findings; however, these findings do extend the relationship between sexual abuse and pain to a Swedish population suffering from musculoskeletal issues. Further, the investigators suggest intervention strategies address problems of effective coping strategies and depression. Linton et al. (1996) conclude, abuse occurs frequently enough and is potentially a powerful factor related to musculoskeletal pain problems; therefore, questions about abuse might be considered for inclusion in the routine assessment. Although such invasive questions might be met with resistance, caregivers would be more effective be able to tailor intervention strategies when given a complete picture of a patient.

Aaron et al. (1997), found perceived physical trauma to be a greater determinant of disability compensation for FM patients than perceived emotional trauma, symptom severity or functional disability. Greenfield et al. (1992) and Wolfe (1986) determined 24% of patients report the development of FM following a perceived physically traumatic event including motor vehicle accidents, surgery, viral illness, and work
injury. Goldenberg (1993) reported 14% of patients in a rheumatology practice experienced FM symptoms after events perceived as emotionally traumatic. Effort is necessary to determine the social and legal factors underlying the relationships between physical trauma in FM and disability compensation, as well as, determining strategies to reduce the costs associated with the high usage of health care services associated with FM patients with perceived emotional trauma (Aaron et al., 1997). Early referral to a multidisciplinary practice may be beneficial, as the longer negative thinking pain and behaviors patterns are left unaddressed the more difficult intervention may become.

One community study, McBeth et al. (1999), researched the association between tender points, i.e. areas of the body that elicit pain upon palpation, psychological distress, and adverse childhood experiences. It has been established, tender points are associated with a range of pain symptoms, as well as with high levels of general psychological distress, independent of pain status. Individuals with a self-reported history of childhood abuse or adversity were more likely to have higher tender point counts than those who did not report such histories. McBeth et al. (1999) found subjects with high tender point counts (≥5) were more likely to have been abused, to be female, to have a high score on the Illness Behavior Scale, to report the loss of a parent in childhood, and to report physical and mental fatigue than those with a low number of tender points (<5). The researchers hypothesize that exposure to adverse experiences early in childhood would precede the development of multiple tender points (McBeth et al., 1999). The investigators’ results lend further weight to the hypothesis that characteristics of somatization and illness behavior, and their childhood antecedents, contribute to the development of fibromyalgia.
Anderberg et al. (2000) investigated female FM patients and determined 47.5% of them, during childhood and adolescence, experienced at least one negative life event compared to 23.7% of the healthy controls. They further found FM patients experienced a larger number of more severely negative life events in childhood/adolescence and in adulthood than healthy women. Common life events for both groups included: conflicts with parents, physical or psychological abuse, death of close friend or relative or mobbing. Only bullying was significantly more common in women with FM than in healthy controls.

Although much of the aforementioned empirical research suggests early childhood trauma, especially sexual abuse, is related to the development of functional syndromes such as fibromyalgia, one methodological problem shared by the studies is that the assessment of abuse in childhood is based on self-report. Raphael et al. (2001) aimed to replicate earlier studies showing an elevation in pain symptoms associated with sexual abuse using documented cases of childhood abuse and to determine whether a relationship extends to childhood physical abuse and neglect. Although there were a number of limitations and methodological problems with the study, the researchers found early childhood victimization and medically unexplained pain were not extrinsically linked, and that medically unexplained pain is not necessarily a psychogenic one. Findings further did not support the hypothesis of an association between childhood victimization and pain symptoms in adulthood, but they did support evidence of an apparent memory bias of the investigated group. Ultimately a need for further research is demonstrated as the role of retrospective self-reports of childhood victimization in elevated pain syndromes require further clarification.
Van Houdenhove and Egle (2002), using their own research concerning victimization, commented on the Raphael et al. (2001) article. Van Houdenhove and Egle emphasize the way victimization is assessed is important for significance and interpretation, as collecting “yes or no” data does not necessarily have the same validity as carefully explored life histories collected by a trained interviewer. Raphael et al. (2001) do not take into consideration the way traumatic experiences are interpreted as far as the pathogenic impact of childhood and possible subsequent adult victimization. The researchers further disagree with Raphael et al.’s association of childhood victimization with the dualistic concept of psychogenic pain, as Van Houdenhove and Egle believe traumatic experiences need “to be understood as one of the multiple factors that, interacting with somatic, neurobiological as well as psychosocial mechanisms may contribute to the vulnerability, initiation and/or perpetuation of various forms of medically ‘unexplained’ complaints, disability and treatment seeking” (p. 215). One factor demonstrated in these studies is that interpretation can be hazardous, as in researching childhood victimization in medically unexplained complaints, prospective studies are faced with as many methodological problems retrospective investigation.

Allostatic Loading

Allostasis, critical to survival, is the ability to achieve stability through change. McEwen (1993) refers to the long-term effect of the physiologic response to stress as the “allostatic load.” He explains through allostasis, the autonomic nervous system, hypothalamic-pituitary-adrenal (HPA) axis, cardiovascular, metabolic, and immune
systems protect the body by responding to internal and external stress (1998). According McEwen (1993) the price of the accommodation to stress can be allostatic load.

Whereas, homeostatic systems maintain blood oxygen, pH, and body temperature within narrow ranges, allostatic systems have broader ranges. McEwen (1998) explains these systems allow individuals to respond to physical states such as sleep and awake, and cope with noise, hunger, isolation, extreme temperature, prolonged anxiety and anticipation, danger and infection. The body’s response to challenge is to turn on the allostatic response, which initiates a complex adaptive pathway, and then shut it off when the threat is past. McEwen further offers the most common allostatic responses involve the sympathetic nervous system and HPA axis. Individuals with HPA hyporesponsiveness include adults with fibromyalgia (Crofford, 1994). White and Nielson (1995) report abuse or emotions of negative stress in childhood and adulthood are suggested to lead to perturbations in the HPA axis. Breslau, Chilcoat and Andreski (1996) led a five year prospective study assessing neuroticism, which for the purposes of their study is the disposition to experience and report aversive emotions. The researchers found for women, the risk of developing migraines increased in direct proportion to baseline neuroticism scores. This suggests negative emotional states are not simply correlated with pain, but also serve as risk factors to increase the likelihood of pain onset or exacerbation.

Patients who have FM may share alterations in the central nervous system mechanisms concerned with the antinociceptive response to sensory stimulation (Mayer, 1999; Clauw & Chrousos, 1998). In addition, Mayer (1999) reports brain
mechanisms involved with the regulation of attention may determine whether predominant symptom expression involves the musculoskeletal system, gastrointestinal system, or both. Patients with FM demonstrate a hypersensitivity to somatic stimuli. In the functional syndrome of FM, it remains to be determined whether neuroendocrine alterations play a direct role in symptom generation, specifically with sigmoid stimulus (Chang et al., 1998), more likely they play a role in the altered feedback from the periphery to the brain, modulating the output of emotional motor system to stress (Mayer, 1999).

Treatment approaches aimed at central alterations, including cognitive behavioral approaches, are more likely to result in global symptom improvements (Mayer, 1999; Clauw & Chrousos, 1998). Allostatic loading can be reduced, by having physicians and health care providers assist their patients in learning coping skills, personal limitations, and relaxation techniques (McEwen, 1998), and in effect, through a multidisciplinary approach become empowered patients. Control over job and work environment, decrease in isolation, increase in social support and enhanced coping skills are also interventions to consider in reducing allostatic load.

Counseling in Chronic Pain Treatment

Cognitive-Behavioral models of pain treatment propose perception of control as a critical moderator between adaptation and pain. Turner and Chapman (1982b) comment a basic assumption is cognitions (attitudes, beliefs and expectation) people maintain in particular situations can determine their emotional and behavioral reactions to those situations. As cognitive (significance of pain for the individual) and emotional
variables (anxiety) influence the pain, the modification of cognitions can be used to alter the pain experience. Assessing patients’ coping skills, thinking, belief patterns and behavioral reactions to pain is important for treatment. Cognitions are based on attitudes, beliefs and expectations developed by experience. Control over pain is a frequent goal of treatment; developing and implementing coping strategies to deal with pain and improve adjustment will aid in perception that pain is controllable. Under the assumption that both the private suffering associated with pain and the overt pain behaviors are significantly influenced by such factors as attention, expectancy, beliefs, and assumptions, cognitive-behavioral therapy has been applied to problems associated with people suffering from chronic pain.

Ellis’ (1971; 1962) Rational Emotive Therapy, a likely forerunner of current cognitive-restructuring approaches, is a cognitive behavior therapy recognizing affective states being derived from cognitive processes, followed by modeling of corrective alternatives. Cognitive-behavioral interventions for pain management build on the premise that developing and implementing a variety of coping strategies for dealing with pain will improve adjustment to chronic pain, including the perception that pain is controllable (Haythornthwaite et al., 1998).

Coping Strategies

The ability to implement a number of coping strategies is assumed to be beneficial specifically in determining beliefs about pain as a controllable stressor. Existing coping literature predominately identifies maladaptive pain coping strategies (Jensen et al., 1991), but Haythornthwaite et al. (1998) attempted to determine whether specific pain coping strategies and an individual’s flexibility in coping with pain were
associated with greater perceptions of control over pain. Chronic pain patients in an inpatient facility were administered the Multidimensional Pain Inventory, the Survey of Pain Attitudes, and the Coping Strategies Questionnaire. Stepwise multiple regression analyses were used to predict perceived pain control from measures of pain severity and coping. Praying and hoping were the most frequently reported strategies. Coping self-statements and reinterpreting pain sensations predicted greater perceptions of control over pain, after controlling for pain severity and education. Ignoring pain sensations predicted a lower perception of control over pain. The researchers concluded regardless of pain severity, certain pain coping strategies, specifically coping self-statements (“I tell myself to be brave and carry on despite the pain”), are important components for cognitive-behavioral interventions for chronic pain management (Haythornthwaite et al., 1998). These strategies especially enhance perceived control and self-efficacy, which are factors of considerable importance and goals for patient empowerment for individuals with chronic pain.

Shifren et al. (1999), researching individuals with rheumatoid arthritis, hypothesized intellectual functioning is directly related to mental health; further, intellectual functioning may be indirectly related to mental health through self-efficacy and pain. Researchers have hypothesized individuals who are less educated may have fewer cognitive resources available for use and more doubt in their ability to deal with their disease; in turn this may lead to poorer mental health (Park and Jones, 1997; Lorig et al., 1989). Moreover, they may perceive themselves as less able to perform daily living activities which could minimize pain and disability. The Shifren et al. (1999) study found higher intellectual functioning was related to more positive mental health
and less negative mental health, and individuals who were more self-efficacious reported more positive mental health and less negative mental health. One might postulate individuals with more educational cognitive resources available for use, in fact have better coping skills and therefore more positive mental health, which better prepares them to handle a situation of chronic pain.

Although there is little research addressing the interactive relationship between coping and pain, the research that does exist is unclear (Jensen et al., 1992; Jensen & Karoly, 1991). Over periods of time individuals’ experience of pain will vary. Moreover, coping strategies and possibly perceptions of control will all vary within the same individual across situations. Unruh et al. (1999) studied the impact of gender on threat or challenge appraisal of pain and pain coping strategies. The women and men in the sample were better educated than people in the community and were more likely to be employed. Researchers determined, though there were slight differences, ratings tended to be similar between genders. Women, however, reported significantly more problem solving abilities, social support, positive self-statements, and palliative behaviors than did men.

Chronic pain may be conceptualized as a stressor to which individuals demonstrate diverse adaptations from minor disruptions in daily life to total disability. Strategies of coping, both behavioral management and cognitive activities, are necessary to deal with or manage specific stressors such as pain. Meichenbaum and Cameron (1974), when researching reduction of anxiety, found that a greater
persistence of treatment efficacy, more generalization, and improved treatment effects were obtained, when standard behavior therapy was combined with a self-instructional package.

Stress Inoculation Training (SIT), developed by Meichenbaum and Turk in 1976, is a therapy package used in the counseling field to help clients control anxiety, anger and pain. This package uses imagery methods, educational rationales, and planned self-instructions for coping with pain. Other cognitive and behavioral methods are aimed at components of the gate control theory of pain (Melzack & Casey, 1968; Melzack & Wall, 1965), which specifically includes psychological factors as an integral aspect of the pain experience, as well as emphasizing central nervous system mechanisms. The gate control theory essentially provides a physiological foundation for psychological factors in chronic pain. Meichenbaum and Turk (1976) suggested the following: relaxation training assists in affecting the “sensory-discriminative” component of pain; by training clients to use distractive techniques in order to combat the negative affect accompanying pain the “motivational-affective” component is addressed; and finally, the “cognitive-evaluative” component of pain is affected by influencing clients’ expectancies by helping them plan different self-instructions which may later be used to cope with pain.

Haythornthwaite et al. (1998) comment that further research needs to address whether specific coping strategies are adaptive only at certain levels of pain. If a strategy cannot effectively be used at high levels of pain as it works only at low levels
of pain, this information must be passed on to the patient and incorporated into their
treatment plans. Failure to do so could result in discouragement and possibly premature
or inappropriate termination of coping.

Support Groups for Chronic Nonmalignant Pain

Little research exists about support groups for individuals with chronic
nonmalignant pain. Both positive and negative effects have been attested to for support
group participants; however, the negative consequences for participants are of particular
concern. Behaviorally, pain support groups may reinforce pain behaviors, pain-related
dysfunction and reinforce the sick role. Cognitively, if a group member has a
disempowering focus, it could foster a sense of helplessness leading members toward
adverse psychosocial and functional consequences. Subramaniam et al. (1999) found
positive results in their study of pain support groups emphasizing general support in a
person’s life does not necessarily ensure pain-specific support. The researchers found
when the family is the primary support system the family may lack the coping resources
required to support a person in pain.

In Subramaniam et al.’s (1999) study, group membership was associated with a
decrease in pain-related visits to family physicians. Successful support groups are
frequently self-governed rather than professionally led (Jacobs & Goodman, 1989);
therefore, there may be a valuable role for health professionals in providing input when
invited, and helping to guide, support, and assist group leaders in the development and
maintenance of a positive group focus on coping, raising self-esteem, and maximizing
function (Subramaniam et al., 1999).
Bernard et al. (2000) surveyed 270 participants in FM support groups from Washington, Illinois and Pennsylvania to collect information regarding quality of life issues. On a ten point scale with ten being the best possible rating, patients ranked past quality of life as an 8.6, present quality of life as a 4.6, and future quality of life (if their FM were to be cured) as a 9.2. Of those who were separated or divorced, almost 94% indicated this factor was due to the FM. Seventy-one percent of the respondents indicated FM had adversely affected their sex lives. FM also had a negative impact on mental health and career, and many reported a lack of social support. Most of the respondents reported a variety of positive coping responses including: talking to friends, praying, exercising, hobbies, relaxation techniques, talking to a professional, and meditation. However, 12% admitted to using alcohol to escape from FM symptoms, and 22.2% had considered it; the majority of the participants did not have a history of alcohol abuse prior to the diagnosis of FM. One-third of the participants reported using nonprescription drugs to escape the FM symptoms and 34.6% had considered it; most of the participants had no history of nonprescription drug abuse. Since the onset of FM, 37.4% of the participants reported they had contemplated suicide, and 63% had never contemplated suicide before developing FM. Moreover, when asked what they wanted from health care professionals, respondents reported needing more support, better educated health professionals, for people to believe that FM exists, more funding for research and better diagnostic tools. These results do indicate people with FM have generally negative attitudes about their health care providers. Further, the Bernard et al. (2000) study supports the literature indicating people with FM need to be empowered to manage their symptoms (Clauw, 1995; Wilke, 1995; Bennett and McCain, 1995;
Burckhardt et al., 1994). Patients who are able to manage their symptoms effectively tend to feel a sense of control over their lives that many FM patients believe they have lost when they acquired the disease.

Summary

Life stressors, quality of life, abuse and trauma can impact and modify personality, affecting an individual’s perception of self and health, which is further complicated by chronic pain. Functional symptoms and syndromes are often considered to be related to stress, depression, anxiety or psychosomatic reaction, which can lead to greater frustration and confusion to the patient and all involved in their treatment. Allostatic load refers to the cost of adaptation to a stressful environment (McEwen, 1999), which elicits repeated and at times prolonged adaptive responses or allostasis in the short run but may cause wear-and-tear on the brain and body (Salt, 2001).

Fibromyalgia, a functional syndrome, is related to allostatic load.

Fibromyalgia and chronic pain are complex medical phenomena taking a toll on the medical system. Psychological distress associated with symptom severity contributes to an individual’s decision to seek medical treatment. By determining factors common to women with FM, mental health professionals may be able to offer increased pain support and psychological symptom relief; thereby, reducing this population’s reliance on the medical care system. Strategies of coping, both behavioral management and cognitive activities, are necessary to deal with or manage specific
stressors. Development and implementation of coping strategies to deal with pain and improve adjustment will aid in perception that pain is controllable, thereby, reducing the allostatic load and improving the quality of life for patients with fibromyalgia.
CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

The purpose of this study is to contribute to the body of knowledge concerning chronic pain literature, specifically, factors associated with women diagnosed with fibromyalgia syndrome. Women who have been diagnosed with fibromyalgia syndrome (FM) were assessed as to their levels of coping skills and anxiety and demographic information including history of abuse and trauma. Subject pools include: (a) FM support group, (b) individual counseling, and (c) no counseling or medical treatment only. The fundamental research hypothesis is: Women who have been diagnosed with fibromyalgia syndrome and have experienced significant abuse or trauma will have lower levels of coping and higher levels of anxiety than women who have experienced less trauma or abuse. Further, women with lower levels of coping and higher levels of anxiety will have higher total scores on the Fibromyalgia Impact Questionnaire.
This chapter describes how the research was conducted. A survey format with three established instruments and one questionnaire designed for the purposes of this study was used. A control group was not used or required as there was no treatment or manipulation of an independent variable. The research questions addressed in this study are as follows:

(1) What demographic characteristics describe the female subjects diagnosed with fibromyalgia in the obtained sample?

(2) From the selected demographic information on the Fibromyalgia Questionnaire, which variables can be identified as statistically significant predictors of higher impact on the Fibromyalgia Impact Questionnaire?

(3) Which variables describing subjects’ current life situation strongly correlate with the Fibromyalgia Impact Questionnaire?

(4) Can the impact of fibromyalgia, as measured by the Fibromyalgia Impact Questionnaire, be predicted by the individuals’ scores on the Coping Strategies Questionnaire and State-Trait Anxiety Inventory (Trait form only)?

Population and Sample

Participants were adult women diagnosed with fibromyalgia syndrome drawn from three subject pools: a local fibromyalgia support group formed through the National Arthritis Foundation; women attending individual counseling at the Association for Psychotherapy, Inc.; and women receiving no therapy or medical treatment only. The different types of treatment were treated simply as descriptive independent variables. The initial goal was to survey 25 participants for each level of
treatment having a total of 75 female participants who have been diagnosed with fibromyalgia syndrome. A total of 115 women ranging in age from 27 to 65 and having a mean age of 48.5 completed and returned survey packets.

Of the 115 respondents, twenty-three women participating in a local FM support group formed through the National Arthritis Foundation returned the survey packet. This researcher attended meetings to introduce the study and coordinated with the moderator to inform group members, who were not in attendance, about the survey opportunity. Four of the participants responded they had attended both individual counseling, as well as, an FM support group in the last 6 months. Participants willing to take the survey were provided envelopes with return postage.

All adult women with fibromyalgia attending individual counseling at the Association for Psychotherapy, Inc. were invited by their psychologist or licensed professional clinical counselor to participate in the study. Women who agreed to fill out the survey were able to complete the survey in the corporation’s conference room at their leisure, take the packet home and return it by mail, or return it at their next appointment. A total of twenty-six women from this treatment type returned completed surveys.

The third treatment type included women with FM who received medical treatment only, or women who were informed of the study by word of mouth. These participants were notified about the study through their medical practice or by acquaintances, and were invited to participate in study. The sixty-two participants comprising this treatment type returned completed surveys to the medical offices or mailed them with the provided return envelope.
Data Collection

A survey method of research was used to collect the data for this correlational study. The survey packets included a letter briefly explaining the study, and thanking the participants in advance for their time and effort. Also included in the packets were measures of (a) coping strategies (Coping Strategies Questionnaire [CSQ]), (b) trait anxiety (State–Trait Anxiety Inventory [STAI], Trait form only), (c) degree of impact of the FM syndrome on participants’ lives (Fibromyalgia Impact Questionnaire [FIQ]), and (d) a demographic questionnaire. Completion of the survey materials was expected to take 40-60 minutes; however, many of the participants indicated by way of note that the entire packet of materials took less than 30 minutes to complete. Data collection occurred over the course of approximately two months. Once the surveys were returned, the materials were scored by this investigator and entered into a data file for statistical analysis.

Variables

Dependent Variable

Impact of FM Syndrome: The subscales on the FIQ are listed as follows: Physical Impairment, Feel Good, Work Missed, Do Job, Pain, Fatigue, Stiffness, Anxiety and Depression. The scores on this instrument are interval. The total score on the FIQ will be a dependent or criterion variable. The variable is continuous with interval scaling.
Independent Variable

**History of Abuse and Trauma:** The Fibromyalgia Questionnaire (FMQ) has a History of Abuse and Trauma subscale. These “yes/no” questions are individually categorical in nature; however, the twenty-seven questions in this section of the Fibromyalgia Questionnaire will be summed to comprise a total score, creating an interval variable.

**Demographic and Biographic Variables:** Demographic variables on the Fibromyalgia Questionnaire include the following areas: age and ethnic background, education, marital status and effect of FM on the relationship, household income, personal habits, physical and emotional health, perceptions of abuse and trauma. Race, marital status, history of sexual and/or physical abuse and trauma are nominal variables. Age, marital status, mental health and depression data, suicidal ideation information, and personal habits are ordinal variables; however, the variables of household income, number of children, and length of diagnosis are interval variables. The role of the demographic and biographic variables is to be descriptive in nature.

**Mediating Variables**

**Coping Strategies:** The subscales on the CSQ are listed as follows: Total Coping Score, Diverting Attention, Pain Sensations, Coping Self Statements, Ignoring Sensations, Praying/Hoping, Catastrophizing, Increase Behavioral Activity, and Filler Items. Scores on the subscales are interval in nature as is the total score on the CSQ. The CSQ consists of 50 items scored on a seven-point scale. The total score is a continuous variable with interval scaling.
Anxiety: The STAI contains two scales the A-State and A-Trait. Scores on this instrument are interval variables. For purposes of this study, only the Trait form will be used, as this researcher is predominately concerned with the more stable trait than transitory emotional state anxiety. The inventory consists of 20 items scored on a four-point scale. The total score on the Trait form of the STAI will be a dependent or criterion variable. The variable is continuous with interval scaling.

Instrumentation

The research tools used for the purposes of this study were the Coping Strategies Inventory (CSQ), the State-Trait Anxiety Inventory (STAI), the Fibromyalgia Impact Questionnaire (FIQ), and a demographic instrument, Fibromyalgia Questionnaire.

Assessment Instruments

Coping Strategies Inventory (CSQ): The CSQ (Rosenstiel & Keefe, 1983) is a 48-item checklist on which subjects indicate the degree they utilize six cognitive and two behavioral coping strategies: Reinterpreting Pain Sensations, Ignoring Pain, Diverting Attention, Coping Self-Statements, Increasing Activity Level, Catastrophizing, Praying or Hoping, and Increasing Pain Behavior. Seven subscales contain items describing different types of coping strategies. Catastrophizing is the eighth subscale, which consists of items with statements such as “it is terrible and I feel it is never going to get any better.” Participants rate how often they use each strategy on a 7-point scale. This instrument also contains two one-item scales related to the subjective ability to control and decrease pain or perceived coping effectiveness. The CSQ is a widely used instrument for the assessment of pain coping strategies (Jensen et
al., 1991; Dozois et al., 1996; Snow-Turek (1996), and Swartzman et al. (1994) refer to the CSQ as the most widely used instrument to assess coping with pain.

Haythornthwaite (1998) used the CSQ, to research individuals’ strategies for dealing with pain. Individuals who used predominately one strategy for dealing with pain scored on the low end of the CSQ; however, those who used multiple strategies for dealing with pain scored on the high end of this measure. Coping self-statements and reinterpreting pain sensations predicted greater perceptions of control over pain, after controlling for pain severity and education. Blalock et al. (1993) using the Coping Strategies Questionnaire examined coping flexibility across four pain-related problem areas (daily activities, work, leisure activities, and social relations) with patients suffering from rheumatoid arthritis. Similar results to the Haythornthwaite (1998) study were found, as individuals who predominately used one method for dealing with pain scored on the low end of the measure. Further, Blalock et al. (1993) found patients using a greater diversity of coping mechanisms demonstrated better psychological adjustment.

Dozois et al. (1996) factor analyzed the CSQ scales to devise composite indices, and the three resultant factors were compared to the individual scales in the prediction of pain. The relative predictability depended on which outcome measure was used to define adjustment. The only individual scale to predict psychological distress was Catastrophizing. Pain control and Rational Thinking (factor II) strongly predicted psychological adaptation. The pattern of scores suggest individuals who tend to use this type of coping are less likely to experience psychological distress and more likely to acquire employment, than those who do not (Dozois et al. 1996). Factor III
(Helplessness/Emotion-focused Coping) significantly predicted disability perception, functional status and return to work. Only factor I (Cognitive Coping and Suppression) did not emerge as a significant variable in the prediction of adjustment for any of the outcome measures.

Lazarus and Folkman (1984) have a concept of catastrophizing, which is less a coping strategy than a reflection of appraisal processes. High scores on the catastrophizing scale reflect high intensities of disease-related anxiety, negative evaluations of the pain, and patients’ negative expectancies about their own coping ability. Stone and Kennedy-Moore (1992) argue summary scores of coping strategy scales are not appropriate, as items in subscales may not covary. Further, researchers comment assessing coping is more similar to behavioral assessment than assessing “trait-like” variables.

**Reliability.** The reliability of coping measures is typically evaluated on the basis of internal consistency. Rosenstiel and Keefe (1983), Keefe et al. (1989), and Gil et al. (1989), show alpha coefficients for all possible subscales ranging from 0.69 to 0.89, indicating adequate internal reliability. Test-retest reliability ranges from 0.68 to 0.91 (Main & Waddel, 1991; Wilke, 1995) with retest after one day.

**Validity.** Concurrent validity has been extensively studied and supported. A number of studies lend support to the predictive utility of the CSQ for patients in pain (Keefe et al., 1987; Gil et al., 1989); however, the utility of the composite or individual scales depended on which outcome was used to define adjustment (Dozois et al., 1996).
State Trait Anxiety Inventory (STAI): According to Spielberger (1989) the STAI has appeared in more than 3000 studies. The STAI consists of two separate self-report scales that measure state anxiety and trait anxiety (Spielberger, Gorsuch & Lushene, 1969). The instrument was developed as a research tool for use with non-psychiatrically disturbed adults. The A-Trait scale consists of 20 statements asking subjects to describe how they generally feel, and the A-State scale consists of 20 statements asking the subjects to describe how they feel at a particular moment in time. For items on both inventories, subjects rate themselves on a four-point scale to what degree they feel each symptom generally. Categories on the A-State scale are: (1) not at all, (2) somewhat, (3) moderately so, and (4) very much so. Categories on the A-Trait scale are: (1) almost never, (2) sometimes, (3) often, and (4) almost always. Total scores on the Trait form range 20-80, higher scores relate to greater anxiety.

Although the STAI is a popular measure of anxiety, some research exists suggesting the trait scale may assess depression, as well as anxiety. Beiling et al. (1998) found good support for this notion. The researchers found the trait scale does not assess pure anxiety but includes items reflecting depression and general negative affect. One set of items assesses anxiety and worry, whereas, the other assesses sadness and self-deprecation. The STAI is a widely used instrument with reasonable reliability and validity. For this study, the STAI Form Y-2 will be used to assess trait anxiety.

Reliability. Five of the items on the STAI are used in both scales; three of these have the same wording and two contain the same key terms. The remaining fifteen items on each scale are sufficiently different in content and/or connotation to be
regarded as independent items (Spielberger et al., 1969). Test re-test correlations for the A-Trait are high, ranging from 0.73 to 0.86. This instrument is sensitive to transitory changes in affect states; as might be expected A-State has a lower test-retest correlation than the A-Trait, and a median Pearson r of 0.32. Internal consistency, in terms of the K-R coefficient, ranges 0.92 to 0.93 for the A-State scale (Spielberger et al., 1969).

Validity. Spielberger et al. (1969) report the A-Trait scale shows a correlation of 0.75 with the IPAT Anxiety Scale (IPAT) and a correlation of 0.80 with the Taylor’s Manifest Anxiety Scale (TMAS). Both the IPAT and the TMAS are reported as measures of Trait anxiety. Spielberger (1983) reports the concurrent validity of the STAI-T, Form Y, with other anxiety questionnaires ranges from 0.73 to 0.85. Spielberger (1983) reports that two scales on the STAI appear to have high discriminant and convergent validity with other measures of anxiety and related constructs.

Fibromyalgia Impact Questionnaire (FIQ): The FIQ (Burckhardt, et al., 1991) was developed to measure FM patient status, progress and outcomes. This assessment and evaluation instrument contains 20 items, the first 11 items comprise the physical functioning scale. Each item is rated on a 4-point Likert-type scale. Items 12 and 13, ask the patients to mark the number of days they felt well, and number of days they were unable to work due to FM symptoms. Items 14 through 20 are numerical scales marked in 10 increments, on which patients rate work difficulty, pain, fatigue, morning tiredness, stiffness, anxiety and depression (Burckhardt et al., 1991). The higher the total score on the instrument, the greater the impact of the syndrome on the individual.
The FIQ total score has shown change in the desired direction as a result of treatment in experimental studies. Fallon et al. (1999) used the FIQ to evaluate patients with Post-Lyme Disease Syndrome (PLDS). They found PLDS patients to demonstrate statistically significantly greater levels of impairment than controls on the FIQ total score. FM patients demonstrated a statistically significantly greater level of impairment than controls as well, but scores were also significantly higher than PLDS group on FIQ total scores. Results suggest a modified FIQ may be useful in evaluating PLDS patients.

The FIQ appears to potentially be a valuable addition to outcome measurement in FM research and clinical care. The instrument has evidence of construct validity, adequate test-retest reliability, and construct relevance. More importantly, it is short in length and duration and recognizes job performance, fatigue and morning tiredness.

**Reliability.** Internal consistency estimates range 0.72 to 0.88, for the eight item scale, on the English, Swedish and German versions. Test-retest correlational coefficients over a one-week interval ranged 0.56 to 0.95.

**Validity.** Concerning content validity, Burckhardt, Clark, and Bennett (1991) report a low percentage of missing data on the English version. Patients, on the first version, were allowed to skip the two job related questions if they did not work outside the home. This has since been revised. The FIQ has been correlated with Arthritis Impact Measurement Scales (AIMS) subscales, Health Assessment Questionnaire (HAQ) disability scale, Nottingham Health Profile (NHP), disease severity, global well-being, tender point scores and dolorimetry. In a Canadian sample, the FIQ was shown to predict disability. Construct validity correlations range from 0.30 to 0.70. The
ability of the FIQ to discriminate between FM patients and healthy controls is highly significant on all items on the English version. Post-Lyme Disease patients have scored significantly differently on the FIQ than healthy controls.

Fibromyalgia Questionnaire (FMQ): This demographic instrument information is an 80-item questionnaire. The FMQ is organized into two sections: Demographic and History of Abuse and Trauma. Items on the History of Abuse and Trauma scale may be scored individually, or as a whole to comprise a total a score.

A number of studies have evaluated the impact of life events and trauma on women with fibromyalgia (e.g., Anderberg, 2000; Bernard et al., 2000; Finestone, 2000; Golding, 1999; McBeth et al., 1999). For instance, Aaron et al. (1996) concluded psychological distress for those diagnosed with FM is strongly associated with symptom severity. Multiple lifetime psychiatric diagnoses may contribute to individuals’ decisions to seek medical care for FM in tertiary care settings. Bernard et al. (2000) surveyed 270 participants in FM support groups from across the country regarding quality of life issues. Similar “quality of life” or life event issues are considered in the FMQ. Studies such as these provided direction and information for the Fibromyalgia Questionnaire.

The FMQ concentrates on individuals’ perception of and possible history of abuse and trauma. Finestone et al. (2000) found women with a history of childhood sexual abuse reported more chronic pain symptoms and utilized more health care resources compared to nonabused control subjects. Of the abused women in this study, there was a significant association with the diagnosis of fibromyalgia. These researchers noted individuals with FM who reported sexual abuse had a greater severity
of the illness than individuals with FM not reporting abuse. Information collected from
the FMQ in combination with the other instruments utilized in this study may offer
further support or insight into abuse and trauma and FM symptom severity.

Statistical Analysis

Statistical data were computed using the windows version of the Statistical
Package for Social Sciences (SPSS). Descriptive, regression and correlational data
were reported for demographic, dependent and independent variables. The following
diagram illustrates the path diagram for the hypothesized relationships:

I.V.          M.V.        D.V.  
Anxiety  
History of Abuse and Trauma ↔ ↑↓ → Fibromyalgia Impact
Coping

Figure 3.1: Path Diagram

In the case of this study, the independent variable is History of Trauma and
Abuse which will be tested after accounting for the effect of the mediating variables:
anxiety, and coping. This researcher proposed that an increased score on the
independent variable is indicative of an increased score on the dependent variable.
Further analysis of the research questions follow:
Research Question One

What demographic characteristics describe the female subjects diagnosed with fibromyalgia, in the obtained sample?

The purpose of the first research question is to properly describe the obtained sample, and better understand its demographic characteristics. Different properties of the sample were shown graphically using both frequency and count histograms, as well as, pie charts. The count histogram illustrate the data in actual counts, i.e. the whole histogram represents the total number of participants; whereas, the frequency histogram represents the data in percentages, thus the entire histogram always represents 100%. There are advantages and disadvantages to both. A count histogram is more useful for actual comparisons in total number of responses, but can be misleading if there is a comparison made between a large and small sample. Moreover, a frequency histogram can be a better tool for comparisons between the samples as it illustrates the scaled counts and relative frequencies. Unfortunately, in that case, the information about the specific size of the sample is lost. Although similar in intention, while histograms are used to illustrate quantitative variables, pie charts are used to depict qualitative variables.

To further summarize the data, descriptive statistics such as mean, median, and standard deviation were utilized. Mean and median are measures of central tendency. The mean reports the typical (average) value of the data; however, it is dependent on extreme values, and can be misleading. On the other hand, the median is a more robust measure, and is not influenced by extreme values and therefore might more accurately represent the true center of data. To describe the spread of observed data, standard
deviation will be reported. A smaller standard deviation indicates a small spread of data, i.e. very similar responses for each subject; whereas, a high standard deviation represents a large spread of data, i.e. substantially different responses from the subjects.

These statistical tools will be used not only for all variables observed in the sample, but also for exploring interactions between selected variables using interactive histograms. For instance, the data can be divided into subsamples by the highest level of education completed and scores on the FIQ, or the number of comorbid diseases and impact of FM as measured by the FIQ. Findings will be summarized for a more complete understanding of the obtained sample.

Research Question Two

From the selected demographic and biographical information on the Fibromyalgia Questionnaire, which variables can be identified as statistically significant predictors of higher impact on the Fibromyalgia Impact Questionnaire?

The purpose of this question is to identify those variables describing demographic and biographic information about the participants in the study which are statistically significant predictors of FM as measured by the FIQ. To obtain such information, the regression analysis is most suitable. A regression model is a set of statistical tools assessing relationships between independent quantitative variables and one dependent quantitative variable. Even though regression analyses and correlation analyses are often use in the same context, the intent of a regression analysis is to identify variables which can be used to predict the dependent variable. In the case of this research, the FIQ variable is the dependent variable.
Since twenty-three variables were used as independent variables to predict FIQ, the most appropriate method to estimate significantly important predictors is stepwise regression estimation. This is a method of choosing the best independent variables for the regression model, and begins with selecting the single most significant predictor. The next most significant independent variable is added to the model increasing the prediction power of the new model. This process continues until there is no variable to select which could significantly improve the prediction power of the model. This method actively creates the best prediction model for the selected dependent variable, and it is the most suitable analysis of the problem for research question two.

**Research Question Three**

Which variables describing subjects’ current life situation strongly correlate with the Fibromyalgia Impact Questionnaire?

FM has a strong effect on subjects’ lives. The purpose of this question is to identify areas of participants’ lives which are strongly affected by having FM. To expose such variables, the correlation coefficient between each variable and FIQ were determined. Correlation coefficients are used to indicate the strength and the direction of association between two variables, and are used in situations when direction of causation is difficult to determine. The typical method of estimating the coefficients of correlation is Pearson’s coefficient ‘r’. This estimate assumes the samples involved have been drawn from populations that are normally distributed, in the case of this research question the independent variables are dichotomous and the dependent variable is continuous; therefore, the most appropriate method of correlation is Pearson’s Point Biserial estimate (Vogt, 1993). The Pearson’s Point Biserial estimate will be used to
analyze the correlation coefficients in the case of this research question, and will be
tested to determine whether it equals to zero on the significance level of $\alpha=.05$.

**Research Question Four**

Can the impact of fibromyalgia, as measured by the Fibromyalgia Impact Questionnaire, be predicted by the individual’s scores on the Coping Strategies Questionnaire and State-Trait Anxiety Inventory (Trait form only)?

The goal of this question is to determine whether the CSQ and the STAI can successfully be used to predict the impact of FM as measured by the FIQ. To resolve such a problem, the regression analysis is the most suitable method. Since only two independent variables are suggested in the model, a standard linear regression is conducted. The results determine if either of the independent variables, STAI and CSQ, significantly explains the FIQ.

**Internal Validity**

Internal validity refers to the confidence researchers can place in inferring a causal relationship among variables while simultaneously eliminating rival hypotheses (Gay, 1987). In other words, there is always a possibility relationships shown in the data are due to or explained by something else (Fraenkel & Wallen, 1993). As no direct manipulation of independent variables will be conducted in this study, but rather they will be controlled statistically, causality will not be able to be inferred (Campbell & Stanley, 1963). Results suggest only association and not causation.

**External Validity**

External validity refers to the generalization of the results of the study to whole population from which the sample was drawn. Since the subjects in our study are
treated as a fixed variable, i.e. as estimates of one fixed value, rather than being properly treated as random variable, i.e. as estimates of values from population distribution, the results cannot be generalized to the whole population. However, the results can be used to suggest information for the whole population. To be able to generalize to the whole population, the subjects would have to be treated as random variables and a whole range of other statistical tools would need to be used. However, that would require testing each subject on several occasions and would expand the study beyond the range of this dissertation and require substantial financial and computational involvement.

Summary

This chapter demonstrates the methodology used to answer the research questions. The study was conducted using adult women who have been diagnosed with fibromyalgia. Each of the one hundred and fifteen subjects completed four instruments measuring coping skills, anxiety, impact of fibromyalgia and biographical information. The following chapter will provide results of these analyses.
CHAPTER 4

RESULTS

The purpose of this study is to investigate women diagnosed with fibromyalgia syndrome (FM). Participants were queried as to demographic information, abuse and trauma, coping, anxiety and impact of FM on their lives. The central position of the study is women with lower levels of coping and higher levels of anxiety have higher total scores on the Fibromyalgia Impact Questionnaire.

This chapter presents the results of the data analyses, which address each research question in turn. Statistical data were computed using the Statistical Package for Social Sciences (SPSS) Windows version. The data were analyzed as discussed in Chapter 3, and each research question is presented in turn. The research questions are as follows:

1. What demographic characteristics describe the female subjects diagnosed with fibromyalgia in the obtained sample?

2. From the selected demographic information on the Fibromyalgia Questionnaire, which variables can be identified as statistically significant predictors of higher impact on the Fibromyalgia Impact Questionnaire?
(3) Which variables describing subjects’ current life situation strongly correlate with the Fibromyalgia Impact Questionnaire?

(4) Can the impact of fibromyalgia, as measured by the Fibromyalgia Impact Questionnaire, be predicted by the individuals’ scores on the Coping Strategies Questionnaire and State-Trait Anxiety Inventory (Trait form only)?

Participants

Participants were women in a Midwestern State, diagnosed with fibromyalgia syndrome. A survey was distributed asking subjects to voluntarily and anonymously participate in the study. A total of 150 test packets were distributed either through the mail, through a psychological practice or through medical offices. Of the 150 survey packets distributed, 115 packets were returned completed in an approximately two-month period of time, resulting in a 76.6% rate of return.

Research Question One

What demographic characteristics describe the female subjects diagnosed with fibromyalgia in the obtained sample?

Demographic Characteristics

The first research question addresses demographic characteristics of the obtained sample. The overall sample consisted of 115 voluntary and anonymous participants. Of the women participating in the study, 4 attended both individual counseling and support groups in the last six months. Twenty-three women participated
in an FM support group within the last six months, whereas, 26 chose to attend individual counseling. The majority (n=62) of the sample participated in neither individual counseling nor support groups within the last six months.

Of the sample, 55.7% considers itself as living in a suburban setting, although 22.6% live in an urban area and 21.7% reside in a rural location. Figure 4.1 illustrates the distribution of the participants’ perceived areas of residence.

![Figure 4.1: Location of Residence](image)

**Age and Ethnic Background**

The mean age of the sample was 48.6 years, with a range from 27 – 65 years. Of the 115 participants, 105 or 91.3% of the women were Caucasian. African-American’s accounted for 5.2% of the participants, whereas, Asian and Pacific Islanders less than 2%. Mixed Race and Other each accounted for less than 1% of the sample. Figure 4.2, illustrates an obvious majority of Caucasian participants.
Figure 4.2: Ethnicity

**Education**

When asked, “what is the highest level of education you have completed?” fifty-two participants or 45% reported their highest degree of education achieved as “high school graduate. Figure 4.3, graphically depicts the sample’s majority of high school graduates. Twenty-seven participants reported completing bachelor degrees, and 23 associate degrees. Five participants completed a master’s degree, whereas four earned a Ph.D. Of the entire sample, four participants reported having “less than a high school degree.”
Marital Status and Effect of FM on the Relationship

As illustrated in Figure 4.4, a significant proportion of the participants in the sample (80.9%) reported themselves as “married or living with a significant other.” Three respondents reported they have never married or are living alone, and 19 individuals reported they were “previously married (separated, widowed, divorced).” When asked if FM contributed to the relationship, 83 participants reported the relationship experienced “some stress or strain” due to FM. Seventeen participants reported there was “no effect,” but 15 participants reported FM “dominated the relationship.”
Fifty-seven percent of the participants reported two people, including themselves, live in their home. Two participants reported seven individuals in the home, and the fewest number of people reported living in the home was one. Moreover, forty-eight of the participants had two children. Eighteen of the participants reported having no children, whereas, two participants reported having seven children.

**Household Income**

The variable “household income” describes overall wealth of the participants. The purpose of obtaining of such information from the subject is to investigate the relationship between FIQ and social status. Illustrated in Figure 4.5, the minimum household income is $2,000.00, the maximum is $500,000.00, mean $84,856.36, and the standard deviation is $69,074.58. Note, of the 110 participants who responded to the question, the mean household income is much larger than median household income of $73,500.00 suggesting extreme observations are present in the data. As depicted in
Figure 4.5, there is one income observation at $500,000.000. This results in a much higher mean and higher standard deviation since the spread of the data includes subjects with almost zero income and one participant with an income of a half million dollars.

![Graph showing the distribution of household income.](image)

Figure 4.5: Count histogram for household income in dollars.

Sixty-eight respondents reported two income providers, 40 cited one provider, and three participants cited three household income providers. Table 4.1 displays further information concerning the number of household providers. Although one participant left the question blank, three reported there were no income providers living in the household. Twenty-two percent of the sample receives disability, and of that portion, 34% responded their disability was in fact due to fibromyalgia.

Fifty of the respondents, 44%, reported they do not work outside of the home. Almost 15% of the sample reported working forty hours per week, and two participants
work approximately seventy hours per week. When replying to the question, “is the number of hours worked reduced due to FM?” 48.7% reported “no” while 37.4% reported “yes.”

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Std. Deviation</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>115</td>
<td>48.5826</td>
<td>48.0000</td>
<td>9.71162</td>
<td>38.00</td>
<td>27.00</td>
<td>65.00</td>
</tr>
<tr>
<td>Number of Children</td>
<td>115</td>
<td>2.1043</td>
<td>2.0000</td>
<td>1.38522</td>
<td>7.00</td>
<td>.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Number of People in Home</td>
<td>115</td>
<td>2.5652</td>
<td>2.0000</td>
<td>1.20765</td>
<td>6.00</td>
<td>1.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Number of Children</td>
<td>115</td>
<td>2.1043</td>
<td>2.0000</td>
<td>1.38522</td>
<td>7.00</td>
<td>.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Number of People in Home</td>
<td>115</td>
<td>2.5652</td>
<td>2.0000</td>
<td>1.20765</td>
<td>6.00</td>
<td>1.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Number of Household</td>
<td>114</td>
<td>1.62</td>
<td>2.00</td>
<td>.586</td>
<td>3.00</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Providers</td>
<td>114</td>
<td>1.62</td>
<td>2.00</td>
<td>.586</td>
<td>3.00</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Caffeine Consumed daily</td>
<td>115</td>
<td>2.5217</td>
<td>2.0000</td>
<td>3.01269</td>
<td>21.00</td>
<td>.00</td>
<td>21.00</td>
</tr>
<tr>
<td>Years had FM</td>
<td>115</td>
<td>11.8522</td>
<td>10.0000</td>
<td>9.00608</td>
<td>45.00</td>
<td>1.00</td>
<td>46.00</td>
</tr>
<tr>
<td>Doctor Visits in Last</td>
<td>115</td>
<td>1.9130</td>
<td>1.0000</td>
<td>2.98407</td>
<td>15.00</td>
<td>.00</td>
<td>15.00</td>
</tr>
<tr>
<td>Six Months</td>
<td>100</td>
<td>11.3400</td>
<td>9.5000</td>
<td>9.79303</td>
<td>59.00</td>
<td>2.00</td>
<td>61.00</td>
</tr>
<tr>
<td>How Long Poor Sleep</td>
<td>114</td>
<td>6.0614</td>
<td>6.0000</td>
<td>1.96106</td>
<td>12.00</td>
<td>2.00</td>
<td>14.00</td>
</tr>
<tr>
<td>Hours sleep per night</td>
<td>114</td>
<td>6.0614</td>
<td>6.0000</td>
<td>1.96106</td>
<td>12.00</td>
<td>2.00</td>
<td>14.00</td>
</tr>
<tr>
<td>Weight</td>
<td>114</td>
<td>26.0877</td>
<td>20.0000</td>
<td>36.38330</td>
<td>260.00</td>
<td>-50.00</td>
<td>210.00</td>
</tr>
</tbody>
</table>

Table 4.1: Descriptive Statistics

**Habits**

Participants were also asked to provide information concerning personal habits. Ninety-four percent of the sample consume up to six caffinated beverages daily. Less than one percent of the sample admitted to consuming 21 caffinated beverages daily, as presented in Table 4.1. The greatest number of caffinated beverages admitted to being consumed was twenty-one. Concerning tobacco usage, 24% admitted to smoking;
whereas, for almost 76% of the sample tobacco use was non-contributory. Less than 5% of the individuals sampled consume more than eight alcoholic beverages weekly.

When inquiring about average exercise routine, an equal amount of participants (n=32) reported “no physical activity because of FM related pain,” and “30 minutes of physical activity once a week.” The remaining 51 respondents reported participating in thirty minutes of exercise three times a week.

Ninety-nine of the participants marked “yes” when asked, “Do you believe you have poor or inadequate sleep?” The range of hours of sleep per night was 2 – 14; thirty percent of the sample (n=34) reporting six hours of sleep per night. Answers ranged from 2 – 61 years when participants were asked how long they had experienced poor or inadequate sleep. Sixty-two percent of the sample reported experiencing diminished sleep for up to ten years.

Weight gain due to FM was reported for 69% (n=79) of the respondents; however, weight loss due to FM was reported in only 8.7% of the women. The weight gain range was 0 – 210 pounds, with the mean weight gain reported as 27.3 pounds, as noted in Figure 4.6. The weight loss range was 0 – 70 pounds with 104 participants denying any weight loss. As evident in Figure 4.6, the data is strongly skewed to the right suggesting the sample was not drawn from a normal sample. This violation of normality is an important feature of the data set. In order to reduce the numbers of variables in the study, the four variables inquiring about weight were collapsed to form the variable “weight.” Further results are displayed in Table 4.1.
Weekly research about FM occupies 1-10 hours of 40% of the participants’ time. Almost 17% of the sample spends one hour per week researching FM. This data is also strongly skewed to the right suggesting the sample was not drawn from a normal sample and is a violation of normality. A number of women wrote beside the question offering the longer they live with FM the less time they spent researching the syndrome. Therefore, it is possible to assume for some FM patients the amount of time spent researching FM decreases as a patient’s experience with the syndrome increases.

Physical and Emotional Health

Women in the sample reported having FM from 1-46 years; the mean number of years being 11.9. Although 40% of the sample reported not visiting their family physician in the last six months, 60% of the sample reported 1 – 15 visits in the last six
months. Forty-eight percent of the participants visited their physicians 1 – 3 times in the six months prior to completing the survey. Two women each reported 8, 10, 12 and 15 visits respectively in the six months prior to completing the survey.

Forty-seven percent of the respondents reported being diagnosed with FM by a medical doctor (M.D.) or doctor of osteopathy (D.O.); whereas, 33% were diagnosed with FM by a rheumatologist. A neurologist or an alternative medicine provider diagnosed seven women each respectively. Four women reported being diagnosed by a pain specialist, and five reported “other.” The pie chart in Figure 4.7, illustrates the division of the sample by the type of individual who made the diagnosis; medical doctors and doctors of osteopathy comprise the obvious majority.

![Pie chart showing diagnosis types](image)

Figure 4.7: Who Made the Diagnosis?

When asked if participants had been diagnosed with “any other chronic illnesses or disabilities,” 71% reported they indeed experienced comorbid diseases. Of the 71%, the number of comorbid diseases ranged from 1 – 8. Thirty-four women or 29.6% of
the sample reported one comorbid disease, 22.6% reported two, and 12.2% offered experiencing three comorbid diseases. Six women reported having at least four comorbid diseases, two participants had six, and one participant reported being diagnosed with at least eight comorbid diseases. Many of illnesses listed by the participants, in order of frequency, included: “other”, osteoarthritis, chronic fatigue syndrome, irritable bowel syndrome, rheumatory illnesses, and lupus.

Participants, at a rate of 10.4% responded “yes,” when asked, “have you used illegal drugs to escape the symptoms of FM?” Eight percent of the sample admitted to misusing prescription drugs in order to escape FM symptoms.

Concerning mental health treatment, 41% of the sample reported they are currently, or had in the past, participated in mental health treatment unrelated to FM. Seventy-one percent reported they would consider individual counseling for FM. Thirty percent reported they have participated in an FM support group, seventeen percent on a weekly basis, 10.4% on a monthly basis, and 4.3% described attending a “few times a year.” For those who had not attended a support group, 43% reported they would “consider attending a support group for FM.”

Seven percent (n=8) reported they had been “hospitalized for stress or emotional problems.” Sixty-five percent of the participants reported they currently experience depression, and 50% believe their depression is a result of FM. Forty-one percent admitted to experiencing depression prior to the diagnosis of FM. Although only one participant admitted to attempting suicide because of FM, 17.4% (n=20) responded they had “contemplated suicide because of FM.”
Fifty-six participants (48.7%) reported FM had adversely affected their sex lives. Only 7.8% believed “people understand how disabling FM can be,” which means an overwhelming 92.2% believe most people do not understand the effects of FM. Forty-seven percent (n=54), believe they are a “victim” due to FM, and 27% (n=31) believe they have “been given an unfair break in life” due to FM. Eighty-two participants (71.3%) reported they “believe people think you exaggerate your symptoms.”

Abuse and Trauma

Participants were questioned about their history of trauma and abuse. Twenty-one (18.3%) reported being sexually abused as a child, and twenty-three participants (20%) reported experiencing physical abuse as a child. As an adult, 17% reported sexual abuse, while 24% reported physical abuse. One participant reported being sexually and physically abused over the course of nine years; however, as her responses did not precisely answer the question, her information concerning the question was eliminated.

Prior to age sixteen, “family illness” was admitted to at 31.3% versus .9% at “onset of FM.” “Parental divorce or separation” was affirmed at a rate of 21% prior to sixteen; however, 3.5% of the sample disclosed parental divorce or separation “at FM onset.” Ten participants reported death of a parent prior to sixteen, but almost 22% of the participants affirmed the question at onset of FM. While hospitalization for a parent or guardian occurred at a rate of almost 30% prior to sixteen, the same rate was reported at onset of FM. Only one participant respectively, admitted to being hospitalized prior to sixteen, and at onset of FM. Three participants admitted to “psychiatric care for self”
prior to sixteen, and also at onset of FM. Drug overdose for a parent or guardian prior to sixteen and at onset of FM respectively had 2.6% response rate. Almost two percent of the participants reported drug overdose of self prior to sixteen, but less than 1% admitted to the same question at onset of FM. One participant offered being placed in a treatment facility prior to sixteen; however, 2.6% were placed in a treatment facility at onset of FM.

Data indicates one participant reported being placed in foster care. Further, the study’s participants, at a rate of 4.3%, affirmed “death of spouse or partner” at onset of FM.

Further, prior to age sixteen 1.7% of the sample reported being raised by parents who argue with each other frequently, but .9% offered their parents as arguing with each other frequently at onset of FM. Less than 1% of the population reported their parents argued with them frequently either prior to sixteen or at onset of FM. More than ten percent of the participants reported parents who argue frequently with non-family members prior to sixteen, and at onset of FM the rate was 7%.

Fifty-two participants (45.2%) reported being physically punished prior to age 16, and 35.7% (n=41) reported emotional abuse; whereas, at onset, the rates were considerably lower at .9% respectively. Fourteen percent of the sample believed they were neglected prior to sixteen, and at onset of FM, one respondent affirmed the question. Almost 17% of the participants reported their parents were “negatively overprotective.” Twenty-eight percent (n=32) of the sample reported being bullied.
One participant reported experiencing a “traumatic event not mentioned” prior to sixteen, but two respondents reported experiencing a “traumatic event not mentioned” at the onset of FM.

More than half of the sample’s responses (52.2%) to the question of perception of impact of trauma on life ranged 6 – 10 on the ten point rating scale, with ten being “very severe impact.” Seven percent of the sample reported a level ten impact, 12.2% reported an eight, and 17.4% a level of six. Twenty percent of the sample reported a two or less, which implies “not severe or little effect”. The influence of trauma will be investigated further in the succeeding research questions.

**State-Trait Anxiety Inventory (STAI Trait Form Only)**

The STAI (Spielberger et al., 1969) is a mediating variable in this study describing how a participant generally feels. Subjects rate themselves of a four-point scale to what degree they feel each symptom generally. Categories on the A-Trait scale are: (1) almost never, (2) sometimes, (3) often, and (4) almost always. Total scores on the Trait form range 20-80, higher scores relate to greater anxiety. Although the STAI is a popular measure of anxiety, some research exists suggesting the trait scale may assess depression, as well as anxiety. Beiling et al. (1998) found good support for this notion.

As illustrated in Figure 4.8, the minimum measured value in our sample is 21, and the maximum value is 80. The mean value of the STAI in the sample is 46.2; median is 45, and the standard deviation is 12.43. Since both mean and median have very similar values, we can assume the sample is symmetrically distributed around the
mean and does not include any extreme observations. This hypothesis is supported by the count histogram displayed Figure 4.8, which illustrates the distribution of the scores on the STAI closely following a normal distribution.

![Count histogram of total scores on the State-Trait Anxiety Inventory.](image)

**Figure 4.8:** Count histogram of total scores on the State-Trait Anxiety Inventory.

**Coping Strategies Questionnaire (CSQ)**

The CSQ (Rosenstiel & Keefe, 1983) is a 48-item checklist, on which subjects indicate the degree to which they utilize six cognitive and two behavioral coping strategies: Reinterpreting Pain Sensations, Ignoring Pain, Diverting Attention, Coping Self-Statements, Increasing Activity Level, Catastrophizing, Praying or Hoping, and
Increasing Pain Behavior. Participants rate how often they use each strategy on a 7-point scale. Their ratings are summed for a total score. The higher the score, the higher the level of coping strategies the subject utilizes.

As illustrated in Figure 4.9, the minimum measured value in our sample is 36, and the maximum value is 193. The mean value of the CSQ in the sample is 118.1; median is 115, and the standard deviation is 30.04. Since both, mean and median have extremely similar values, we can assume the sample is symmetrically or normally distributed around the middle and does not include any extreme observations. This hypothesis is supported by the data in Figure 4.9, which illustrates the distribution of the scores on the CSQ closely follow a normal distribution.

Figure 4.9: Count histogram of total scores on the Coping Strategies Questionnaire.
Fibromyalgia Impact Questionnaire (FIQ)

The FIQ (Burckhardt, et al., 1991) was developed to measure FM patient status, progress and outcomes. This assessment and evaluation instrument contains 20 items; the first 11 items comprise the physical functioning scale. Each item is rated on a 4-point Likert-type scale. Items 12 and 13, ask the patients to mark the number of days they felt well, and number of days they were unable to work due to FM symptoms. Items 14 through 20, are numerical scales marked in 10 increments, on which patients rate work difficulty, pain, fatigue, morning tiredness, stiffness, anxiety and depression (Burckhardt et al., 1991). The higher the total score on the instrument, the greater the impact of the syndrome on the individual.

As illustrated in Figure 4.10, the minimum measured value in our sample is 15, and the maximum obtained was 115. The average value of FIQ in the sample is 57.7; median is 60, and the standard deviation is 21.26. Since both, mean and median have very similar values, we can assume that the sample is symmetrically distributed around the mean and does not include extreme observations. This hypothesis is supported by the data in Figure 4.10, which illustrates the distribution of the scores on the FIQ closely follow a normal distribution.
Interactive Graphs

The interactive graphs illustrate a relationship between the levels of one variable and value of a second variable. Many of the interactive graphs were investigated, but only a few will be presented to demonstrate possible predictive relationships between select variables and the impact of FM, as measured by FIQ.

One demographic variable, “Highest Level of Education Completed,” shows an interesting negative relationship with impact of FM. See Figure 4.11. As illustrated, the “less hs” (meaning “less than high school education”) participants score higher on the FIQ inventory than participants whose highest level of education completes was “hs” (high school education). An apparent overall relationship between “Level of Education” and “FIQ” indicates with increasing education, the impact of FM is reduced.
It can be suggested increased education corresponds with improved FM impact on the lives of the participants in the study, subsequently relating to lower scores on the FIQ measurement.

Another interesting relationship is suggested by interactive histograms of “Number of Comorbid Diseases” and FIQ scores. As expected, with an increased number of comorbid diseases, the observed FIQ scores are higher. This positive relationship may be explained by an overall decline in subjects’ general physical and emotional health and wellness, thus they may be more likely to experience higher FM impact. Figure 4.12 illustrates this relationship.
Figure 4.12: Frequency histogram of FIQ scores for groups of subjects with like numbers of comorbid diseases.
Research Question Two

From the selected demographic information on the Fibromyalgia Questionnaire, which variables can be identified as statistically significant predictors of higher impact on the Fibromyalgia Impact Questionnaire?

Analyses for the second research question were carried out in two steps. The first step investigated the relationship between FIQ and the independent variables. These independent variables include demographic variables, the inclusive “abuse and trauma prior 16” variable, and the inclusive “abuse and trauma at onset” variable. If either of the two overall abuse variables was significant, then a relationship between FIQ and each particular cause of the trauma will be investigated in the second step of the regression analysis. For the regression analysis, a stepwise regression method described in Chapter 3 will be used.

For the initial analysis, the variables hypothetically affecting FM are identified:

- Age
- Ethnicity
- Level of Education Completed
- Number of Children
- Number of People in Home
- Household Income
- Number of Household Providers
- Hours Worked per Week
- Caffeine Consumed daily
- Tobacco Use
- Consume more than Eight Alcoholic Beverages Week
- Average Exercise Routine
- Years had FM
- Number of Comorbid Diseases
- Hospitalization for Stress or Emotional Problems
- Mental Health Treatment Unrelated to FM
- Experience Depression before FM
- Hours Sleep per night
Due to the large number of variables in this analysis a stepwise regression was performed to determine the most significant variables. As depicted in the model summary illustrated in Table 4.2, the stepwise regression analysis indicated the variables, which most significantly predict the participants’ FM impact measured by the FIQ. The variables with significant R Squares include: “All Trauma prior 16”, “Average Exercise Routine”, “Number of Comorbid Diseases”, “Tobacco Use”, and “Level of Education Completed.” Demographic and biographic variables, which queried “at FM onset” were not significant and therefore were not included in the second step of analyzing this research question.
<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.500(1)</td>
<td>.250</td>
</tr>
<tr>
<td>2</td>
<td>.619(2)</td>
<td>.383</td>
</tr>
<tr>
<td>3</td>
<td>.677(3)</td>
<td>.459</td>
</tr>
<tr>
<td>4</td>
<td>.703(4)</td>
<td>.495</td>
</tr>
<tr>
<td>5</td>
<td>.725(5)</td>
<td>.525</td>
</tr>
<tr>
<td>6</td>
<td>.714(6)</td>
<td>.509</td>
</tr>
<tr>
<td>7</td>
<td>.736(7)</td>
<td>.541</td>
</tr>
</tbody>
</table>

1. Predictors: (Constant), All Trauma prior 16
2. Predictors: (Constant), All Trauma prior 16, Average Exercise Routine
3. Predictors: (Constant), All Trauma prior 16, Average Exercise Routine, Household Income
4. Predictors: (Constant), All Trauma prior 16, Average Exercise Routine, Household Income, Number of Comorbid Diseases
5. Predictors: (Constant), All Trauma prior 16, Average Exercise Routine, Household Income, Number of Comorbid Diseases, Tobacco Use
6. Predictors: (Constant), All Trauma prior 16, Average Exercise Routine, Number of Comorbid Diseases, Tobacco Use
7. Predictors: (Constant), All Trauma prior 16, Average Exercise Routine, Number of Comorbid Diseases, Tobacco Use, Level of Education Completed

Table 4.2: Model summary of variables (with “all trauma”) predicting FM impact

Table 4.2 depicts increasing significance of the model as the independent variables best explaining the FIQ were added. As we can see, a regression model with only one independent variable “All trauma prior 16” explains 25% of the dependent variable FIQ. In the search for the second best independent variable, the “Average Exercise Routine” was selected. The new model, with two independent variables (“All Trauma prior 16” and “Average Exercise Routine”), explains 38% of the dependent variable FIQ. Such an algorithm was repeated until no other variable could be added to significantly improve the model. The best final model includes five variables, (All Trauma prior 16, Average Exercise Routine, Number of Comorbid Diseases, Tobacco Use, Level of Education Completed) and explains the 54% of dependent variable FIQ. Even though, there is 46% of the dependent variable left unexplained, the model can be considered successful and used to give advice to and provide evidence for FM patients.
Table 4.3, presents the importance of each independent variable as they were added to the regression model. For example, in the final best model, the coefficient for “All Trauma prior 16” is .295, and is significant on a (.001) level. The regression coefficient for “Level of Education Completed” is -.195. The negative value may be interpreted as a negative relationship between the level of education and FIQ scores, i.e. as level of education increases, the score on the FIQ inventory decreases. Such a behavior was expected and analyzed in Research Question One. The level of significance for ‘Level of Education Completed’ is .024.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Final model</td>
<td>68.784</td>
<td>6.824</td>
<td>10.080</td>
<td>.000</td>
</tr>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Trauma prior 16</td>
<td>1.612</td>
<td>.459</td>
<td>.295</td>
<td>3.508</td>
</tr>
<tr>
<td>Average Exercise Routine</td>
<td>-5.701</td>
<td>1.991</td>
<td>-.247</td>
<td>-2.863</td>
</tr>
<tr>
<td>Number of Comorbid Diseases</td>
<td>3.165</td>
<td>1.043</td>
<td>.247</td>
<td>3.034</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>10.096</td>
<td>4.203</td>
<td>.211</td>
<td>2.402</td>
</tr>
<tr>
<td>Level of Education Completed</td>
<td>-3.663</td>
<td>1.585</td>
<td>-.195</td>
<td>-2.311</td>
</tr>
</tbody>
</table>

a. Dependent Variable: FIQ

Table 4.3: Coefficients of independent variables in best model for step 1.

In the second portion of Research Question 2, stepwise regression selected variables from the initial part of the analysis or step 1 (Average Exercise Routine, Number of Comorbid Diseases, Tobacco Use, and Level of Education Completed); however, rather than using the variable “All trauma prior 16”, the 22 individual variables which comprise the variable “All trauma prior to 16” were entered. The goal
was to find which of “traumas” experienced prior to the age of 16 years, most
influenced impact of FM on the lives of the study’s participants.

Using stepwise regression in a similar manner to the first step, we obtained the
results summarized in Tables 4.4 and 4.5. The results now indicate which particular
traumas and which demographic variables significantly effected the impact of FM on
the lives of the participants. The stepwise regression analysis concluded following
variables to be significant: “Average Exercise Routine”, “Number of Comorbid
Diseases”, “Tobacco Use”, “Emotional Abuse Prior to 16”, “Hospitalization for Parent
or Guardian Prior to 16”, and “Level of Education Completed”. As the Table 4.4
suggests, the final selected model explains 52% of the FIQ variable, similar to but
slightly lower than the regression in the first step, which explains 54% of the dependent
variable FIQ.
<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>R Square Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.451(1)</td>
<td>.203</td>
<td>.195</td>
<td>.203</td>
</tr>
<tr>
<td>2</td>
<td>.589(2)</td>
<td>.347</td>
<td>.335</td>
<td>.144</td>
</tr>
<tr>
<td>3</td>
<td>.642(3)</td>
<td>.412</td>
<td>.395</td>
<td>.065</td>
</tr>
<tr>
<td>4</td>
<td>.673(4)</td>
<td>.453</td>
<td>.432</td>
<td>.041</td>
</tr>
<tr>
<td>5</td>
<td>.699(5)</td>
<td>.488</td>
<td>.463</td>
<td>.035</td>
</tr>
<tr>
<td>6</td>
<td>.721(6)</td>
<td>.520</td>
<td>.492</td>
<td>.032</td>
</tr>
</tbody>
</table>

1. Predictors: (Constant), Average Exercise Routine
2. Predictors: (Constant), Average Exercise Routine, Number of Comorbid Diseases
3. Predictors: (Constant), Average Exercise Routine, Number of Comorbid Diseases, Tobacco Use
4. Predictors: (Constant), Average Exercise Routine, Number of Comorbid Diseases, Tobacco Use, Emotional Abuse Prior to 16
5. Predictors: (Constant), Average Exercise Routine, Number of Comorbid Diseases, Tobacco Use, Emotional Abuse Prior to 16, Hospitalization for Parent or Guardian Prior to 16
6. Predictors: (Constant), Average Exercise Routine, Number of Comorbid Diseases, Tobacco Use, Emotional Abuse Prior to 16, Hospitalization for Parent or Guardian Prior to 16, Level of Education Completed

Table 4.4: Model summary of variables predicting FM impact.

The final model as described in Table 4.5, suggests there are positive relationships between the FIQ variable and the variables: “Emotional abuse prior to 16,” “Hospitalization for Parent of Guardian Prior to 16,” “Number of Comorbid Diseases,” and “Tobacco Use.” This positive relationship suggests as the explanatory or independent variables increase the dependent or FIQ scores also increase. Thus, the model suggests more comorbid diseases, high tobacco use, high emotional prior to 16, and experiencing the hospitalization or a parent or guardian prior to 16 results in higher FIQ scores. Moreover, the FIQ score is negatively related to two variables “Average Exercise Routine,” and “Level of Education Completed.” This may be interpreted as more exercise and increased level of education achieved results in lower FIQ scores.
<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final model (Constant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td></td>
</tr>
<tr>
<td></td>
<td>66.442</td>
<td>6.303</td>
<td>10.541</td>
</tr>
<tr>
<td>Average Exercise Routine</td>
<td>-6.171</td>
<td>2.001</td>
<td>-.238</td>
</tr>
<tr>
<td>Number of Comorbid Diseases</td>
<td>4.297</td>
<td>1.053</td>
<td>.292</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>11.393</td>
<td>3.836</td>
<td>.233</td>
</tr>
<tr>
<td>Emotional Abuse Prior to 16</td>
<td>9.750</td>
<td>3.184</td>
<td>.217</td>
</tr>
<tr>
<td>Hospitalization for Parent or Guardian Prior to 16</td>
<td>8.674</td>
<td>3.359</td>
<td>.184</td>
</tr>
<tr>
<td>Level of Education Completed</td>
<td>-3.658</td>
<td>1.417</td>
<td>-.191</td>
</tr>
</tbody>
</table>

a Dependent Variable: FIQ

Table 4.5: Coefficients of independent variables in best model for step 6, Table 4.4

The goal of the second research question was to identify statistically significant predictors of higher impact on the Fibromyalgia Impact Questionnaire.

Applying the stepwise regression twice in hierarchical manner allowed us to determine such variables.

Research Question Three

Which variables describing subjects’ current life situation strongly correlate with the Fibromyalgia Impact Questionnaire?

Question three examines how the variables describing participants’ current life situations correlate with the Fibromyalgia Impact Questionnaire. The variables included in the correlations are listed as follows:
• Participation in FM Support Group
• Individual Status
• Group Status
• Public Assistance
• Disability
• Compensation Due to FM
• Hours Work Reduced due to FM
• Hours of Weekly Research
• Participation in FM Support Group
• Depression because FM
• People Think You Exaggerate Symptoms
• People Understand how Disabling FM can be
• Victim Due to FM
• Unfair Break Due to FM
• FM Adversely Affected Sex Life
• Illicit Drugs to Escape FM Symptoms
• Prescription Drugs to Escape FM Symptoms

As displayed in Table 4.6, several variables exhibit significant correlations with FM impact, as measured by the FIQ. A significant positive correlation coefficient can be found between FIQ and “Disability” (r=.521), “Compensation Due to FM” (r=.481), “Hours Work Reduced due to FM” (r=.503), “Depression because of FM” (r=.554), “People Think You Exaggerate Symptoms” (r=.219), “Victim Due to FM” (r=.330), “Unfair Break Due to FM” (r=.468), “FM Adversely Affected Sex Life” (r=.326), and “Illicit Drugs to Escape FM Symptoms” (r=.229). As noted in Table 4.6, the correlations listed are either significant at a level of 0.05 or a stronger level of 0.01.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation Coefficient</th>
<th>r</th>
<th>(Sig.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Status</td>
<td>.174</td>
<td>.063</td>
<td></td>
</tr>
<tr>
<td>Group Status</td>
<td>.143</td>
<td>.063</td>
<td></td>
</tr>
<tr>
<td>Public Assistance</td>
<td>-.244**</td>
<td>.009</td>
<td></td>
</tr>
<tr>
<td>Disability</td>
<td>.521**</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Compensation Due to FM</td>
<td>.481**</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Hours Work Reduced due to FM</td>
<td>.503**</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Hours of Weekly Research</td>
<td>.081</td>
<td>.389</td>
<td></td>
</tr>
<tr>
<td>Participation in FM Support Group</td>
<td>.142</td>
<td>.129</td>
<td></td>
</tr>
<tr>
<td>Depression because FM</td>
<td>.554**</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>People Think You Exaggerate Symptoms</td>
<td>.219*</td>
<td>.019</td>
<td></td>
</tr>
<tr>
<td>People Understand how</td>
<td>.077</td>
<td>.411</td>
<td></td>
</tr>
<tr>
<td>Disabling FM can be</td>
<td>.330**</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Victim Due to FM</td>
<td>.468**</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Unfair Break Due to FM</td>
<td>.326**</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>FM Adversely Affected Sex Life</td>
<td>.229*</td>
<td>.014</td>
<td></td>
</tr>
<tr>
<td>Illicit Drugs to Escape FM Symptoms</td>
<td>-0.011</td>
<td>.906</td>
<td></td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 4.6:
Pearson’s Correlation Coefficients (n=115)

A negative correlation coefficient (r=.244) was found between FIQ and the "Public Assistance” variable. This may be explained in two ways. First, one can read this result as public assistance is offered to those subjects with a lower impact of FM on their lives or more simply, smaller FIQ scores. However, a second interpretation is also valid in that smaller FIQ scores are result of public assistance, that is public assistance eases the impact of FM on the subject, and thus, the result is a lower score on the FIQ.
Research Question Four

Can the impact of fibromyalgia, as measured by the Fibromyalgia Impact Questionnaire, be predicted by the individuals’ scores on the Coping Strategies Questionnaire and State-Trait Anxiety Inventory (Trait form only)?

The purpose of this final research question is to determine how the impact of fibromyalgia, as measured by the Fibromyalgia Impact Questionnaire, can be predicted by the individual’s scores on the Coping Strategies Questionnaire (CSQ) and State-Trait Anxiety Inventory (STAI - Trait form only). This relationship will be investigated using standard linear regression analysis. The results are reported in Table 4.7. The scatter plot in Figure 4.13 illustrates an initial investigation of the variables to determine the suitability of standard linear regression as a method of analysis.

Figure 4.13: Scatter plot for STAI, CSQ and FIQ
Notice that scatter plots below and above the diagonal in Figure 4.13 are the same, only with flipped axes. The first scatter plot in the second row illustrates the relationship between STAI and CSQ. From the wide spread of data, it is obvious there is no relationship between STAI and CSQ, thus they are independent of each other, and both are suitable to be independent variables in a regression equation predicting the FIQ. As for relationship between STAI and FIQ, the first scatter plot in the third row suggests a strong positive association. The CSQ and FIQ (second scatter plot in the third row) exhibit the same relationship as discussed for the STAI and CSQ, and likely no relationship between the CSQ and FIQ exists.

The results of the regression analysis are presented in Table 4.7. As indicated, the CSQ is not a significant predictor of FIQ; however, the STAI does significantly predict the impact of FM on the participants’ lives in the sample. It can be concluded there is a positive relationship between STAI and FIQ, with a significance level near zero.

<table>
<thead>
<tr>
<th>Model b</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>-.856</td>
<td>9.073</td>
<td>-.094</td>
</tr>
<tr>
<td></td>
<td>STAI</td>
<td>1.066</td>
<td>.128</td>
<td>.617</td>
</tr>
<tr>
<td></td>
<td>CSQ</td>
<td>.079</td>
<td>.053</td>
<td>.111</td>
</tr>
</tbody>
</table>

a. Dependent Variable: FIQ
b. Note: \( R^2 = .384; \) Adjusted \( R^2 = .373 \)

Table 4.7: Coefficients for STAI and CSQ with FIQ
To better understand the impact of anxiety on the female subjects, the STAI is further investigated. By adding the STAI as an independent variable in the stepwise regression equation in Research Question Two (Figure 4.4) a “best model” for predicting impact on the FIQ is indicated.

The results of the stepwise regression analysis can be found in Table 4.8. Table 4.8 indicates the significant variables predicting the FIQ include: STAI, “Tobacco Use,” “Number of Comorbid Diseases,” “Hospitalization for Parent or Guardian Prior to 16,” “Average Exercise Routine” “Emotional Abuse Prior to 16,” and “Level of Education Completed. With the addition of the STAI in the stepwise regression equation, the R Squares and Adjusted R Squares are relatively high, and explain 54% of the FIQ variable.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>R Square Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.610</td>
<td>.372</td>
<td>.366</td>
<td>.372</td>
</tr>
<tr>
<td>2</td>
<td>.655</td>
<td>.429</td>
<td>.419</td>
<td>.057</td>
</tr>
<tr>
<td>3</td>
<td>.655</td>
<td>.429</td>
<td>.419</td>
<td>.057</td>
</tr>
<tr>
<td>4</td>
<td>.717</td>
<td>.514</td>
<td>.496</td>
<td>.031</td>
</tr>
<tr>
<td>5</td>
<td>.730</td>
<td>.534</td>
<td>.512</td>
<td>.020</td>
</tr>
<tr>
<td>6</td>
<td>.743</td>
<td>.552</td>
<td>.527</td>
<td>.019</td>
</tr>
<tr>
<td>7</td>
<td>.755</td>
<td>.570</td>
<td>.542</td>
<td>.018</td>
</tr>
</tbody>
</table>

1. Predictors: (Constant), STAI
2. Predictors: (Constant), STAI, Tobacco Use
3. Predictors: (Constant), STAI, Tobacco Use, Number of Comorbid Diseases
4. Predictors: (Constant), STAI, Tobacco Use, Number of Comorbid Diseases, Hospitalization for Parent or Guardian Prior to 16
5. Predictors: (Constant), STAI, Tobacco Use, Number of Comorbid Diseases, Hospitalization for Parent or Guardian Prior to 16, Average Exercise Routine
6. Predictors: (Constant), STAI, Tobacco Use, Number of Comorbid Diseases, Hospitalization for Parent or Guardian Prior to 16, Average Exercise Routine, Emotional Abuse Prior to 16
7. Predictors: (Constant), STAI, Tobacco Use, Number of Comorbid Diseases, Hospitalization for Parent or Guardian Prior to 16, Average Exercise Routine, Emotional Abuse Prior to 16, Level of Education Completed

Table 4.8: Model summary of independent variables for best model.
Summary

Chapter four presented the results of the data analysis for each research question. Demographic characteristics, regression analyses and correlational coefficients were computed with significant results. As revealed in this study, childhood abuse and trauma is associated with increased impact of FM on life, suggesting the female subjects in the sample experienced increased anxiety and had a more difficult time adjusting to FM than those female subjects who did not experience or perceive themselves to experience abuse and trauma. Chapter five provides discussion and possible explanations for the results of this study. Limitations of the current investigation are provided, as well as, indications for future research.
CHAPTER 5

DISCUSSION AND RECOMMENDATIONS

The purpose of this investigation was to gain better understanding of adult women suffering from fibromyalgia syndrome (FM). More specifically, this study queried the role of abuse and trauma, coping strategies and anxiety, and their impact on the lives of women diagnosed with FM. The research questions of interest in the current investigation were as follows:

(1) What demographic characteristics describe the female subjects diagnosed with fibromyalgia, in the obtained sample?

(2) From the selected demographic information on the Fibromyalgia Questionnaire, which variables can be identified as statistically significant predictors of higher impact on the Fibromyalgia Impact Questionnaire?

(3) Which variables describing subjects’ current life situation, strongly correlate with the Fibromyalgia Impact Questionnaire?

(4) Can the impact of fibromyalgia, as measured by the Fibromyalgia Impact Questionnaire, be predicted by the individual’s scores on the Coping Strategies Questionnaire and State-Trait Anxiety Inventory (Trait form only)?
This chapter will discuss the results obtained using different statistical analysis described in Chapter Four. The findings will be compared to those of other scientific researchers and related to the current knowledge of FM. Throughout this chapter, research presented in this paper will be referred to as “current study.” The findings will be discussed in the order of the Research Questions. Finally limitations, recommendations for future research, and clinical practice and education will conclude the chapter.

Research Question One

The findings of Research Question One were used to describe social, demographic and health aspects of the lives of the female subjects in the sample. As concluded, demographic information about the sample in this study does not deviate drastically from the findings of the US Census 2000. Therefore, the following conclusions present value for the whole population of FM effected females.

Research Question Two

In order to identify important factors of subjects’ lives influencing FIQ scores, a stepwise regression analysis was performed on twenty-three variables detailed previously in Chapter Four, page 88. The variables emerging as statistically significant in predicting higher impact on the FIQ were: “Average Exercise Routine”, “Number of Comorbid Diseases”, “Tobacco Use”, “All Trauma Prior to 16”, and “Level of Education Completed”(see Table 4.2). Table 4.4 summarizes the statistical properties of the final model for the previously mentioned variables, as selected by stepwise
regression analysis. The final model as described in Table 4.5, suggests there are positive relationships between the FIQ variable and the variables: “Emotional abuse prior to 16,” “Hospitalization for Parent or Guardian Prior to 16,” “Number of Comorbid Diseases,” and “Tobacco Use.” This positive relationship suggests as the explanatory or independent variables increase the dependent or FIQ scores also increase. Thus, the model suggests more comorbid diseases, high tobacco use, high emotional abuse prior to 16, and experiencing the hospitalization of a parent or guardian prior to 16 results in higher FIQ scores. Moreover, the FIQ score is negatively related to two variables “Average Exercise Routine,” and “Level of Education Completed.” This may be interpreted as more exercise and increased level of education achieved result in lower FIQ scores.

The result of the first step in Research Question Two suggests higher FM impact is related to experiencing more childhood traumas. Such a finding agrees with results in previously published literature. Anderberg et al. (2000) investigated whether female FM patients experienced more negative life events than healthy women. They found stressful life events in childhood/adolescence and in adulthood appeared to be common with FM patients. In their study 47.5% of FM patients experienced at least one negative life event during childhood and adolescence compared to 23.7% of the healthy controls. The investigators concluded FM patients experienced more traumatic life events, and they experienced those events “as very negative.”

Further, McBeth et al. (1999) examined the association between tender points, psychological distress and adverse childhood experiences. The researchers found subjects with a high tender point count were more likely to have been abused, to be
female, to report a loss of a parent in childhood, and to report physical and mental fatigue than those with a low number of tender points. They also demonstrated perceived parental overprotection or lack of care was associated with a high number of tender points. Similarly, Finestone et al. (2000) observed individuals with FM who report childhood sexual abuse had a greater severity of illness than those individuals not reporting sexual abuse. The current study supports the findings of these researchers.

Both regression analyses in the current study reveal increased education can be related to lower FIQ scores. This result corresponds to findings in the literature. Researchers have hypothesized individuals who are less educated may have fewer cognitive resources available for use, and more doubt in their ability to deal with their disease; in turn, this may lead to poorer mental health (Park and Jones, 1997; Lorig et al., 1989). Moreover, they may perceive themselves as less able to perform daily living activities, which could minimize pain and disability. Shifren et al. (1999), in researching cognitive processes in individuals with rheumatory arthritis, found higher intellectual functioning was related to more positive mental health and less negative mental health. Further, individuals who were more self-efficacious reported more positive mental health and less negative mental health. One might postulate individuals with more educational cognitive resources available for use, in fact, have better coping and adaptive skills and therefore more positive mental health, which better prepares them to handle a situation of chronic pain. However, no relationship between coping and FM impact was found in the current study. Brekke et al. (2001) studying patients
with rheumatory arthritis and chronic noninflammatory musculoskeletal pain
determined special attention should be given to patients with low education and to those
with poor mental health and low self-efficacy.

In this current study, a negative relationship exists between the level of
education completed and the impact of FM. Moreover, studies discuss FM as being
associated with a lower level of education and lower family income (White et al., 1997).
Although level of education and its association with illness may need to be addressed
with caution, Mohamed and Khan (1999) found patients with no formal education were
more likely to suffer from irritable bowel syndrome (IBS).

The current study indicates increased number of comorbid diseases corresponds
to increased impact of FM. FM is not a secondary condition to concomitant conditions
or comorbid diseases if a satisfactory treatment of the accompanying disease does not
significantly alter the symptoms or tender point count of FM (Yunus, 2002). However,
Aaron et al. (1995) in studying FM nonpatients and FM patients in a tertiary care
rheumatory clinic found a greater number of lifetime psychiatric diagnoses in FM
patients than in nonpatients. The researchers concluded psychiatric factors are not
intrinsic to FM, but patients having lifetime psychiatric diagnoses are more likely to
consult a physician.

In comparison to other studies mentioned, the current research addresses all
aspects of patients’ lives relating FM. Due to the complexity and sheer number of
variables in the study, results provide information about significant life factors
impacting FM. However, such a complex study must be carefully analyzed to obtain
meaningful and realistic answers. The similarities of this research to other studies
suggest the selected statistical analyses were appropriate. This study provides a complete portrait of factors impacting FM for the participants in this research.

Research Question Three

The current study considered two types of aspects of subjects’ lives: First, those investigated in Research Question Two, i.e. variables influencing FM; Second, those variables investigated in the present research question, which are a direct result of having FM. To identify those variables which are significantly related to FM, the statistical quantity correlation coefficient was computed.

In examining the participants’ current life situations, a significant positive correlation coefficient was found between FIQ and a number of variables. A significant relationship, at the level of 0.05, was reported for the following variables: “Disability”, “Compensation Due to FM”, “Hours Work Reduced Due to FM”, “Depression because of FM”, “People Think You Exaggerate Symptoms”, “Victim Due to FM”, “Unfair Break Due to FM”, “FM Adversely Affected Sex Life”, and “Illicit Drugs to Escape FM Symptoms”. Therefore, one may conclude, women with higher FIQ scores are: more likely to receive disability, more likely to receive compensation due to FM, more likely to have work reduced by more hours, more likely to be depressed, and more likely to be viewed as extremely sensitive rather than understood. Additionally, it means subjects are more likely to feel like victims due to FM, feel as though they are unlucky in life, and relate their sex lives as poor. Due to these factors, FM patients with higher FIQ scores are also more likely to use drugs to escape FM symptoms.
A negative correlation coefficient was found between FIQ and the “Public Assistance” variable. This might be surprising, and may be explained in two ways. First, one can interpret this result to mean public assistance is offered to those subjects who experience a lower impact of FM on their lives or more simply, received smaller FIQ scores. However, a second interpretation is smaller FIQ scores are a result of receiving public assistance, thus public assistance eases the impact of FM on the subject, thereby resulting in lower scores on the FIQ. These results are in accordance with Aaron et al. (1997). They found the perception of physical trauma to be a greater determinant of disability compensation for FM than perceived emotional trauma, symptom severity or functional disability.

Perceptions of working conditions of FM patients, in the current study, support findings of Henriksson (1993). He reported persons with a stronger education were generally employed in physically less demanding jobs and in positions where they could rearrange their working conditions. He also found level of education was higher in groups that worked versus non-working groups. Henriksson (1993) concluded FM affects all aspect of everyday life. However, the correlation analyses enabled the current research to identify aspects of everyday life most significantly affected by FM.

In researching quality of life issues for FM patients, Bernard et al. (2000) urged health care workers to be cognizant of the effect FM has on everyday life. The findings of the present study offer support to the Bernard et al. (2000) study. Specifically, they found of the participants who were divorced or separated, 94% indicated the divorce or separation was due to FM, and 71% indicated FM had adversely affected their sex lives. Regarding work status, the Bernard et al. (2000) study reported 53.1% worked prior to
developing FM, and of those still working 59.4% had reduced their work load since the onset of FM. The sample in their research appears to have a lack of social support; only 1.5% believed people understand how disabling FM can be and 85.6% believe people think they exaggerate their symptoms. The sample in this current study had similar views, although, a majority of the sample did not report using alcohol to escape symptoms of FM. However, using illicit drugs to escape symptoms was a significant finding. Bernard et al., found 33.8% of their sample used non-prescription drugs to escape the symptoms of FM. The current study also supports the findings of Bernard et al. (2000) that 67.8% of the sample believed their depression is a result of FM.

Bernard et al. (2000) explain treatment should not be limited to prescription medication, and comment patients are using both positive and negative methods to cope with FM symptoms. Because there is no cure for FM, it is critical for health care professionals to effectively manage the disease and empower patients to manage their symptoms. Research presented in the current study concluded similar findings to Henriksson (1993) in that FM affects all aspects of life, but the current study also selects the most significant aspects. Essentially, the current study expands the work of Henriksson (1993) and Bernard et al. (2000) in reporting FM impacts all aspects of everyday life, but also is more specific and thus enriches the overall knowledge of FM.

Research Question Four

The final and most poignant research question asks whether the effect of FM on subjects’ lives can be explained by coping strategies and anxiety level. To assess, a regression analysis was performed.
In determining whether the CSQ and STAI could be used to predict the impact of FM, the relationship between CSQ and STAI had to be investigated. The CSQ and STAI were noted to have no relationship and were therefore suitable to be independent variables in a regression equation predicting the FIQ. The results presented in Table 4.7 suggest the CSQ and FIQ also have no significant relationship. As for the STAI and FIQ, there exists a strong positive relationship; as scores on the FIQ increase, so too do the scores on the STAI.

In this study, coping strategies such as reinterpreting pain sensations, cognitive distraction, and positive self-statements were expected to be related to lower scores on the FIQ. These findings were expected to support previous studies; however, many of the studies in the literature used experimental or time limited pain verses chronic or constant pain (Worthington & Shumate, 1981; Dozois et al, 1996). Rosenstiel and Keefe (1983), in their research of behavioral and cognitive coping strategies, found particular kinds of coping strategies were not necessarily related to better adjustment. Using the CSQ, their results suggest some strategies are in fact related to poorer adjustment. For example, patients scoring high on the scales diverting attention and praying experienced more pain and functional impairment, while those scoring high on the scales helplessness and catastrophizing were not adjusting well as assessed by depression and anxiety. One might expect these strategies to aid in diminishing pain, but individuals appear to focus on pain thereby increasing the ultimate impact of their pain or symptomology. Ultimately some coping strategies offer maladaptive rather than positive adjustment; however, no relationship was noted in this study between coping strategies and impact of FM.
The findings of this current study support other researchers who have explored anxiety in chronic pain. White et al. (1997) explored potential risk factors in predicting the development of chronic pain. The researchers proposed recognition of risk factors for developing chronic pain could lead to early identification of individuals with acute pain who are at risk. The data suggest as pain persists, anxiety and distress also persist. White et al. (1997) explain unresolved pain may lead to continued anxiety and distress, rather than persistent anxiety and distress being predictive of unresolved pain. Regardless of the direction of the relationship, the researchers conclude it is an important relationship.

Two interesting findings in the current study are that no relationship exists between the CSQ and FIQ, but the STAI may be used to predict FIQ. As indicated in Table 4.8 significant variables predicting the FIQ include: STAI, “Tobacco Use,” “Number of Comorbid Diseases,” “Hospitalization for Parent or Guardian Prior to 16,” “Average Exercise Routine” “Emotional Abuse Prior to 16,” and “Level of Education Completed.” With the addition of the STAI in the stepwise regression equation, 54% of the FIQ variable is explained, creating an even stronger model for determining impact of FM on the lives of the female subjects. Overall, the current findings are analogous to past research, and suggest no new changes to the impact of FM on subjects’ lives.
Summary of Data

The following figure (5.1), illustrates the initial path diagram for the hypothesized relationships of the variables prior to conducting the study:

<table>
<thead>
<tr>
<th>I.V.</th>
<th>M.V.</th>
<th>D.V.</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Trauma and Abuse ↔ ↑↓ → Fibromyalgia Impact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coping</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5.1 (Initially 3.1): Path Diagram

The independent variable History of Trauma and Abuse, which included all variables “prior to 16” and “at onset,” with demographic variables was investigated accounting for the effects of the mediating variables: anxiety and coping. Current research proposed an increased score on the independent variable mediated by coping strategies and anxiety would be indicative of an increased score on the dependent variable. The following path diagram represents a revised and more accurate version of the initial diagram (Figure 5.1), as supported by the results of this study. History of Abuse and Trauma Prior to 16 or the “All Trauma Prior to 16” variable is a condensed version of all variables of childhood abuse and trauma from the Fibromyalgia Questionnaire.
The current study expands upon previous findings by describing specific components of psychological distress or abuse and trauma prior to the age of 16 that are associated with a higher impact of FM on a person’s life. By understanding some symptoms of FM can be worsened by psychological aspects affected by the history of abuse and trauma, healthcare providers may be able to better impact patients’ attitudes about the disease and their ability to manage it. Empowering a patient involves providing support, teaching strategies for effective coping, and providing opportunities for patients to explore nontraditional therapies for controlling their FM (Bernard et al., 2000).

**Limitations**

Patients in this study were assessed at only one point in time, and a more accurate assessment of FM impact might be better investigated by studying patients on more than one occasion. Further, the temporal course of the observed effects is unclear. As the study is correlational in nature, anxiety and impact likely engage with one another dynamically; anxiety may predict future pain and impact, and the experience of pain may predict the development of anxiety. The design of this study does not allow for the disentangling of temporal aspects of this relationship.
Assessment procedures consisted of entirely self-report measures, and future studies may consider assessing anxiety, trauma and abuse, and FM impact responses using a variety of response modalities. Results may not be generalized to all patients who suffer from chronic pain or to all fibromyalgia patients, as males were not included in the sample.

Additionally, future survey research should attempt to randomly select individuals with FM from a larger sample. Although 115 women from three different types of treatment participated in the study, each of the women was included rather than randomly selecting participants. Overall, despite limitations of this study, findings do lend support to research supporting childhood/adolescent abuse and trauma increasing impact of FM.

Future Research

Existing knowledge of long-term health consequences of childhood victimization is limited. As revealed in this study, childhood abuse and trauma is associated with increased impact of FM on life, suggesting these individuals experience increased anxiety and have a more difficult time adjusting to FM than those who did not experience or perceive themselves as experiencing abuse and trauma. Future research teaching children to rid maladaptive coping and anxiety and learn positive adjustment would be beneficial. Focus should be placed on those children and adolescents who have experienced trauma and abuse or believe they experienced trauma and abuse. Identifying early adverse experiences is important for development of the best treatment for children, adolescents, and adults. The current study did not reveal any relationship
between coping strategies and the impact of FM. Although the lack of relationship in this study was surprising for this researcher, further investigation into effective versus maladaptive coping strategies and impact of FM could prove beneficial for the helping professions.

A longitudinal study of children, who have documented cases of abuse and trauma, and children who were not exposed to abuse or trauma, comparing their frequency of FM would be beneficial. A study such as this could expand the knowledge of allostatic loading. Improved measurements of abuse and trauma would allow for a more accurate assessment of victimization. The aim of a longitudinal design should be on “care” aspects of FM patients not “cure.”

Implications for Clinical Practice and Education

Important in any assessment of pain coping strategies in chronic pain patients is to take into account patient history and psychological variables which may also impact a patients’ current adjustment. The STAI, in this study, was effective in predicting impact of FM on the lives of women with FM. Clinicians need to be aware that the STAI does not assess “pure” anxiety and includes items reflecting depression and general negative affect (Beiling, et al, 1998). Moreover, particular trait form items strongly correlate with anxiety and depression measures respectively. Behavioral evaluations need to address depression and general emotional distress, as not doing so would be grossly deficient. Anxiety also should be addressed, and in this study higher scores on the STAI predict higher impact FM on the lives of women in this sample.
Considering FM patients as chronic pain patients has important implications for treatment, as treating them somatically may lead to fixation on the somatic aspect of the complaints. A patient who feels disabled by severe, unrelenting pain can resent the use of a term such as “benign condition”. In determining predictors of physician frustration among those who care for patients with rheumatological complaints, Walker et al. (1997) reported patients with histories of childhood abuse have historical reasons to distrust authority figures. The researchers elaborated, due to this distrust, patients may have problems forming collaborative, therapeutic relationships with their physicians. Education and an attitude of understanding for all healthcare providers should be demonstrated throughout contact with the FM patient.

Research supports a growing opinion that a multidisciplinary approach seems to be the best way to deal with the complexity of the chronic pain patient’s situation, (Salt and Season, 2000; Keel et al., 1998; Aaron et al., 1997; Crue, 1985) as this approach treats patients in their entirety and not solely their medical symptoms. Patient education should be encompassed in the multidisciplinary approach to FM patients. Educating patients with explanations of biophysiologic mechanisms, discussion of aggravating factors (for example: poor sleep, anxiety, work, physical activity), and reassurance regarding the noninflammatory and nonmalignant nature of the illness (Yunus, 2002) will aid the FM patient by enhancing perceptions of control and self-efficacy. These are all factors of considerable importance and goals for patient empowerment for individuals with chronic pain. As evidenced in this study, addressing childhood/adolescent emotional abuse and trauma, exercise routine, tobacco usage, comorbid disease, anxiety and understanding a patient’s level of education is of
significant importance for a healthcare provider. The social consequences of FM, a chronic non-remitting pain syndrome, affect all aspects of daily life (Heinricksson, 1994), and the current study addresses these aspects even more specifically. The early identification of patients at risk for the development of chronic pain will be cost effective and will reduce needless suffering. Chronic pain constitutes a major source of suffering and disability, as well as, a major economic problem (White et al., 1997). Expanding the overall awareness of this syndrome will help FM patients who seem to be trapped in vicious cycles of psychological and physical factors. Treatment programs with a multidisciplinary approach can break these cycles and empower FM patients to take responsibility for their own well-being.


APPENDIX A

INTRODUCTION AND INVENTORY INSTRUCTIONS

THE FIBROMYALGIA QUESTIONNAIRE (FMQ)
INTRODUCTION AND INVENTORY INSTRUCTIONS

Dear Participant,

I am a Ph.D. student at The Ohio State University, and a behavioral specialist at the Association for Psychotherapy. I am conducting a study for my doctoral dissertation. This study has been reviewed by OSU Human Subjects Committee, and is designed to evaluate factors associated with women who have been diagnosed with fibromyalgia syndrome (FM). This study is completely anonymous and no information for any individual will be reported. Group averages will be summarized and may be published in a research journal. We are asking approximately seventy-five women to participate in this study.

The purpose of this letter is to ask you to volunteer to participate in this study. If you decide to participate in this study, please fill out the attached forms. The entire packet of information should take 40-60 minutes. The forms include: a questionnaire about yourself; a short form about impact of FM on your life called the Fibromyalgia Impact Questionnaire; a form about anxiety called the Trait Anxiety Inventory; and a survey about coping skills called the Coping Strategies Questionnaire.

Please be certain to answer all the questions on the forms, and note the instructions at the top of each form, as they are all slightly different. When you complete the surveys, answer the forms quickly with your first thought. There are no right or wrong answers to any of the questions; we are simply looking for your first impressions.

When you have completed the forms, please return them to the individual who distributed the packet to you.

Thank you kindly for your time and assistance.

Amy Marzella Spiess, MA
Behavioral Specialist
Association for Psychotherapy

Paul Granello, Ph.D.
Assistant Professor and Advisor
The Ohio State University
The purpose of this survey is to collect information about women, 18 – 65 years of age, with the chronic pain condition of fibromyalgia. Identities are not requested, as this is a completely confidential research project. Please answer each of the items carefully, leaving no question blank. Thank you for your time and cooperation, your participation is greatly appreciated.
GROUPING INFORMATION

1. Which statement best applies to you in the last six months? Please choose only one.
   _____ I have attended an FM support group (no individual counseling in the last 6 months).
   _____ I have attended individual counseling (no support group in the last 6 months).
   _____ I have attended no sessions of counseling or FM support group in the last 6 months.
   _____ I have attended both individual counseling and an FM support group in the last 6 months.

1a. I currently live in a _____ rural _____ urban _____ suburban setting?

BIOGRAPHICAL INFORMATION

2. Age: _____

3. Ethnic Background:
   _____ African-American      _____ Hispanic      _____ Other
   _____ Asian & Pacific Islander _____ Native-American
   _____ Caucasian            _____ Mixed race

4. What is the highest level of education you have completed?
   _____ Less than high school  _____ Bachelors Degree
   _____ High School            _____ Masters Degree
   _____ Associates Degree      _____ Ph.D.

5. Current Marital Status:
   _____ Never married or living alone
   _____ Married or living with significant other
   _____ Previously married (separated, widowed, divorced)

6. How has FM contributed to your relationship?
   _____ No effect
   _____ Some Stress or Strain
   _____ It dominated the relationship

7. Number of children: _____

8. Including yourself, how many people reside in your home currently? _____

9. Approximate household income (to the nearest $1,000): __________

10. How many people in the household bring in income? _____

11. Do you receive public assistance? _____ YES _____ NO

12. Do you receive disability? _____ YES _____ NO

13. If yes, is this compensation due to FM? _____ YES _____ NO

14. How many hours do you work each week? _____

15. Is the number of hours worked reduced because of FM? _____ YES _____ NO

16. On average, how many caffeinated beverages do you consume daily? _____

17. Do you smoke? _____ YES _____ NO

18. Do you drink more than 8 alcoholic beverages a week? _____ YES _____ NO
19. What is your average exercise routine? Please choose only one.
   _____No physical activity because of FM related pain
   _____30 minutes of physical activity once a week
   _____30 minutes of physical activity three times a week

20. How many hours a week do you generally spend researching FM? _____

21. How long have you had FM? __________

22. What type of physician made the diagnosis? ________________________________

23. In the past 6 months, how many times have you visited your physician for FM? _____

24. Do you have any other chronic illnesses or disabilities? _____YES_____NO

25. If yes, what are they? ________________________________________________

26. Have you been hospitalized for stress or emotional problems? _____YES_____NO

27. Are you or have you participated in mental health treatment for a reason unrelated to FM? _____YES_____NO

28. Would you consider attending individual counseling for FM support? _____YES_____NO

29. Have you ever been a part of an FM support group? _____YES_____NO

30. If yes, how often do/did you attend? ____________________________________

31. If no, would you consider attending a support group for FM? _____YES_____NO

32. Do you experience depression now? _____YES_____NO

33. If yes, do you believe your depression is a result of FM? _____YES_____NO

34. Did you experience depression before the onset of FM? _____YES_____NO

35. Have you contemplated suicide because of FM? _____YES_____NO

36. Have you ever attempted suicide because of FM? _____YES_____NO

37. Do you believe people think you exaggerate your symptoms? _____YES_____NO

38. Do you believe people understand how disabling FM can be? _____YES_____NO

39. Do you feel like a victim because of FM? _____YES_____NO

40. Due to FM, have you been given an unfair break in life? _____YES_____NO

41. Has FM adversely affected your sex life? _____YES_____NO

42. Have you used illicit or street drugs to escape the symptoms of FM? _____YES_____NO

43. Have you misused prescription drugs to escape FM symptoms? _____YES_____NO

44. On average, how many hours do you sleep at night? __________

45. Do you believe you have poor or inadequate sleep? _____YES_____NO

46. If yes, how long have you experienced this poor quality of sleep? __________

47. Have you gained weight, since your diagnosis of FM? _____YES_____NO

48. If yes, how much weight? ______________________

49. Have you lost weight, since your diagnosis of FM, not purposely caused by dieting? _____YES_____NO

50. If yes, how much weight? ______________________

128
HISTORY OF ABUSE AND TRAUMA

Please use the following definition of childhood sexual abuse, when answering the following the question.

Any kind of sexual contact or attempted sexual contact that was unwanted and occurred when one of the participants was under 16 years of age and/or any kind of sexual contact or attempted sexual contact that occurred between relatives, in which there was an age difference between the participants of more than 5 years. By sexual contact we mean touching of the breasts or genitals, oral-genital contact, vaginal or anal intercourse, or similar activities (Finestone et al, 2000).

51. Were you sexually abused as a child? _____YES_____NO
52. Were you physically abused as a child? _____YES_____NO

53. Have you been sexually assaulted as an adult? _____YES_____NO
54. If yes, how many times? ________________
55. Have you been physically assaulted as an adult? _____YES_____NO
56. If yes, how many times? ________________

For the following questions, please respond prior to the age of 16 and/or surrounding FM onset.

57. Did you experience severe illness in family members?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

58. Did you experience parental divorce or separation?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

59. Did you experience death of a parent?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

60. Did you experience medical hospitalization for a parent?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

61. Did you experience medical hospitalization for self?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

62. Did you experience psychiatric hospitalization for a parent?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

63. Did you experience psychiatric hospitalization for self?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

64. Did you experience a drug overdose of parent/guardian?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

65. Did you experience a drug overdose of self?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

66. Did you experience a death of spouse or partner?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

67. Were you placed in a treatment facility?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

68. Were you placed in foster care?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

69. Did your parents argue with each other frequently?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

70. Did your parents argue with you frequently?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

71. Did your parents have frequent loud arguments with non-family members?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

72. Were you punished physically?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

73. Were you emotionally abused?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

74. Were you neglected?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

75. Were your parents overprotective in a negative way?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

76. Do you believe you were bullied?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

77. Did you experience any traumatic event not mentioned?
   Prior to 16    Surrounding FM onset
   _____YES_____NO

78. On a scale of 1-10, with one being “little or no impact” and 10 “extreme impact”, how severely do you think trauma has effected your life? __________
APPENDIX B

STATE-TRAIT ANXIETY INVENTORY (STAI)

SELF-EVALUATION QUESTIONNAIRE
# Self-Evaluation Questionnaire

**Stai Form Y-2**

**Directions:** A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>I feel pleasant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>I feel nervous and restless</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>I feel satisfied with myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>I wish I could be as happy as others seem to be</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>I feel like a failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>I feel rested</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>I am &quot;calm, cool, and collected&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>I feel that difficulties are piling up so that I cannot overcome them</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>I worry too much over something that really doesn't matter</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>I am happy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>I have disturbing thoughts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>I lack self-confidence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>I feel secure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>I make decisions easily</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>I feel inadequate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>I am content</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Some unimportant thought runs through my mind and bothers me</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>I take disappointments so keenly that I can't put them out of my mind</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>I am a steady person</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>I get in a state of tension or turmoil as I think over my recent concerns and interests</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Copyright 1968, 1977 by Charles D. Spielberger. Reproduction of this test or any portion thereof by any process without written permission of the publisher is prohibited. Sixteenth printing.*
APPENDIX C

FIBROMYALGIA IMPACT QUESTIONNAIRE (FIQ)
FIBROMYALGIA IMPACT QUESTIONNAIRE (FIQ)

Directions: For questions 1 through 11, please circle the number that best describes how you did overall for the past week. If you don't normally do something that is asked, cross the question out.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Always</th>
<th>Most</th>
<th>Occasionally</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do shopping?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Do laundry with a washer and dryer?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Prepare meals?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Wash dishes/cooking utensils by hand?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Vacuum a rug?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Make beds?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Walk several blocks?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Visit friends or relatives?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Do yard work?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. Drive a car?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. Climb stairs?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

12. Of the 7 days in the past week, how many days did you feel good?

<table>
<thead>
<tr>
<th>Days</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

13. How many days last week did you miss work, including housework, because of fibromyalgia?

<table>
<thead>
<tr>
<th>Days</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

continued on back of page
FIBROMYALGIA IMPACT QUESTIONNAIRE (FIQ)

Directions: For the remaining items, mark the point on the line that best indicates how you felt overall for the past week.

14. When you worked, how much did pain or other symptoms of your fibromyalgia interfere with your ability to do your work, including housework?

[ ] No problem with work

[ ] Great difficulty with work

15. How bad has your pain been?

[ ] No pain

[ ] Very severe pain

16. How tired have you been?

[ ] No tiredness

[ ] Very tired

17. How have you felt when you get up in the morning?

[ ] Awoke well rested

[ ] Awoke very tired

18. How bad has your stiffness been?

[ ] No stiffness

[ ] Very stiff

19. How nervous or anxious have you felt?

[ ] Not anxious

[ ] Very anxious

20. How depressed or blue have you felt?

[ ] Not depressed

[ ] Very depressed
APPENDIX D

COPING STRATEGIES QUESTIONNAIRE (CSQ)
COPING STRATEGIES QUESTIONNAIRE

Individuals who experience pain have developed a number of ways to cope, or deal with their pain. These include saying things to themselves when they experience pain, or engaging in different activities. Below are a list of things that people have reported doing when they feel pain. For each activity, I want you to indicate, using the scale below, how much you engage in that activity when you feel pain, where a 0 indicates you never do that when you are experiencing pain, a 3 indicates you sometimes do that when you are experiencing pain, and a 6 indicates you always do that when you are experiencing pain. Please write the numbers you choose in the blanks beside the activities. Remember, you can use any point along the scale.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never do that</td>
<td>Sometimes do that</td>
<td>Always do that</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When I feel pain ...

1. I try to feel distant from the pain, almost as if the pain was in somebody else's body.
2. I leave the house and do something, such as going to the movies or shopping.
3. I try to think of something pleasant.
4. I don't think of it as pain but rather as a dull or warm feeling.
5. It is terrible and I feel it's never going to get any better.
6. I tell myself to be brave and carry on despite the pain.
7. I read.
8. I tell myself that I can overcome the pain.
9. I take my medication.
10. I count numbers in my head or run a song through my mind.
11. I just think of it as some other sensation, such as numbness.
12. It is awful and I feel that it overwhelms me.
13. I play mental games with myself to keep my mind off the pain.
15. I know someday someone will be here to help me and it will go away for awhile.
16. I walk a lot.
When I feel pain ...

17. I pray to God it won't last long.
18. I try not to think of it as my body, but rather as something separate from me.
19. I relax.
20. I don't think about the pain.
21. I try to think years ahead, what everything will be like after I've gotten rid of the pain.
22. I tell myself it doesn't hurt.
23. I tell myself I can't let the pain stand in the way of what I have to do.
24. I don't pay any attention to the pain.
25. I have faith in doctors that someday there will be a cure for my pain.
26. No matter how bad it gets, I know I can handle it.
27. I pretend it's not there.
28. I worry all the time about whether it will end.
29. I lie down.
30. I replay in my mind pleasant experiences in the past.
31. I think of people I enjoy doing things with.
32. I pray for the pain to stop.
33. I take a shower or bath.
34. I imagine that the pain is outside of my body.
35. I just go on as if nothing happened.
36. I see it as a challenge and don't let it bother me.
37. Although it hurts, I just keep on going.
38. I feel I can't stand it anymore.
When I feel pain ...

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Never do that</td>
<td>Sometimes do that</td>
<td>Always do that</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

39. I try to be around other people.
40. I ignore it.
41. I rely on my faith in God.
42. I feel like I can't go on.
43. I think of things I enjoy doing.
44. I do anything to get my mind off the pain.
45. I do something I enjoy, such as watching TV or listening to music.
46. I pretend it's not a part of me.
47. I do something active, like household chores or projects.
48. I use a heating pad.

Based on all the things you do to cope, or deal with your pain, on an average day, how much control do you feel you have over it? Please circle the appropriate number. Remember, you can circle any number along the scale.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>No control</td>
<td>Some control</td>
<td>Complete control</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on all the things you do to cope, or deal with your pain, on an average day, how much are you able to decrease it? Please circle the appropriate number. Remember, you can circle any number along the scale.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Can't decrease it at all</td>
<td>Can decrease it somewhat</td>
<td>Can decrease it completely</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>