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Irritable Bowel Syndrome Pain-related Behaviors and Pain Coping Strategies as Predictors of Women’s Daily Activities

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IRRITABLE BOWEL SYNDROME PAIN-RELATED BEHAVIORS AND PAIN COPING STRATEGIES AS PREDICTORS OF WOMEN’S DAILY ACTIVITIES

Jeffery Aaron McCleary

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Psychology

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PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE
DEPARTMENT OF PSYCHOLOGY

Dissertation Approval

This is to certify that the thesis presented to us by Jeffrey A. McClarre
on the 22nd day of August, 2006, in partial fulfillment of the
requirements for the degree of Doctor of Psychology, has been examined and is
acceptable in both scholarship and literary quality.

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Acknowledgement/Dedication

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Abstract

The purpose of this study is to discover the predictability of women’s daily activities in relation to their irritable bowel syndrome (IBS) pain-related behaviors and coping styles. One hundred seventy-seven women participated in a national survey study using Rome II criteria. Recruitment occurred through medical and graduate students’ list serves at the Philadelphia College of Osteopathic Medicine (PCOM), Philadelphia, Pennsylvania; IBS websites; women’s healthcare websites; primary care and gastroenterology practices; churches, and a community center. This survey study was conducted face-to-face and via mail-in, using the Coping Strategies Questionnaire-Revised (Hastie, Riley III, & Fillingim, 2004; Riley III & Robinson, 1997; Riley III & Robinson, Geisser, 1999), the West Haven-Yale Multidimensional Pain Inventory (Kerns, Turk, & Rudy, 1985), the Pain Behavior Questionnaire (Phillips & Jahanshahi, 1986), and a Personal Characteristics Questionnaire (Kazdin, 1998a). Results of this investigation suggest that the active and passive coping strategies, in conjunction with the pain behaviors used, impact the IBS pain sufferers’ daily activities.
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Introduction

Irritable bowel syndrome (IBS) is a prevalent and perplexing functional gastric syndrome treated both by medical and by psychological professionals (Rutter & Rutter, 2002). This syndrome is referred to as an “arbitrary” condition based on consensus of symptom exclusion rather than specific biological markers, and it is delineated by three subtypes: (1) diarrhea-predominate, (2) constipation-predominate, and (3) alternating-type. Abdominal pain or discomfort is the prevailing complaint for IBS treatment-seekers; however, the entire IBS symptom complex is associated with mild to severe changes in daily functioning. This is defined according to IBS epidemiological studies conducted in the United States (US) using the Medical Outcomes Study 36-item Short Form Health Survey (SF-36) (Ware & Sherbourne, 1992). Such studies consistently correlate IBS treatment-seekers both with below normal quality-of-life (QoL) and with health-related quality-of-life (HRQoL). In brief, QoL refers to one’s capacity to engage in and derive pleasure from socially and psychologically meaningful activities (Piccininni, Falsini, & Pizzi, 2004). This encompasses interpersonal relationships, social activities, and vocational involvements, to suggest a few. On the other hand, HRQoL refers to those dimensions of QoL that are affected by disruptions in one’s normal activities of daily living and functioning due to health problems such as IBS-related pain.

Various cognitive and behavioral coping paradigms have been authored, advanced and applied to pain and consequent changes to daily activities (D’Zurilla & Goldfried, 1971; Lazarus & Folkman, 1984; & Meichenbaum, 1977). Research into coping paradigms suggests that efforts to overcome stressful situations (i.e., pain) can be dichotomized into active and passive types. It is theorized that active coping signifies an
internal fortitude and self-reliance that imbues assertive self-directed actions to affect problem resolution (Brown & Niscassio, 1987). Passive coping, however, is conceptualized as deferment to external locus-of-control, whereby one is inclined and/or compelled to find problem resolution through others’ knowledge and skills (i.e., physician). Active and passive coping modalities are correlated with positive and negative adjustment to pain, respectively (Brown & Niscassio, 1987).

Crane and Martin (2004) investigated the association of passive coping strategies, depression, anxiety and parental reinforcement of illness behaviors associated with IBS. The author’s study supports the premise that parental reinforcement of illness behaviors correlates with their children’s passive coping. Interestingly, this study utilized the Vanderbilt Pain Management Inventory (VPMI) (Brown & Niscassio, 1987) that was compared with the Coping strategies Questionnaire (CSQ) (Rosenstiel & Keefe, 1983) and the VPMI was found to be less psychometrically sound (Snow-Turek, Norris, Tan, 1996). Connally and Sanders (1991) examined the predictability of cognitive coping strategies and pain behavior for low back pain patients. This study failed to show a “predictive utility” of coping strategies. Furthermore, Cohen (2003, dissertation abstracts) investigated illness perception and coping with chronic fatigue syndrome. Illness perception, which is proposed to be shaped by the patient’s understanding and outlook of his or her disease, is influenced by the patient’s attributions and coping responses, according to the illness representational model investigated by the author. In this study, illness behavior is associated with physical impairment; however, coping strategies did not predict functional disability. Haythonethwaite, Menefee, Heinberg,
and Clark (1998) did find the Coping Self-Statements and Reinterpreting Pain Sensations dimensions of the CSQ correlated significantly with perceptions of pain control. However, the study correlated CSQ dimensions with the Life Control dimension of the West Haven-Yale Multidimensional Pain Inventory (WHYMPI) (Kerns, Turk, & Rudy, 1985; Appendix A) and the Control dimension from the Survey of Pain Attitudes (SPA) (Jensen, Karoly, & Huger, 1987). The SPA measures cognitive expressions of pain and one’s perception of their efficacy to influence the intensity of pain. The current study differs because it correlates the Coping Strategies Questionnaire-Revised (CSQ-R) (Hastie, Riley III, & Fillingim, 2004; Riley III & Robinson, 1997; Riley III & Robinson, Geisser, 1999; Appendix B) dimensions with the Interference, Pain Severity, Life Control, and daily activities dimensions of the WHYMPI and with two of the Pain Behavior Questionnaire (PBQ) (Phillips & Jahanshahi, 1986; Appendix C) dimensions: Pain Avoidance and Pain Complaint. This study does not use the Help Seeking dimension of the PBQ because it shows only modest validation. Last, a Personal Characteristics Questionnaire (PCQ) (Kazdin, 1998; Appendix D) is used to elicit IBS treatment history and demography factors.

The behavioral constructs investigated are the PBQ Pain Avoidant (i.e., staying in bed, reduction in outdoor activities, not performing chores, etc.) and Pain Complaint (speaking to other(s) about pain, grimacing, pain-related utterance, etc) behaviors. Daily activities behaviors are measured by the WHYMPI and refer to activities cross-culturally common in the US, such as socializing with family and friends, gardening, playing board
games, riding in a car, going to work, and so on. Additional constructs utilized from the WHYMPI are Interference, Pain Severity, and Life Control. Interference is defined as affecting participation in social activities, in relationships with supports, and in general satisfaction with life. Pain Severity refers to the perceived amount of pain suffering, the perception of weekly pain, and the perception level of present pain. Life Control pertains to one’s perceived amount of control during the previous week and the ability to cope with problems during that period. Last, coping strategies are defined as cognitive and behavioral interventions aimed towards managing stress responses.

Although extensive research has been conducted in pain-coping strategies and pain behaviors, separately, the current study remains relevant. Specifically, IBS pain-related decreased daily activities may show a linear relationship with particular coping strategies. In conjunction with this idea, the coincidence of IBS pain-related behaviors with the erosion of daily activities may also be correlated with coping style propensities. This should be worthy of consideration when considering rates of IBS impairment and overall cost to the sufferer and to society. These points of relevancy are expected to extend to cognitive and behavioral treatment intervention and improvements of IBS-related functioning.
Irritable Bowel Syndrome

IBS, one of the most prevalent functional gastrointestinal disorders (FGID) worldwide, can trace its symptomatology to antiquity. IBS is indicated by its prominent features: lower abdominal pain or discomfort, diarrhea, and/or constipation of specified duration without organic disease. Although IBS has become one of the most researched FGID, the natural history of IBS remains elusive (Talley & Spiller, 2002). Harvey, Mauad and Brown (1987) conducted a prospective study and concluded that 75 percent of persons diagnosed with IBS remain symptomatic for at least five years following initial diagnosis. Perhaps the impediment to understanding more fully the natural course of IBS is the lack of a unifying symptom criterion and the comparative rates of IBS among non-treatment-seekers with treatment-seekers. One improvement, however, is a better understanding of the biopsychosocial complex of IBS and treatment considerations.

IBS Diagnostic Criteria

The Manning Criteria (Manning, Thompson, Heaton, & Morris, 1978) is the initial, eight symptom-based screening criterion instrument used to assess and diagnose IBS. However, the Manning criteria failed to show good applicability for male patients. This problem was addressed at the Thirteenth International Congress of Gastroenterology in Rome, Italy in 1988. The result was the creation of the Rome criteria (Drossman, Thompson, Talley, Funch-Jensen, Janssens, et al., 1990; Thompson, Dotevaol, Drossman, Heaton, & Kruis, 1989) named such after the convention host city. It incorporates Manning criteria such as abdominal pain, diarrhea and constipation but specifies the
duration of symptoms for three consecutive months. The Rome criteria warranted revision (Lacey & Lee, 2005; Thompson, Longstreth, Drossman, Heaton, Irvene, et al., 1999) because its applicability was “too unwieldy” for clinical practice. Hence, the Rome criteria was revised in Rome in 1998 and established as the Rome II criteria (Thompson et al, 1999; Appendix E) which requires that one have abdominal pain for a minimum of 12 weeks (not consecutively) during the preceding 52 weeks.

There have been concerns with the temporal pain values of Rome and Rome II. Chey, Olden, Carter, Boyle, Drossman, et al. (2002) conducted a US community telephone survey of 1014 women who suffered from IBS to determine a lifetime prevalence for IBS. They discovered the Rome criteria led to dramatically higher rates of IBS than the Rome II criteria. In their sample, IBS prevalence was 5.4 percent when using Rome II criteria but increased to 8.3 percent with Rome criteria. The authors concluded that the Rome II criteria was better suited for identifying persons with ongoing symptom activity, and better suited for clinical research in capturing persons with current IBS related symptoms. Paradoxically, using Rome II criteria in epidemiological studies has the risk of underestimating IBS in population-based investigations. For example, Badia, Mearin, Balboa, Baro, Caldwell, et al. (2002) conducted an IBS population-based study in Spain. Of 2000 Spaniards in the general population, 65 persons met Rome II criteria and 146 met Rome criteria. This study makes no mention of the possibilities that normal populations with IBS symptoms were artifacts of these findings.
IBS Epidemiology

Prevalence rates for IBS, internationally and/or domestically, vary depending on the research sample and, as mentioned previously, the criteria used. IBS is diagnosed in persons under 18 years-of-age; however, “peak” rates occur during the third and fourth decades of life with dramatic decreases in rates occurring after 60 years-of-age (Lacy & Lee, 2005). Worldwide IBS gender rates indicate female to male ratios are in the range of 1.5:1 to 3:1, respectively (Blanchard, 2001; Saito, Schoenfel, & Locke, 2003).

Globally, IBS is approximated to exist in 4 to 35 percent of the population; on the other hand, Thompson (2002), estimates global IBS rates between 5-65 percent; this again is due to population type and criteria used. He comments that in one study, 38 percent of persons initially meeting Manning and Rome criteria for IBS failed to do so when Rome II was used. Clinically, primary care physicians see approximately 12 percent of the IBS population but gastroenterologists see approximately 28 percent (Lacy and Lee, 2005). Sykes, Blanchard, Lackner, Keefer, and Krasner (2003) believe the primary and secondary care rates are closer to 30 and 50 percent, respectively.

Saito et al. (2003) conducted a literature review of IBS prevalence in the US, using data from well documented epidemiological studies carried on from 1989 to 1992, using Manning and Rome criteria. Saito et al. found IBS prevalence rates between 3 and 20 percent for diarrhea-predominant type and 5 percent for constipation-predominant type. However, Corazziari (2004) reports diarrhea-predominant type is found globally in upwards of 65 percent of the IBS treatment-seeking population. Furthermore, Hungin, Whorwell, Tack, and Mearin (2003) conducted a European IBS epidemiological study
spanning eight countries. A community survey of 41,984 individuals was performed using a quota sampling method and random digit telephone dialing. The estimate of IBS prevalence was 11.5 percent, 9.6 percent of whom had current symptoms. As previously commented, studies are highly influenced by the criteria used; therefore, this study used the Manning, Rome, and Rome II. Last, a recent US web-based IBS epidemiology investigation was conducted by Andrews, Eaton, Hollis, Hopkins, Ameen, et al. (2005). A sample was drawn from an existing, online, web-based research panel of over 150,000 households, representing persons 21 to 65 years-of-age. Using Rome II criteria, 1,713 met diagnostic criteria and of this sample, 63.6 percent were female; 81.3 percent were White; 10.3 percent were Black; 6.7 percent were Hispanic; and 6.0 percent were other.

IBS Pathophysiology

Motility dysfunction, serotonin imbalance and visceral hypersensitivity are implicated in IBS etiology. In previous decades, IBS was considered primarily a motility disorder in which discrete cluster contractions in the jejunum were more frequently observed in IBS sufferers. However, abnormal motility patterns have not been consistently observed in persons diagnosed with IBS (Covelli, Price, & Verne, 2004). A link to motility is serotonin, a major neurotransmitter in the gastrointestinal (GI) tract (Wood, 2001; Gershon, 1999). Ninety to ninety-five percent of serotonin, which is located in the GI tract, has multiple complex actions. It directly affects gut smooth muscle, leading to contractions and relaxation of the colonic wall, stimulating intrinsic sensory neurons initiating perisaltalic and secretory reflexes (Camilleri, 2004; Kim & Camilleri, 2000). Moreover, serotonin can regulate sensory function through
vagal spinal afferent nerves (Kim & Camilleri, 2000; Geshon, 1999; Wood, 2001).

Contemporary research focuses on IBS as a disorder of altered perception or visceral hypersensitivity (Lautenbacher & Fillingim, 2004; Zar, Benson, & Kumar, 2006). This is demonstrated with balloon distension studies in which IBS subjects report greater rectal or rectosigmoid pain at significantly lower balloon expansion rates when compared to control subjects (Gebhart, 2000; Houghton, 2002; Mayer & Raybould, 1990). Mertz (2002) reports that both the diarrhea-predominant type and constipation-predominant type IBS patients show rectal hypersensitivity; this contradicts other studies reporting that this is exclusive to diarrhea-type (Maxton & Whorwell, 1992).

Additionally, Kwan, Diamant, Mikula, & Davis (2005) also show that IBS patients exhibit rectal hypersensation and longer pain latency. In a study of 10 IBS patients and 13 controls, the investigators observed isobaric rectal distensions. The first set consisted of ascending, stepwise distensions terminating upon report of moderate pain, during which three verbal ratings of discomfort were required: urge, pain, unpleasantness. The remaining studies were phasic distensions at a single pressure, eliciting continuous ratings either moderate urge or moderate pain intensity. Kwan et al. (2005) find many abnormalities in IBS patients compared to control subjects, based on “real-time” assessment of ratings during rectal distension; these include higher incidence of pain or unpleasantness, greater expressed pain affect, greater pain perception, and lower pain threshold.
Earlier IBS hypersensitivity research by Whitehead, Holtkotter, Enck, Hoelz, Holmes, et al. (1990) and Zighelboim, Talley, Phillips, Harmsen, and Zinsmeister (1995) and Zighelboim et al. (1995) compared somatic pain thresholds for cold pressor experiments between IBS and control subjects. Neither study demonstrated the presence of cutaneous hypersensitivity to immersion of the hand in ice water. A possible limitation of these studies is the use of water temperatures that may not be low enough temperatures to activate discomfort (Whitehead et al., 1990; Zighelboim et al., 1995). A recent study evaluating 33 patients with FGID and 33 controls reveals findings different from these earlier studies (Bouin, Meunier, Riberdy-Poitras, & Poitras, 2001). All subjects in the study immersed their non-dominant hands into 4 degrees C water for as long a time as possible (maximum 120 sec). Patients suffering from FGID had greater visual analog scale pain intensity ratings than did controls. In addition, patients with FGID demonstrated a significantly shorter period of time during which they were able to keep their hands immersed in the cold water. Covelli et al. (2004) suggest this study supports previous studies indicating that patients with FGID exhibit hyperalgesia that extends beyond the gut and may be indicative of central pain processing abnormality.

Brain activation in persons with persistent IBS-related pain has been examined using neuroimaging of visceral sensations. This is accomplished with Positron Emission Tomography (PET) and Functional Magnetic Resonance Imaging (fMRI) (Covelli et al.). Brain imaging techniques measure regional changes in cerebral blood flow which reflect local changes in neuronal activity. These procedures provide some insight into cortical participation in the processing of acute and chronic pain in humans (Casey & Bushnell,
Mertz, Morgan, Tanner, Pickens, Price, et al. (2000) and Verne, Himes, Robinson, Briggs, Gopinath, et al. (2001) find IBS subjects, in comparison to age and sex matched control subjects, exhibited enhanced activation in almost all known pain-related areas elucidated in human pain neuroimaging studies. For example, rectal distention produces more activity in the prefrontal cortical areas comparative to heat stimulation. Verne et al. (2001) reported that this may reflect greater psychological activation in response to pain.

IBS and Psychopathology

Affective and anxiety disorders are common occurrences in IBS treatment-seeking patients. Creed (2002) reports IBS patients have a greater instance of comorbidity that meets the Diagnostic and Statistical Manual of Mental Disorders-IV, Revised Text (DSM-IV-RT) (2000) criteria for affective and/or anxiety disorders. Jarret, Heitkemper, Cain, Tuftin, Walker, et al. (1998) report such conditions tend to increase complaints of IBS. Creed et al. (2001) investigated QoL among a United Kingdom (UK) IBS sample and found 40-60 percent referred to secondary and tertiary care suffered from anxiety, depression or both. In a Norwegian study, Vankvik, Wilhelmsen, Ihlebaek, and Farup (2004) conducted an observational, prospective investigation of comorbidity in IBS patients, using a sample from nine general medical practices. A sample of 208 IBS patients was compared to 1240 healthy persons. The IBS aggregate reported far more somatic and anxiety symptoms than did the controls.

Sykes et al. (2003) investigated the proposition that IBS causes affective and anxiety disorders, based on the somatopsychic and psychosomatic hypotheses (Gaynes &
Drossman, 1999; Walker, Roy-Bryne, & Katon, 1990). The former hypothesis postulates that stress associated with IBS will evolve into manifested anxiety and depression. The latter hypothesis posits that IBS is largely a somatic display of psychological troubles. Sykes et al. studied 188 (151 women, 37 men) participants recruited from local family and gastroenterology practices in a region of New York state. In this study, IBS was confirmed by the patients’ physicians and by a consulting gastroenterologist utilized for the study; however, there is no report of the specific IBS diagnostic criterion used. The authors believe their study is the first to investigate the sequence of occurrence for IBS and psychiatric symptoms. Eighty-four participants reported diagnosis of anxiety disorder before IBS onset and 25 were diagnosed after IBS onset. Thirty-eight participants reported diagnosis of depression prior to IBS onset and 25 were diagnosed after IBS. The authors assert that their study gives credence to the suggestion that IBS is a psychophysiological disorder. A critique of the position suggests that not all IBS patients develop diagnosable Axis I disorders. Second, a cause-and-effect relationship is not solidified by the authors’ sequential hypothesis.

A lesser discussed issue in association with psychopathology and IBS is somatization disorder. Somatization disorder reflects a patient’s modus operandi of attributing health complaints solely to a physical etiology (DSM-IV-RT, 2000). In this regard, such patients are refractory and tend to balk at psychological contributions to physical complaints (Allen, Gara, Escobar, Waitzkin, & Silver, 2001; Lackner, Gudleski, & Blanchard, 2004; Miller, North, Clouse, Wetzel, Spiznagel, et al., 2001). Lackner et al. (2004) link development of somatization disorder and IBS to aspects of social
learning and to parental/caregiver dereliction. The authors found that adults with a history of parental rejection and/or hostility, especially by the paternal figure, were more likely to have pain complaint histories and somatization disorder. Miller et al. (2001) propose that somatization disorder may be the precursor to psychiatric symptoms associated with IBS. These authors investigated 50 participants, solicited from a university gastrointestinal clinic who were diagnosed with ulcerative colitis (n=26) and IBS (n=24), using Rome II criteria. Ulcerative colitis patients were chosen for comparison as one type of organic disorder not known to be psychiatrically entrenched. This study found somatic disorder more than three times greater among IBS patients as opposed to ulcerative colitis patients.

**IBS Health Related Quality-of-Life (HRQoL)**

As mentioned previously, HRQoL refers to those aspects of QoL (capacity to engage in and derive pleasure from socially and psychologically meaningful activities) that are compromised due to health deterioration. In this vein, Frank, Kleinman, Rentz, Ciesla, Kim, et al. (2002), using the SF-36, compared IBS HRQoL patients with published US population health norms. Consistent with previous studies, IBS treatment-seekers reported lower HRQoL than US norms. An unquantifiable cost of IBS is its impact on interpersonal relationships and social interactions such as avoidance of physical intimacy and withdrawal from family and friends, as well as from leisure activities. Married or cohabitating women report increased avoidance of physical intimacy and/or decreases in affection from their partners and single women report difficulties establishing or maintaining relationships (Akehurst, Brazier, Mathers,
O'Keefe, Kaltenhaler, et al., 2002; Silk, 2001). Guthrie, Creed, and Whorwell (1987) note women with IBS complain of sexual dysfunction, of pain, or both, exacerbated by sexual activity. IBS sufferers attribute these problems to intractable pain, concern about the unpredictability of bowel movements, and/or embarrassment from flatulence.

Culture

Granlnek, Hays, Kilbourne, Chang and Mayer (2004) conducted one of the earliest studies on racial differences in IBS HRQoL. They interviewed patients at the UCLA Functional Bowel Disease Clinic, using the SF-36. The subjects included 707 White-Americans, 66 Black-Americans, 56 Latino-Americans, 25 Asian-Americans, 2 Native-Americans, and 17 non-specified. The researchers reported initially finding that non-White IBS sufferers were functioning less well than the White IBS subjects. Specifically, the non-White participants reported more bodily pain, poorer health perception, greater role limitations due to physical health, less vitality and decreased emotional functioning. However, when the authors controlled for age, gender, and income, the between-group difference decreased to a non-statistically significant range.

Financial Cost

Estimated cost of IBS within the US is upwards of $30 billion annually and this amount reportedly excludes prescription and over-the-counter medications. In a US survey study, Patrick, Drossman, Frederic, DiCesare, and Punder (1998) found that IBS patients, compared to non-IBS sufferers, averaged 4.9 more sick days, made 5.5 more physician visits, and spent an annual average of $742, or $325 more than non-IBS patients, on medical care. Recently, Longstreth, Wilson, Knight, Wong, Chiou, et al.
(2003) used Rome criteria to identify IBS patients from a US health maintenance organizations, year 2000 patient data base. The authors found IBS patients with moderate to severe symptoms spent an annual average of $926.47 to $1546.32 for treatment related expenses.

IBS treatment cost is generated from several modalities: primary care, secondary, and tertiary care. IBS sufferers are seen in emergency room services that sometimes result in inpatient observation. Furthermore, healthcare cost can be exacerbated by unnecessary diagnostic studies (i.e., colonoscopy, upper gastrointestinal x-ray studies, Barium enemas) and surgical procedures; the reason for this is that IBS tends to mimic other conditions. Psychological consultation for non-pharmacological pain management represents additional monetary cost. Further, work absenteeism and related loss work productivity compose another major component of IBS related economic outlay.

IBS Treatment

Various treatment modalities: (1) pharmacotherapy, (2) alternative remedies, and (3) psychotherapy demonstrate varying degrees of effectiveness for relieving complaints or symptoms of IBS (Blanchard, 2001; Corazziari, Bytzer, Delvaux, Holtmann, Malagelada, et al., 2003; Dunphy & Verne, 2001; Gonsalkorale, Miller, Afzal, Whorwell, 2003; Grigoleit & Grigoleit, 2005; Lembo, 2004; Toner, Segal, Emmott, & Myran, 2000; Zuckerman, M. J., 2006). Pharmacological interventions, although effective, are currently limited to treating specific symptoms of IBS as opposed to one medication that resolves the entire symptom complex. Other concerns with pharmacological interventions pertain to gender-specificity because some medications
(e.g., Alosetron) targeting diarrhea-predominant symptoms have been approved only for women (Chang, Chey, Harris, Olden, Surawicz, et al., 2006). Some alternative treatments such as increased intake of fiber (relieves constipation) and peppermint oil (decreases abdominal spasms and flatulence) have shown effectiveness in relieving some symptoms. Unfortunately, pharmacological and alternative interventions can produce iatrogenic effects that compound the IBS sufferers decreased HRQoL (Grigoleit & Grigoleit, 2005; Lembo, 2004).

Regarding psychotherapy, Nezu, Nezu and Lombardo (2001) write of the significant contribution that cognitive-behavioral therapy (CBT) makes to the treatment of “medically unexplained symptoms.” The authors define this as symptoms for which no physical etiology or physical dysfunction related to a psychological disorder is known. CBT is used both in individual and in group modalities for IBS and aims to assist the patient in reconstructing or modifying their schema (beliefs, self-conceptualization) for pain, cognitive interpretation and affective evaluation of physical symptoms (Toner, et al. 2000). This is particularly salient from an information processing viewpoint because this centers on sensory perception that requires proper somatic appraisal. Good translation of somatic sensations improves reaction(s) and generation of adaptive or more appropriate pain responses. For example, IBS literature reports maladaptive responses, such as catastrophizing, prolonging sympathetic nervous symptom activity and exacerbating pain sensation.

The research critiques are mixed regarding evidence-based CBT for IBS. Boyce, Talley, Balaam, Koloski, and Truman (2003) recruited 51 participants via advertisement
and 54 participants from outpatient clinics using Rome criteria. Participants were placed in randomized standard treatment (ST) (15-30 minutes with gastroenterologist; GI), CBT and relaxation therapy (RT) groups for 8 week trails, with one year follow-up. This study found ST with the GI was equal to CBT and RT when these latter modalities were used alone. Olatunji, Tolin, and Lohr (2004) conducted a literature review of CBT, commenting on nine individual therapy and four group protocols. The authors found CBT to be moderately effective but were concerned that specific CBT interventions were not clearly correlated with improved patient functioning. Lackner, Morely, Dowzer, Mesmer, and Hamilton (2004) conducted a meta-analysis of 15 (32 total studies were involved, but 17 studies were inadequate for review) random controlled trails that did not comment specifically on CBT. Rather, their review concluded that superiority of any particular psychotherapy was not established; this was due to estimates of magnitude of treatment effect being made on subsets of trials only and to small sample sizes that lacked sufficient power. Last, Kennedy, Jones, Darnley, Seed, Wessely, et al. (2005) investigated a randomized trial of CBT with meberverine and meberverine alone. The participants were recruited from primary care practices using Rome criteria; CBT was conducted by a registered nurse. The combined group showed better results at three and six month follow-up, but the specific improvements were not clearly stated in this study.

In summary, IBS diagnostic criteria are still evolving and epidemiological studies are speculative. However, women generally are diagnosed as often as three times the rate of men. Culturally laden schema for gender-role pain reaction probably influences reporting of symptoms; this may account for some gender disparities. IBS is thought of
increasingly as a problem of somatic hypersensitivity and poor cognitive appraisal. IBS dramatically diminishes HRQoL and treatment costs continue to rise. CBT treatment protocols are well established; however, evidence-based treatment reviews reveal poor identification of mediating interventions and outcome success.
Pain

Physical pain is commonly explained biomedically and/or biopsychosocially. Both concepts elucidate pain perception but the latter purposes the integration of the psychological, social, and cultural dynamics that influences the pain experience. Furthermore, pain behavior and illness behavior concepts help to understand adaptive and maladaptive pain-related functioning.

Definition

The International Association for the Study of Pain conceives of pain as a sensory and emotional experience deemed “unpleasant” that originates in actual or potential tissue damage (Merskey & Bogduk, 1994). Reportedly, this explication of pain is widely accepted within the pain research and pain treatment communities. Aside from this are definitions of pain that delineate onset and duration of pain, such as phasic pain, which pertains to the exact instance of the onset and antecedent(s) of pain; this type of pain represents a short-term experience and may be expressed when one grimaces or exclaims in response to bumping his or her knee or stubs a bare toe, for example. Usually, phasic pain is not indicative of tissue damage and produces minimal discomfort, remitting within seconds to minutes without adversely affecting one’s physical and emotional functioning. The next type, acute pain, normally results from tissue damage and may persist for hours to days and sometimes for months (Gatchel & Turk, 1999; Lautenbacher & Fillingin, 2004). Acute pain can be the source of physical limitations, of changes in one’s daily functioning, and become a precursor for extended pain complaints. Generally, the pain literature suggest that incidence of pain which persists beyond three
to six months is chronic pain (Weiner, 1998). However, Eimer and Freeman (1998) consider this “criterion” arbitrary, preferring a view of chronic pain as an instance when pain persistence exceeds reasonable treatment, repair and recovery time. Chronic pain is correlated with moderate to severe changes in one’s daily functioning, with increased disability, with changes in psychological well-being, and in extreme instances, in suicide (Magni, Rigatti-Luchini, Fracca, & Merskey, 1998; Tang & Crane, 2006).

Biomedical Model

Biomedically, pain is viewed as a sensory system “unit of perception” that alerts one to impending physiological harm, dysfunction and/or damage (Lautenbacher & Fillingin, 2004). The biomedical model suggests that problems, generally, can be reduced to a single etiology which can be further dichotomized into an organic or functional disorder (Drossman, 1998). Hence pain is understood as a sensory perception, triggering a complex neural transmission from pain locations to the cerebral cortex for processing and appropriate motor response.

Pain Perception

The rudimentary physiology of pain is rooted in nociceptive (Latin derivative meaning harm or damage) afferents (nerve fibers) in the peripheral nervous system (PNS) that communicate internal and external pain perception to the central nervous system (CNS) (Zimmerman, 2004). There are three types of afferent nerve fibers: A-beta fibers, A-delta fibers, and C-fibers. A-beta fibers are sensitive to cutaneous touch, A-delta fibers are sensitive to touch of hair follicles and cold temperatures and sharp and/or pricking sensations. C-fibers form the largest group of peripheral nerve fibers (90
percent found in skin nerves) and are sensitive to touch of hair follicles and warmth/heat and are typically alert to burning sensations (Chapman, Nakamura and Flores, 1999; Zimmerman, 2004). Nociceptive information is relayed to the dorsal horn of the spinal cord, where peripheral nociceptive signals are further transmitted to the neurons of the brainstem reticular activating system. Transmission of nociceptive information to the brain is predominately affected by long axons of dorsal horn neurons crossing over to the other side of the spinal cord and ascending in the anterolateral tract (Zimmerman, 2004). Pain sensation is processed in the thalamus where all sensory information is relayed to the cerebral cortex and limbic system (Zimmerman, 2004; Fields & Price, 2006). The cerebral cortex performs the function of sensory-discrimination (recognition), cognitive-evaluation (appraisal), localization of pain, and of motor responses to avoid further discomfort. The limbic system is responsible for maintaining homeostasis as well as the affective-motivational (emotions) response of pain perception. Nocieptors are found in skeletal muscles, cardiac systems, joints, and most important to IBS, visceral systems. Low-threshold receptors operate concurrently with nociceptors in the perception of pain and related motor reactions (Fields & Price, 2006).

Biopsychosocial Model and Perspectives

The biopsychosocial model of assessment and treatment was created by Engel (1977), a psychiatrist, who believed the dominant biomedical model (Gatchel & Turk, 1999) was insufficient to capture the breadth of influences impacting disease, illness behavior, and well-being. In addition to biophysical analysis of the presenting complaint, it is essential to assess the cognitive, behavioral, emotional, and social issues
that exacerbate or attenuate the patient’s suffering and subsequent health status (Drossman, 1998; Flor & Turk, 2006; Gatchel & Turk, 1999).

Cognitive Factors

Cognitive theoretical perspectives dating from Beck’s early writings (1976) to recent authorships conceptualize human behavior sequentially in terms of cognitive-affective interpretation and appraisal of environmental stimuli, emotional reactivity, and manifest behavior(s). Elements of social learning (Bandura, 1971, 1977, 1983) and information processing models (Kornblum, 1969; Schneider & Schifferin, 1977) undergird the cognitive paradigm. One’s beliefs, view of self, worldview, and understanding of what is normal (commonly known as schema in cognitive-behavioral vernacular) is forged during early human development. This proclamation derives from social learning, positing that one learns in the context of nurturance, observance of other’s behaviors, interpersonal relationships and interactions that give meaning, and sets both cultural and sub-cultural standards for what is appropriate as well as inappropriate functioning. Likewise, information processing explicates how one selectively attends to certain stimuli (visual, auditory, somatic, etc.) that bears value to one’s well-being and readily ignores or disregards stimuli deemed unimportant, non-threatening and/or disconfirming to a particular conviction. These aspects of social learning and information-processing, then, are poignant to further tenets of the cognitive perspective, such as automatic thoughts, underlying assumptions, and cognitive distortions that are intertwined with the schema (Beck, 1976; Freeman, Pretzer, Fleming, & Simon, 1990).
Automatic thoughts are conceptualized as the occurrence of instant cognitive responses (literally one’s initial thought) to stimuli that transacts emotional and behavioral reactions. Second, underlying assumptions reflect previous learning experiences that develop into one’s heuristic for assessing, interpreting, and explaining situations. Third, cognitive distortions represent a “system of making inferences or drawing conclusions from faulty observations”; however, this does not mean the perception of a situation is inexact (Beck, 1976, p. 219). These tenets are central to CBT explorations of factors that the patient uses to guide his or her response to pain as well as to coping.

Eimer and Freeman (1998), Toner et al. (2000), and Turk, Meichenbaum, and Genest (1983) propose separate cognitive models of pain, developed from the cognitive ideology of human functioning. Yet, each insists on the importance of beginning with the pain sufferer’s cognitive interpretation of the pain sensation. It is at this stage one can discern the meaning of pain as it pertains to the individual’s overall functioning and/or safety. As such, a confluence of beliefs, cognitive interpretations and validating pain information can account for adaptive or maladaptive pain responses. These cognitive models of pain posit that pain sensation is intertwined with affective and emotional responses that can exacerbate the pain experience. Support for cognitive conceptions and models of pain comes from Flor and Turk (2006), Chapman, Nakamura, and Flores (1999), and Rutter and Rutter (2002) who remark that the cognitive representation of pain can contribute to an increased sensitivity to pain. Further support comes from Melzack and Wall (1965, 2006) as they argue that a mechanism in the dorsal horn of the spinal
cord reacts like a gate (gate control theory) to allow or disallow transmission of somatic nerve impulses to the cerebral cortex. The authors assert that the gate is influenced by the amount of excitatory activity forming in the dorsal horn. More importantly, they contend the cognitive-evaluative process is integral to pain neuronal activity that influences the gate.

Behavioral Factors

Beck’s (1976) writings convey the relevance of behavioral applications to redress unwanted behavior, resultant from deficient cognitive processing. Pain research has discovered interesting behavioral conditioning (classical and operant) processes that improve as well as hinder functioning.

Gentry and Bernal (1977), reportedly, are the first to consider pain from a classical conditioning (respondent conditioning) standpoint. The authors write that the association of pain with specific environments (unconditioned stimulus) and body positioning (unconditioned responses) leads to negative affective responses, increased sympathetic nervous system (SNS) activity and muscle tension. They believe such processes result in the maintenance of chronic pain when it is no longer related to the initial antecedent. Diesch and Flor (2005) support the respondent model of pain; this support is based on their investigation of this relationship, using eight men with no self-reports of chronic pain conditions. Flor and Turk (2006) surmise the chronic pain sufferer has learned to associate pain indiscriminately with any environmental or physical activity that is interpreted as interfering with premorbid functioning. The authors induced pain with an electrode attached to the medial phalanx of the third digit of the
non-dominant hand. A ticking clock (the conditioned stimulus) was paired with the stress of mental arithmetic and white noise (the unconditioned stimuli), which produces a stress-induced hypoalgesia, over two days of trials. The investigators found the clock alone elicited a hypoalgesic response and thus concluded that learning indeed influences nociceptive activity.

Fordyce’s (1976) writings remain quintessential to the operant conditioning model of pain-related behaviors. The author deemphasizes pain because it is non-observable; rather, he focuses on overt pain-related behaviors. The author posits that pain-related behaviors correlate with environmental reinforcements (i.e., day off from work, reduced household chores, increased attention from intimates, and so on). Hence, the operant condition model of pain proposes the initial origin of pain is supplanted by external contingencies that maintain pain behavior. Flor, Knost, and Birbaumer (2002) investigated 30 chronic back pain patients and 30 matched healthy volunteers. The chronic pain patients suffered from continuous low back pain for at least 6 months. Pain stimulation was provided with an electrode inserted into a small opening in the upper layer of the skin of the middle finger of the left hand. Subjects were given positive feedback when their actual pain rating was higher than the average rating of their trials for each intensity level in the habituation period (lower pain ratings were followed by negative feedback). The authors found both controls and chronic back pain patients could be affected by operant conditioning. However, the healthy controls showed faster extinction phases but the chronic back pain patients maintained their elevated pain ratings throughout the extinction phase. An explanation for the chronic back pain participants’
delayed extinction response in this study is that prolonged conditioning of behavior response was too extensive to be significantly affected in one protocol.

Emotional Factors

Emotion, mood and arousal are regulated by the limbic system which also composes the anterior cingulate cortex (ACC). Studies show surgical legions of the ACC alleviate pain and cingulotomy appears to reduce emotional responses to pain, yet preserves sensory components of pain (Craig, 2006). Despite current understanding of the nexus between pain and emotions, debate continues regarding emotion as a “cause or consequence of pain” (Craig, 2006, pp. 235).

Negative emotions (brain imaging studies of positive emotions ongoing) appear to correlate in a positive direction with pain sensitivity. Robinson and Riley (1999) conducted a literature review, addressing hypotheses that negative emotions increase pain sensitivity, negative emotions cause pain, and negative emotions and pain are biologically interrelated. The authors found mood induction studies did provide evidence that negative mood increased the reporting of physical discomfort. The authors also reported studies indicating affective disordered persons demonstrate a hyperalgesic response to pain sensation, compared to controls. However, Craig (2006) recognizes the existence of shared psychobiological systems that intuitively suggest a connection of pain and emotional variation. Craig (2006) suggest that there are no unequivocal reports in the absence of physical pathology that negative emotions have a cause and effect relationship with pain; rather, such findings are driven by correlational studies (Flor, Birbaumer, & Turk, 1990; Craig, 2006).
Recently, Giesecke, Gracely, Williams, Geisser, Petzke, et al. (2005) studied depression and fibromyalgia (FM), using 53 patients (33 female/20 male) and 42 controls (20 female/22 male). The subjects were asked to discontinue antidepressant medications 4 weeks prior to the study (depending on the half-life of the drug), but subjects were allowed to take non-steroidal anti-inflammatory medications prior to the study. On day 1 of the study, patients completed self-report questionnaires, underwent the structured clinical interview, and were familiarized with the pain-testing paradigm. On day 2, experimental pain testing and functional magnetic resonance imaging (fMRI) were performed. In patients with FM, neither the extent of depression nor the presence of comorbid major depression modulated the sensory-discriminative aspects of pain processing as measured by sensory testing or fMRI. However, depression was associated with the magnitude of neuronal activation in brain regions that process the affective-motivational dimension of pain. The authors conclude their data suggest that there are parallels and even independent neural pain-processing networks for sensory and affective pain elements. Rainville, Viet Huynh Bao and Chreten (2005) investigated the relationship of negative affect and pain, using subjects who were hypnotically-induced to experience relaxation, sadness and anger. The authors used healthy women and men (students and faculty) recruited from the University of Montreal. The subjects participated in three cold pressor experiments in which they were asked in submerge their hand and/or hands in 45 degree F water from 1-5 minutes across trials and rate their emotions and pain on the Self Assessment Manikin Scale (a non-verbal pictorial assessment technique that directly measures the pleasure and arousal associated with a
person's affective reaction to a wide variety of stimuli) (Lang, 1980). EGG and respiratory activity was also monitored for emotion-related physiological changes. The authors found increases in perceived pain statistically significant with more negative emotions (This also correlated with cardiac changes). Also, Strand, Zautra, Thoresen, Odegard, Uhlig, et al. (2006) studied 43 rheumatoid arthritis patients over an 8 week period, using telephone surveys of pain perception and mood states. These authors found that positive affect negates effects of negative affect pain perception. Similarly, Zautra, Johnson and Davis (2004) investigated variations of emotions and the interaction with pain using 124 women with osteoarthritis, fibromyalgia, or both. These authors found that positive affect correlates with less reported pain perception, and, conversely, negative affect correlates with increased reports of pain.

Social Learning Factors

Social learning paradigms explaining the augmentation of chronic pain have gained relevance and are integral to the biopsychosocial pain model. Rotter (1954, 1960) provides the theoretical framework for social learning with the extrapolation of “expectancy” of behavior and magnitude of the reinforcement(s). The author conceptualizes social learning as a triad of (1) behavior potential, (2) expectancy, and (3) reinforcement value (Rotter, 1954). Behavior potential refers to the likelihood that a behavior will occur, based on the strength or desirability of reinforcement. Expectancy is the belief that reinforcement will occur as the result of an exhibited behavior. Rotter (1954) believes the reinforcement value is the “degree of preference” and the
worth that the individual ascribes to it. However, this sequence is not viable when one
does not relate their behavior as contingent upon the reinforcer.

all learning phenomena resulting from direct experience occur on a vicarious basis by
observing other people’s behavior and its consequences for them” (Bandura, 1983, p. 88).
For Bandura (1977), social learning has four component processes: attentional processes,
retention processes, behavioral production processes, and motivational processes. First,
attentional processes establish those behaviors that will be selected to observe and the
valence the observer gives to the observational experience. Bandura (1977, 1983)
believed retention required encoding of information relevant to the observed behavior
and the contiguity of outcomes. This component is further represented by storage of
visual and verbal images of the observed experience that one maintains. This is to say,
practice is not necessarily in vivo but can be a cognitive rehearsal of observed behaviors.
During the behavioral production process, one evaluates the consistency of behavioral
outcomes for modification cross-situationally. The last component, motivational
processes, reflects both acquisition of learned behavior and one’s decision to perform the
behavior (behavior can be motivated altruistically and ulteriorally). Bandura (1977,
1983) believes it is this component of social learning that solidifies one’s belief that he or
she will or will not replicate observed behavior. For this stage of social learning requires
self-confidence that one can achieve desired results with their behaviors.

Bandura (1977) refers to such confidence as “self-efficacy” that, in part, is
derived from locus-of-control (LoC) theory (Phares, 1957, 1965). LoC is a generalized
psychological construct that describes one’s attitude as it translates to belief that a behavior is generated by one’s own capabilities or at the largess of external factors. Phares (1957) conducted the original investigations of LoC using a Likert-scale of 26 questions divided evenly, tapping into external and internal attitudes. In brief, the author found externally oriented persons or those subscribing to chance, had a statistically significant lower belief in their abilities to produce behaviors necessary to attain desired goals. From this, Bandura (1977) postulates self-efficacy is the “conviction” one has that he or she possesses the requisite abilities and capabilities to perform the behaviors that will achieve or produce the desired outcomes. Similarly, the author believes that outcome expectancy is one’s approximation that he or she can successfully perform behaviors needed to accomplish the sought after outcome. What is important about this theorem is that self-efficacy is believed to affect how much effort and time one will expend; moreover, this will affect how long he or she will persist in goal-directed behavior, despite aversive experiences (this may be linked with coping resilience).

LoC and social learning are indicated in early development of pain management and secondary gain. Regarding the relationship of LoC and pain, several authors (Arraras, Wright, Jusue, Calvo, & Calvo, 2002; Bates, Edwards, & Anderson, 1993; Schariff, Turk, & Marcus, 1995; Toomey, Mann, Abashian, & Thompson-Pope, 1991) find a correlation between one’s self-assessment of pain intensity and pain-related limitations and LoC. Generally, individuals with an internal LoC perceive their pain as less bothersome and less incapacitating than persons inclined towards an external LoC. With respect to social learning, Christensen and Mortensen (1975) found children
exhibited identical pain syndromes as their parents currently had. This is considered contrary to children commonly reporting pain complaints their parents would have had during childhood. Chambers, Craig and Bennett (2002) investigated the relationship between maternal pain management and children’s pain reaction and coping. Participants were 120 healthy children (60 boys, 60 girls) between the ages of 8 and 12 years and their mothers. Mothers were randomly assigned and trained to interact with their children in one of three ways: (1) a pain-promoting interaction, (2) a pain-reducing interaction, and (3) a no training control group. The children underwent lab-induced cold pressor pain experiments that were assessed using self-reports of intensity and affect, coding of facial activity, pain tolerance, and heart rate responsiveness. Girls whose mothers’ interacted with them in the pain-promoting manner reported more pain than daughters of mothers in the control group, who in turn reported more pain than girls whose mothers’ interacted with them in the pain-reducing manner. In contrast, maternal pain modeling had no significant effect on the sons of either group. Chambers, Craig and Bennett (2002) suggest the boys may not have attended to their mothers’ behavioral response as a result of gender-role modeling. The boys’ responses to their mothers may have been a product of gender-role socialization about how males should respond to pain. The positions on gender-role development has been argued by seminal gender-schema and self-schema theorists such as Bem (1981, 1982); Markus, Crane, Bernstein, and Siladi’s (1982); and Forbach, Evans, and Bodine (1986). Chambers et al. (2002) believe the results for both girls’ and boys’ groups support the importance of social learning factors in development and influence of children's pain experiences.
Further, social learning is indicated in recurrent abdominal pain (RAP) which may be a precursor to IBS. RAP affects 0.3 to 19 percent of US children; it is prominent in children, 4 to 6 years-of-age and in early adolescence, and it is most prevalent with females (Chitkara, Rawat, & Talley, 2005). RAP is reported to be associated with psychological comorbidity in childhood, transcending adulthood pain profiles. Research suggests that FGID complaints in children, including RAP, may arise in part through social learning in the form of children modeling parents’ pain and illness behaviors as well as parental reinforcement of children’s pain and illness behaviors (Mechanic, 1961).

Venepalli, Van Tilburg, and Whitehead (2006) investigated a community sample of 40 RAP consulters, 41 RAP non-consulters, and 36 pain-free controls and their mothers. Participants completed questionnaires on GI and non-GI symptoms, school absenteeism, psychological symptoms, coping, self-esteem, and behavioral and cognitive responses to RAP. Study analyses showed RAP children had more physical complaints, and reported more distress and more passive coping. The mothers of RAP children, in contrast to the controls, were more likely to have IBS or somatization disorders (although not statistically significant). The authors concluded that their findings are consistent with Bandura’s (1977) modeling hypothesis and suggest the study results are indicative of an association between RAP and the child’s familial and living environment.

“neurotic illnesses” using twins recruited from an Australian Twin Registry between 1984 and 1986. The sample comprised 104 female MZ pairs, 82 male MZ pairs, DZ pairs, and 71 male DZ pairs. The authors found that 638 individuals had no functional bowel disorder (FBD) symptoms, 33 had one or more symptoms, 25 had one symptom, and 8 had two or more symptoms (4 symptoms maximum). The authors report that 58 percent of individual differences in FBD symptom-reporting are due to inherent pathophysiological differences, with the remainder possibly influenced by environment. The authors report that the limitation with their study was an ill-defined construct of FBD based on the participants’ “practioners’” constellation of symptom criteria. Another problem is that neither of the available symptom criteria for IBS, Manning or for Rome, were used. In another twin study, Levy et al. (2001) using questionnaires to solicit information from 11,986 twins find that IBS rates are significantly higher for monozygotic twins. Likewise, dizygotic twins of IBS mothers report significantly higher IBS rates than dizygotic twins, without a parental marker. These authors believe their finding supports a consideration of an association between social learning and poor adaptation to IBS by treatment-seekers. Finally, Mohammed et al. (2005) looked at the genetic and environmental prevalence for IBS in 888 MZ pairs (82 males) and 982 DZ pairs (69 males) recruited from a UK national volunteer twin register. IBS was indicated in 17 percent of the MZ twins and 16 percent of DZ twins, using Rome II criteria. Mohammed et al. find parental family histories of IBS are more strongly correlated with a complaint of IBS by an individual than that of an individual having a twin with IBS. The authors conclude genetic factors are less of a factor but the environment is the
overarching factor in the development of IBS. It is suggested that the latter study results contradict earlier ones because different criteria was used to define the study population. In the latter study, participants showed a higher rate of IBS (comparable to UK community statistics) than the earlier study participants. Moreover, the former studies used much younger participants (15-20 years younger) and more males.

Culture and Pain

Cross-cultural research reveals a myriad of differences in pain tolerance and thresholds, affective-motivational responses to pain, and divergent inter- and intra-cultural pain coping strategies. There are also indicators that poor patient and physician communication hinders assessment and management of pain complaints.

Chapman and Jones (1944) are among the earliest researchers in cross-racial pain research. These authors investigated pain sensitivity in 200 “normal” participants as evidenced by the subject’s biopsychosocial history. Participants’ ages range from 10 to 85 years and “a majority of the group were of Northern European stock; the remainder included 25 Southern Negroes, 15 Ukrainians, and 30 of Jewish and other Mediterranean races” (pp. 81). The study participants were from various but unspecified socioeconomic backgrounds and gender was referenced but not quantified. The investigators used a 1,000 watt tungsten filament lamp with an aperture and a 3 second time exposure shutter as the laboratory pain inducing instrument. The light was applied to the participant’s forehead and the amount of heat was expressed in absolute end-point values per second per square centimeter of skin surface (Chapman & Jones, 1944). The investigators found Blacks had lower pain perception and threshold levels than Northern
Europeans. However, the Mediterranean group’s pain perception and pain thresholds were more closely aligned with the Black participants. The authors retested 3 Black participants with vitiligo (a skin disorder marked by smooth white spots on various parts of the body) because pigmentation was considered a factor in pain differences. However, no differences were found when light was applied both to the pigmented and to the non-pigmented skin areas.

Despite Chapman and Jones’ (1944) work, Zborowski (1952), a medical anthropologist, is credited as the pioneer of cross-cultural pain research. His initial study involved a convenience sample of 103 (87 pain suffers and 16 healthy) men. The study compared pain complaints of Jewish (31), Italian (24), Irish (11), "old American" (26), and other (11) veterans at Kingsbridge VA Hospital, Bronx, New York. The author conducted clinical interviews with the participants, observed their behavior when in pain, and discussed individual cases with care providers and other persons involved in the participants’ daily pain experience. Zborowski (1952) concludes that social factors in the development of ethnocentrism influence pain expression and adaptation. This is to say, the author theorizes that the men’s adaptation to pain is driven by belief systems cultivated and conveyed by their cultural groups.

This theorem has been used in subsequent research to determine how cultural groups set “standards” for appropriate response to pain and pain-related behavior (Kitayama & Markus, 1994; Koopman, Eisenthal, & Stoecke, 1984; Roseman, Dhawan, Rettek, Naidu, & Thapu, 1995). For example, Finnstrom and Soderham (2006) conducted interviews with Somali women presenting for pain treatment at a Swedish
hospital. The Somali patients reported stoicism was the “expected” pain behavioral response, especially for men; however, Somali children, too, were reared to control their pain. This is born of the belief that with life comes pain, so one has to learn to control it with the assistance of Divine intervention. Johansen (2002) writes that these traditional views and interventions are exhibited more by rural Somali’s who may not have access to healthcare, but, urban dwellers also resort to traditional/indigenous care when modern healthcare appears ineffective. A similar cultural commentary is made by Horbara (2004) who compared pain behavior beliefs of Japanese and Euro-Americans. Horbara (2004) recruited participants from public libraries in Japan and the US. The distinguishing factor observed by the author is that both Japanese women and men found overt expression of pain as less acceptable compared to the Euro-American sample. As with the Somali sample, stoicism and concealing of pain, reportedly, is the cultural norm.

Edwards, Moric, Husfeldt, Buvanendran and Ivankovich (2005) conducted a survey study of Hispanic, White, and Black chronic pain patients who were solicited from an unspecified U.S. university hospital pain center. This study observed pain intensity, pain-related emotional distress, pain-related disability, and pain coping. The participants’ responses indicate no significant group differences for pain perception, affective impairment, or pain-related disability. The authors do find Blacks and Hispanics use prayer and hoping as a pain coping strategy to a greater extent than the White cohort. This is a finding comparable to that of Tan, Jensen, Thornby, and Anderson (2005) who investigated 128 Blacks (89.1 percent male) and 354 Whites (90.4 percent male) at a Veterans Affairs Medical Center and found the participants’ attitudes,
beliefs, coping responses and adjustment to chronic pain was similar. However, the Black subjects did express less perceived control over pain and more external pain-coping strategies (i.e., prayer). Portenoy, Ugarte, Fuller, and Haas (2004) caution that perception of control can be misleading because this may reflect “realistic” thinking that permeates various aspects of living by Blacks and Hispanics who may see pain as a natural life occurrence. These authors conducted a nationally representative random-digit dial probability telephone survey for chronic pain subjects (444 Whites, 447 Blacks, and 434 Hispanics participated). The investigators report no statistically significant differences in participants’ perceptions about pain; however, those in lower socioeconomic status (SES) groups express greater disability. Relative differences lie in social support; Hispanics and Blacks, disclose less understanding and support from family and friends than the White cohort. Furthermore, in this study, Blacks and Hispanics were less likely to seek professional treatment (any discipline) for pain and Hispanics used analgesics the least, out of concern for developing addictions. This concern should not be seen as an exaggeration because Molea and Augustyniak (2005) discuss the potential abuse and addictive perils of opioid analgesic, sedative hypnotics, and stimulants used in chronic pain treatment. Though not stated, treatment may have been influenced by SES and ability to pay for physician visits (uninsured/underinsured) and pharmaceuticals. Last, Hastie, Riley, and Fillingim (2005) conducted a telephone survey of healthy undergraduate males and females less than 35-years-old at the University of Florida. Similar to the aforementioned clinical studies, this one reveals no cultural differences in pain prevalence or severity. However, the authors indicate that
White students use self-care but Hispanic and Black students more often utilize prayer and hoping.

Baker and Green (2005) and Green, Baker, Sato, Washington, and Smith (2003) find younger women (less than 50-years-old) report more pain-related impairment and less adaptation than older women. Baker and Green (2005) conducted a survey study with a clinical population solicited from the University of Michigan’s Multidisciplinary Pain Center. Younger Black and White women were more likely to complain of pain and affective disorders associated with chronic pain and manage less well with pain than their older racial group participants. The implication is that older persons have more experience adapting to pain and thus exhibit less interference from pain in daily activities. Lachapelle and Hadjistavropoulos (2005) also conclude in their study of 280 older and younger pain sufferers (low back pain, shoulder pain, etc.) that increasing age was correlated with lower pain severity and less daily interference. Unlike Baker and Green (2005) and Green et al. (2003), Lachapelle and Hadjistavropoulos (2005) defined older as persons as those above 64 years-of-age.

Pain and Illness Behavior

Pain and illness behavior are separate but overlapping terms and used interchangeably in healthcare literature. Generally, pain behaviors refer to physical and emotional pain that causes changes in function commensurate with the pain problem or the episode (i.e., fractured leg that is healing may lead to changes in gait, posture, or length of time on feet). On the other hand, illness behavior revolves around attitudes, beliefs, understanding of prognosis, and expectations of functioning related to pain. (e.g.,
better to lie in bed than aggravate fractured leg). Both, pain and illness behaviors can persist long after the severity of the pain has abated.

Pain behaviors as conceptualized by Fordyce (1976) refers largely to the observable behaviors (verbal and non-verbal) individuals express during the experience of pain (i.e., gait, posture, use of walking aid, grimace, etc.). In this vein, pain behavior is an amalgamation of neural, situational, and environmental influences (previously addressed). Fordyce (1976) believes pain behaviors serve a meaningful purpose, insofar as, the sufferer is able to report onset, antecedent, duration, limitations and interference. Fordyce (1976) also believes efforts the sufferer makes to manage the pain and aspects of the patient’s social network that attenuate or exacerbate pain behavior is relevant. Fordyce’s (1976) early writings established that pain was subjective and pain behavior was difficult to measure reliably. Current research finds expressions of pain can be qualified and quantified (Labus, Keefe, & Jensen, 2003; Prkachin, Huges, Schultz, Joy, & Hunt, 2002). Self-reports and observational reports (including videotapes) have been systematically classified, based on subjective and objective pain related functioning for various complaints (Labus, Keefe, & Jensen, 2003; Phillips & Jahanshahi, 1986; Prkachin et al., 2002). Nonetheless, pain behavior remains a complex problem particularly given its relationship to illness behaviors.

Mechanic (1961) pioneered the concept of illness behavior as physical symptoms perceived, evaluated and acted upon differently from person to person. The author posits that variables affecting illness behavior begin in the environment and are forged prior to the onset of disease symptoms and are manifested in the morbid state. Mechanic (1961)
alludes to the pain sufferer’s learned behavior for responding to disease symptom as paramount for maintenance of illness behaviors.

Crane and Martin (2002, 2004) conducted studies focusing on pain and illness-behaviors that also support theorems of learned behaviors. One study (Crane & Martin, 2002) consisted of student (137 women and 132 men) participants who completed seven mail-in questionnaires pertaining to parental response to the participant’s childhood illnesses, somatic complaints, and effects of illness on daily life. The authors discovered that the participants reported current illness behaviors moderately reflected the influence of their childhood caregiver’s illness-related attitudes and behaviors. Crane and Martin (2004) also conducted an illness-behavior study using 25 participants diagnosed with IBS and 33 individuals diagnosed with Inflammatory Bowel Disease (IBD), recruited chiefly from primary care facilities. The authors concluded that IBS subjects who were raised by caregiver(s) with IBS had appeared to adopt illness-behaviors that were associated with passive coping. The passive coping that the authors describe are avoidance-behaviors; for example, slight abdominal pain is reason to stay home and rest excessively.

In summary, pain is explained biopsychosocially as an integrated action that requires a multi-factorial understanding of the pain suffer. The goal is not just pathophysiologic reconstitution or recovery along a linear measure but addressing the psychosocial variables that improve current and future adaptation to pain. Cultural influence may promote learning experiences that generate similar ways of viewing pain within groups. The relevance is that this appears to establish the premise that (1) cultural
schemas lay a foundation for appropriate response(s) to subjective pain; (2) social
learning for adaptation to IBS is implicated; and, (3) cultural variation in pain perception
and tolerance seems to be empirically supported.
Coping

Coping strategies are central to chronic pain management as indicated in a plethora of pain literature investigating adaptive and maladaptive adjustment to pain. Although there appears to be no unanimous agreement on a definition of coping, generally, coping involves cognitive and behavioral strategies to manage responses to stress (Lazarus, 1966; Lazarus & Folkman, 1984; Everly & Lating, 2002; McCracken & Eccleston, 2003; Roesch & Weiner, 2001).

Historical Perspective

Coping theorems originate in animal studies and psychoanalytic ego psychology (PEP) (Haan, 1964; Miller, 1980; Tomkins, 1965; Vaillant, 1971). Both animal and PEP theories of coping propose that behavioral responses to stress are mediated by emotional processes. Animal emotions have been demarcated into fear and anger which dictate various reactions to stress. Fear in animals has been correlated with escape or with avoidance behavior, but anger commonly precedes aggression and/or attack behaviors. PEP suggests stress signals threat to well-being and the need for protective behavior(s). PEP theories of coping generally approach coping from a “unidirectional” viewpoint and place less emphasis on cognitive activity.

Evidenced-based Coping Theorems

Lazarus (1966), in authoring a text on psychological-stress theory emphasized a two-process appraisal model of stress that included coping. His monograph, according to some, has become the trace origin of contemporary human coping literature. However, his use of the term, coping, is preceded by Murphy’s (1962) utilization in her writings on
child development. However, it is not clear that Murphy (1962) was intentionally articulating a concept of coping, but rather, using the word in addressing vicissitudes children encounter. She believed children as young as two years-of-age demonstrated the wherewithal to recognize threat and otherwise problem situations. Therefore, Murphy (1962) wrote there were instances in which a child experienced novel "demands" and stressful situations that required more than "well-established" or automatic responses. She emphasized a dual purpose of coping: (1) confronting threat situations and (2) problem solving in novel situations.

Lazarus (1966) appears to adopt and advance Murphy’s (1962) use of coping in his stress-theory insofar as it applies to threat. He theorized that in stressful situations one evaluates the existence of threat via primary and secondary appraisals. The former involves evaluation of the stimulus evoking threat, the imminence of threat (pain sensation), specificity of threat (abdominal pain), history for threat situation (dissipation within minutes, hours, and so on) and determining resolution (pharmacotherapy, cognitive-behavioral coping intervention). Secondary appraisal involves coping processes that focus on localizing the threatening stimulus (lower abdominal pain), considering viability of alternative coping responses (ignoring, prayer), assessing situational constraints (traffic congestion), and coping disposition (distraction techniques). Lazarus (2001) argues primary appraisal is foremost a process of determining whether or not a stimulus warrants attention and is not indicative of more or less importance than secondary appraisal. Folkman and Lazarus (1980) and Lazarus and

Emotion-focused coping is a process whereby strategies, such as venting emotions, positive reinterpretation/reappraisal, and soliciting emotional social support occur. Emotion-focused coping does not alter the situation and/or the stimulus associated with the stress but attempts to improve one’s affective response. On the other hand, problem-focused coping targets alteration of the situation and/or a change in behavior through the detection of the problem(s), generation of solution(s), a consideration of the cost-benefit of solutions, finally, implementation. Folkman and Lazarus (1980) and Lazarus and Folkman (1984) assert problem-focused coping also involves “cognitive reappraisal” of need for “inward-directed” changes, such as learning new skill sets and improving upon customary behaviors.

Evidence for emotion- and problem-focused coping is demonstrated in Folkman and Lazarus’ (1980) survey study of 100 men and women ages 45 to 64 years, reporting on their coping tendencies for a variety of daily stressors. Participants completed a 68-item checklist containing emotion- and problem-focused coping statements. Questions ranged from minor car problems to major life events such as the death of loved one. More than 1,300 stressful episodes were analyzed, indicating that emotion- and problem-focused coping were used in approximately 98 percent of the situations. Recent pain studies also indicate the use of such coping preferences (Allen, Golightly, & Olsen, 2006; France, Keefe, Emery, Affleck, France, et al., 2004; Keefe, Affleck, France, Emery, Waters, et al., 2004).
Another prominent human coping theorem, problem-solving, was authored by D'Zurilla and Goldfried (1971) that has since been refined (Nezu & Ronan, 1988; D'Zurilla & Nezu, 1990; Nezu & Nezu, 1993). D'Zurilla and Goldfried (1971) define problem-solving as “the process of techniques by which one attempts to ‘discover’ a solution to a problem.” (pp. 109). Moreover, D'Zurilla and Goldfried (1971) envision problem-solving perpetually combining previously learned and useful ways of responding to situations with newly acquired ways for addressing novel stress-related situations. D'Zurilla and Goldfried (1971) argue two assumptions: first, poor abilities to manage stressful situations concomitant with intrapersonal and social variances in stability set the stage for affective and behavioral degradation and subsequent psychotherapeutic intervention; second, affective and behavioral problems can be avoided or greatly reduced with acquisition of problem-solving skills. These skills presumably do facilitate efficacious management of future encounters with daily stressors. Ultimately, problem-solving has the potential to improve adaptation to stress and enhance social competence while decreasing situational maladjustment.

The first component of the problem-solving model (D'Zurilla & Goldfried, 1971) is problem orientation, which focuses on one’s historical response regimen to coping with problematic situations. This is followed by four problem-solving skills sets: (1) problem definition and formulation, (2) generation of alternative solutions, (3) decision making, and (4) solution implementation and verification. Problem definition and formulation focuses on factual information, clarification, and generation of obtainable problem-resolution goals. The generation of alternative solutions seeks to compile an exhaustive
list of solutions to maximize the probability of finding a successful solution. Regarding decision making, D’Zurilla and Nezu (1990) posit that this skill set involves one’s choice of the most efficacious solution for implementation. Last, solution and verification is the process of self-monitoring and self-evaluation of the problem outcome.

Shaw, Feuerstein, Haufler, Berkowitz, and Lopez (2001) investigated pain problem-solving with 973 US soldiers from Eastern US military installations who suffered with low back pain (LBP). Soldiers found it helpful when they viewed chronic pain as a set of sequential problems rather than one overriding problem. Also, positive problem-solving orientation appeared to buffer the impact of LBP severity on functional limitations. Subtypes of positive problem-solving included high self-efficacy, persistence, and commitment to finding solutions. Conversely, the authors found those soldiers with an avoidant, impulsive and careless problem-solving approach coped less well with LBP. In another study Nezu, Nezu, Felgoise, McClure and Houts (2003) used problem-solving to assess its efficacy in decreasing distress and improving HRQoL for cancer patients. The authors concluded their findings by using 132 participants composed of two protocol groups: (1) problem-solving treatment (PST) for participant only and (2) PST for participant and significant other. This study found that both groups show post-treatment improvement; however, participants receiving PST along with their significant other demonstrated better post-treatment improvement both at 6 month and at one year follow-ups.
An alternative coping paradigm that builds on emotion- and problem-focused coping as well as problem-solving is active and passive coping. Light and Obrist (1980) are credited with pioneering the concept of active and passive coping. Their discovery is born of studies of the psychophysiology of coping and cardiovascular response. Light and Obrist (1980) conducted stress tasks with 60 male undergraduates (ages 18- to 29-years-old). The investigators used heart rates (HR) as a predictor variable in stress-evoking tasks, such as submerging a foot in cold water, watching 4 minute clips of heterosexual pornography, and completing a 14 minute task or suffering an electric shock. Light and Obrist (1980) found elevated HR was common for all subjects during tasks involvement. However, the authors found that some men exhibited lower than average HR and others above average HR during the tasks. Light and Obrist (1980) discovered that participants with the fastest reaction and tasks completion times also showed lower HR and were more cognitively “engaged in actively coping” with the stressors. The authors concluded that coping can be dichotomized into active and passive types. In support of Light and Obrist’s (1980) assumptions, Bandler, Keay, Floyd, and Price (2000) and Keay and Bandler (2001) find physiological variance is evident for active and passive coping responses. Keay and Bandler (2001) report active coping is induced by activation of dorsolateral or lateral columns of the periaqueductal gray region (PAG) and passive coping is evoked by activation of the ventrolateral PAG. Anatomical studies reveal the PAG columns receive ascending and descending afferents specific to the coping type involved (Keay and Bandler, 2001). Similarly, Malan, Schutte, Malan,

Brown and Niscassio (1987) applied the concept of active and passive coping to pain management. The authors contend that active coping is performed by persons who see their self-directed efforts as pivotal to improved functioning with chronic pain. The premise is that active coping involves more independent efforts at problem resolution and one sees his or her own actions as essential for better well-being. Passive coping, however, occurs when one relinquishes self-control of pain management to others, for example, depending on the healthcare provider for resolution or seeking Divine intervention. Nicholas, Wilson, and Goyen (1992), dubiously, expand Brown and Nicassio’s (1987) definition of active and passive pain coping. Nicholas et al. (1992) specify that active pain coping is an instance in which one uses his or her available resources, and that passive pain coping is the exhibition of helplessness and/or reliance on others. This notwithstanding, Brown and Niscassio’s (1987) findings are based on their development of the Vanderbilt Pain Management Inventory (VPMI) (Brown & Niscassio, 1987) which is the original pain measure that elicits active and passive coping. The researchers used 361 rheumatoid arthritis patients to complete the self-report items and results indicate that passive coping is significantly correlated with increased pain perception and interference.

Snow-Turek, Norris, and Tan (1996) also investigated the validity of active and passive pain coping. These authors recruited 64 men and 12 women from the Houston Veteran’s Administration Hospital pain management clinic. These authors used the
Coping Strategies Questionnaire (CSQ) and the VPMI to compare active and passing pain coping (both measures have active and passive factor structures). Based on these comparison measures, the authors find support for active and passive coping dimensions. This study also concludes that the CSQ is psychometrically sounder than the VPMI for measuring active and passive coping. Mercado, Carroll, Cassidy and Cote (2005) also examined the relationship between passive coping and the development of pain. The authors’ study indicates that persons adopting a passive coping strategy significantly lower adjustment to pain. Furthermore, Crane and Martin (2004) find a correlation between adult subjects’ parental reinforcement of illness behaviors and the subjects’ current passive pain behaviors associated with IBS.

Comparatively, empirical research and review articles for IBS-related pain coping are less abundant than pain-related coping studies as a whole. Nonetheless, IBS and other types of pain studies consistently find active and passive cognitive and behavioral coping strategies correlate with greater or lesser daily functioning (Asghari & Nicholas, 2006; Fernandez & Turk, 1989; Haythornthwaite, Clark, Pappagallo, & Raja, 2003; Haythornthwaite, Menefee, Heinberg, & Clark, 1998; Keefe, Kashikar-Zuck, Robinson, Salley, Beaupre, et al., 1997; McCracken & Eccleston, 2003; Turner, Jensen, & Romano, 2000; Turner, Mancl, & Aaron, 2004).

Coping and Socioeconomic Status

Socioeconomic status (SES) as a social science construct generally refers to or incorporates education, occupation and income into this composite variable. As such, SES is reportedly a core variable to well-being throughout the life-span (Adler, Boyce,
Chesney, Cohen, Folkman, et al. 1994). One’s SES is correlated with various aspects of QoL and HRQoL, such as employment, disposable income, quality and safety of living environment, quality of educational institutions, nutrition, health maintenance practices, psychopathology, and rates of mortality (Carey, 1977; Marmount, Shipley, & Rose, 1984; Wadsworth & Achenbach, 2005). Epidemiological and health survey data consistently indicates higher SES persons report experiencing better QoL and HRQoL compared to those of lower SES (Ross & Mirowsky, 2000).

Another area of SES investigation is its relationship with coping and pain management (Landau, 1995; Roth & Giesser, 2002). Landau (1995) conducted a self-report study comparing locus of control (LoC), SES, and coping. The author suggest gradients of resources are concomitant with SES and the higher one’s SES, the more coping resources one can access to buffer the impact of stress. However, Landau (1995) also found in her study that LoC is a more stable and stronger predictor variable of coping efficacy because LoC was independent of SES in one’s overall ability to cope with major (death) and minor (traffic congestion) life events. As with previous studies mentioned, Landau (1995) finds that internal and external LoC is equal if not better than SES, in determining hardiness in coping. It should be noted that interpretation of the participants’ abilities to cope was not measured by a coping instrument; this was deduced using a LoC questionnaire. In another self-report study, Roth and Geisser (2002) investigated the relationship of level of education (LoE) with pain beliefs and coping strategies, using 299 chronic spinal pain patients. Participants were aggregated as follows: less than a high school diploma (51), high school education (55), some post-
secondary technical school training or college (126), college graduate (31), and graduate or professional school degree (36). The authors find in their study that LoE is not correlated with pain intensity. However, lower LoE correlates with increased pain-related disability, decreased belief in ability to control pain, and higher instance of passive pain coping. Interestingly, this study also reveals that persons of lower LoE are more likely to endorse the belief that their pain “required a medical solution.” Conversely, Roth and Geisser (2002) learned that persons of higher LoE are more likely to utilize coping self-statements and believe they can affect pain control.

SES pertains to pain and coping behaviors; however, what is not clear is how SES impacts cognitions for pain and pain resolution. Adler et al. (1994) suggest that social evolution is one binding factor, because SES (regardless of stratum) perpetuates group behavioral norms such as transmission of beliefs and ways of coping that benefit the survival of the group. Also, it is argued that by virtue of the process of educational attainment one learns to confront challenges (academic stress) that may affect development of problem-solving skills applicable to daily stress situations. Last, although active and passive coping does not appear to be exclusive to SES, it may be that persons of similar SES aggregates cope differently with respect to differences in availability of resources.

Age and Pain-related Coping

Pain and its biopsychosocial impact can be age aggregated because younger persons are likely to experience pain more intensively than older persons due to nociception density. With increasing age humans suffer a loss in nociceptors, inhibiting
one’s physiological detection and responsiveness to perceive pain stimuli (Melzack & Wall, 2006). From a psychosocial context, younger persons reportedly divert their attention from physical pain in order to meet the demands of a livelihood (building career), maintaining collegial, family and interpersonal relationships, and general self-fulfillment activities associated with younger ages. On the other hand, Lachapelle and Hadjistavropoulos (2005) postulate that older persons who generally have met the pressures of biological and social propagation, in particular, retirees, have more time to attend to physical pain. However, these age-related developmental views cannot diminish older persons’ susceptibility to pain syndromes associated with age-related physical decline such as osteoarthritis. What the aforementioned may allude to is that developmental stages along the human life span may necessitate use of different coping strategies.

Empirically, more pain research has been conducted with younger persons, emphasizing pain perception, threshold and tolerance. Conversely, age-related pain research addressing coping strategies is scarce. Lachapelle and Hadjistavropoulos (2005) report the existence of only three studies researching age-related pain coping strategies, specifically. This writer has reviewed several other studies that address and/or comment on age-related pain coping strategies as a component or outcome of their research (Baker & Green, 2005; Green, Ndao-Brumblay, Nagrant, Baker, & Rothman, 2004; Soares, Sundin, & Grossi, 2004). These researchers mixed findings can be attributed to differences in the measures and age parameters used across the studies. For example, Keefe and Williams (1990) utilized the Coping Strategies Questionnaire
(Rosenstiel & Keefe, 1983), which has been criticized for items indistinguishable as bona-fide coping strategies. On the other hand, Sorkin, Rudy, Hanlon, Turk and Stieg (1990) used a semi-structured interview to assess their participants’ coping strategies. Regarding age criteria, each study reviewed used different age aggregates.

Combined, the studies offer sundry and contradictive findings because some studies suggest younger persons are more apt to engage in active coping strategies such as, distracting attention, but older persons are more likely to use passive coping (praying-hoping and catastrophizing). Still, some studies (Baker and Green, 2005) do not support older persons’ reliance on passive coping strategies to a significant extent over younger persons. Although these coping strategies portend success with pain coping, some of the studies reviewed suggest that older persons cope better with pain despite greater usage of passive coping (Green, et al., 2005).

In summary, various coping models exist to explain adaptive and maladaptive pain-related coping. Active and passive coping constructs are established and empirically supported by pain researchers. Socioeconomic status may be less of a determinant of coping than one’s internal resolve; nevertheless, position in the social strata does appear to impact wellness. Last, success of pain-related coping strategies is linked to age, yet findings appear dependent on the studies’ methodologies.
Summary

IBS is a ubiquitous chronic pain condition, but, reported more frequently among women. Global estimates of prevalence will differ, based upon the diagnostic criteria used: Manning, Rome, or Rome II. IBS rates are also affected by persons who are diagnosed, but who do not become frequent treatment-seekers. It is notable, that profiles of the treatment-seeker and non-treatment-seeker appear to be correlated with co-existing psychological issues. For example, it appears that IBS treatment-seekers are more likely to have histories for psychosocial disturbances such as sexual abuse, affective and anxiety disorders, and somatization disorder. This no less decreases the ramifications of IBS regarding its potential to alter negatively, one’s psychosocial functioning and impact expenditures for treatment. For US studies show the IBS treatment-seeker is likely to be absent from work more, and, spend more annually for healthcare compared to US norms.

Abdominal pain is the common protagonist of IBS treatment-seekers. Though IBS etiology is not solidified, perceptual hypersensitivity is a leading theory explaining sufferers’ problems. Brain imaging studies do show IBS subjects, when compared to controls, have greater activity in regions of the brain corresponding to affective response during laboratory induced pain experiments. On the other hand, researchers find significant correlations with IBS sufferers’ developmental histories for illness-behavior promoted by a caretaker and/or by a cultural enclave. Such revelations give traction to social learning, helplessness, and LoC theorems explicating IBS pain conditioning, complaint, and adaptation.

Various coping paradigms and evidentiary studies help us to understand cognitive
and behavioral processes associated with pain and adjustment. Pain coping is commonly
dichotomized as active and passive types and these are associated with better and poorer
outcomes, respectively. Acquisition of coping strategies alters cognitive structuring of
previous pain behavior schemas and improves coping self-efficacy through systematic
interventions.
Research Question

Will age, socioeconomic status (SES), pain severity, coping strategies and pain behaviors predict “relevant pain behavior” as defined by daily activities on the West Haven-Yale Multidimensional Pain Inventory (WHYMPI)? It is believed that active and passive coping strategies endorsed on the Coping Strategies Questionnaire-Revised (CSQ-R) will coincide both with pain behaviors and with daily activities, self-reported on the Pain Behavior Questionnaire (PBQ) and with WHYMPI enabling predictability of pain-related daily activities.

Hypotheses and Rationale

Hypothesis 1. Given the reported impact of coping styles on pain and consequent biopsychosocial well-being, it is hypothesized that Praying-Hoping and Catastrophizing (passive coping strategies) as measured by the CSQ-R will correlate positively with increased Pain Avoidance and Pain Complaint behaviors (measured by the PBQ) and decreased daily activities (measured by the WHYMPI). Conversely, it is hypothesized that Reinterpreting Pain Sensations, Ignoring Sensations, Coping Self-Statements, and Diverting Attention (active coping strategies) as measured by the CSQ-R will have an inverse relationship with Pain Avoidance and Pain Complaint behaviors and a positive relationship with increased daily activities.

Hypothesis 2. Abdominal pain and/or discomfort is the primary symptom of IBS and generally the most common treatment-seeking complaint and the most common disruptor of daily activities. Therefore, it is hypothesized that increased Pain Severity and increased Interference as reported on the WHYMPI will correlate with increased passive
coping strategies (per the CSQ-R), increased Pain Avoidance and Pain Complaint behaviors (per the PBQ), and decreased daily activities (per the WHYMPI).

Hypothesis 3. According to Fordyce (1976), self-efficacy is pivotal to pain behavior attenuation and/or exacerbation. Hence, it is hypothesized that Life-Control as reported on the WHYMPI will have a relationship with passive coping strategies and Pain Avoidance and Pain Complaint behaviors.

Exploratory Hypotheses

Hypothesis 4. Although the pairing of pain-related coping and SES research is scarce, studies in general indicate that persons of lower SES readily engage in passive pain coping (Adler et al.) and report more pain-related limitations. Hence it is hypothesized that passive coping strategies, increased pain behaviors, and decreased daily activities will correlate with less than bachelor degreeed participants.

Hypothesis 5. Pain literature indicates a nexus between age and pain-related coping, specifically, older persons adapt to pain better than younger persons. However, the research in connection with age and pain-related coping has yielded mixed results (Crane and Martin, 2004; Baker and Green, 2005). Using Baker and Green’s (2005) age parameters, it is believed more Pain Avoidance and Pain Complaint behaviors, passive coping strategies, and pain-related daily activities will occur in persons less than 50 years-of-age.

Learning such relationships further refines conceptualization and the cognitive-behavioral propensities for this pain syndrome group. This can be worthy insofar as cognitive and behavioral tendencies, extrapolated, may assist in clinical profiling of IBS.
patients, leading to more precise and efficient psychotherapeutic interventions.

Participants

Participants are women ranging in age from 18 to 70 who agreed to complete pain-related questionnaires. One hundred thirty-eight of the participants identified themselves as White, 7 as Black, 4 as Latino, 2 as Asian, 6 as Biracial, 1 as Multiracial, and 1 with no response. Socioeconomic statuses as well as places of residence vary broadly (i.e., farm, city, rural, etc.).

177 subjects who were diagnosed with IBS using Rome II criteria were solicited from the Philadelphia College of Osteopathic Medicine’s (PCOM) Family Medicine Clinic, Philadelphia, Pennsylvania, from PCOM’s three community healthcare centers, from participating gastroenterologists and primary care physicians, nationally using a recruitment flier (Appendix F). In addition, participants were solicited from IBS websites and women’s health websites, as well as from two churches and from a community center in Philadelphia. Surveys were administered face-to-face or mailed to the participants with a stamped return envelope. The participants received a cover letter (Appendix G) explaining the purpose of the study, their voluntary status, and their right to discontinue participation without coercion. Participants were given minimal verbal or written instructions from the responsible investigator.

Participants were screened by the responsible investigator for IBS using Rome II criteria. Persons eligible for the study had to be 18 years-of-age and older, diagnosed by their physician with IBS, not suffering from a concurrent chronic pain condition, and able to
speak and read English. Participants were excluded if they did not meet the aforementioned criteria, or if they were alcohol and/or substance abusers or dependents.

Of the 177 participants only data for 159 is used because some study material were not returned, some were incomplete, or participants indicated on the personal characteristics questionnaire that they had a concurrent chronic pain condition that was omitted during the initial screen.

Measures

Coping Strategies Questionnaire-Revised.

The Coping Strategies Questionnaire-Revised (CSQ-R) (Hastie, Riley III, & Fillingim, 2004; Riley, III, & Robinson, 1997; Riley III & Robinson, Geisser, 1999) was developed in response to complaints about the original Coping Strategies Questionnaire (CSQ) (Rosenstiel & Keefe, 1983); however, the most commonly used measure in pain studies relies on undesirable factor overlap. The CSQ-R boasts a more stable factor structure and the elimination of those factors found on the CSQ that are repetitive. The CSQ-R is a 7-point Likert-type scale (0-6) abridged to 27 items compared to the 48 items of the CSQ and retains six of the principle dimensions: (1) Catastrophizing, (2) Ignoring Sensations, (3) Diverting Attention, (4) Praying-Hoping, (5) Reinterpreting Pain Sensations, and (6) Coping Self-Statements. The CSQ-R is written at the fifth-grade reading level, taking approximately 5-10 minutes to complete.

Rosenstiel and Keefe (1983) believe that persons inclined to use Ignoring Sensations, Reinterpreting Pain Sensations, and Coping Self-Statements take an “active approach to coping with pain.” In contrast, persons endorsing items on the
Catastrophizing subscale express poor ability to cope with pain cognitively and behaviorally and are deemed “passive.” Interestingly, the authors refer to persons high on the Diverting Attention and Praying-Hoping subscales as using “external” methods to quell pain. Snow-Turek, Norris and Tan (1996) conducted a validity assessment of active and passive coping dimensions of the CSQ based on Brown and Nicassio’s (1987) and Nicholas, Wilson, and Goyen’s (1992) definition of active and passive pain coping (mentioned previously). Snow-Turek et al. (1996) find items on the CSQ representing Diverting Attention and Praying-Hoping are distinguishable as active and passive forms of coping, respectively. Subsequently, the CSQ subscales are commonly referred to as active and passive coping strategies in contemporary coping literature; these distinctions are retained in the CSQ-R.

West Haven-Yale Multidimensional Pain Inventory.

The West Haven-Yale Multidimensional Pain Inventory (WHYMPI; Kerns, Turk, & Rudy, 1985) was developed using a sample from two VA Hospitals of male chronic pain patients with various pain complaints. The WHYMPI reveals three distinct pain patient profiles: Dysfunctional, Interpersonally Distressed, and Adaptive Coper. The WHYMPI consist of 52 questions, each with a 7-point Likert scale (0-6) per question divided into 12 empirically devised subscales that are grouped into three sections. Section I (Pain Experience) includes five subscales that describe pain severity and cognitive-affective responses to pain. Section II (Pain Relevant Significant Other Responses) assesses patients’ perceptions of how their significant other(s) respond to their pain complaints. The third section (Daily Activities) uses five subscales to assess
performance of normal daily functioning, such as bathing, cooking, household chores, and so on. Cronbach’s alpha coefficients for scale scores range from 0.53 to 0.91. Discriminant distinctiveness of scales is indicated by intraclass correlation coefficients among scale scores ranging from 0.39 – 0.72. The WHYMPI is written at a fifth-grade reading level and generally requires 15-30 minutes to complete.

Pain Behavior Questionnaire.

The PBQ (Phillips & Jahanshahi, 1986) was originally devised to measure headache related pain behaviors but the measure was unreliable for this purpose. Serendipitously, factor analysis did reveal independent behavioral factors of pain behavior. The measure is divided into 30 Avoidance behaviors, 10 Complaint behaviors, and 10 Help-seeking behaviors. Test-retest reliability coefficient indicates Avoidance behaviors at .77 percent, Complaint behaviors at .70 percent, and Help-seeking at .53 percent.

Personal Characteristics Questionnaire.

Last, a Personal Characteristics Questionnaire (Kazdin, 1998a) is used to capture the texture of the participants involved. This type of questionnaire is utilized in various industries for the purpose of gathering personal data deemed useful and consistent with a particular interest. Thus, this form is designed to ascertain further the individual factors that contribute to the participant’s pain management.

Procedures

Data was collected nationally from December 2005 through June 2006, using four pain related measures with no participant personal identifying information reported.
Participants were screened for IBS per the Rome II criteria and exclusionary criteria. The responsible investigator had face-to-face contact with fifteen participants from various locales, i.e., the Center for Brief Therapy (PCOM), PCOM healthcare centers, churches, and a community center. The remaining participants mailed-in the surveys (stamped return envelopes were provided by the responsible investigator). The measures did not require a sequential order of completion; however, the personal characteristics questionnaire was placed last. Participants received $10 cash or a gift card of equal value.
Results

The data analytic strategy involved performing (1) descriptive analyses, (2) Pearson-product moment correlational matrix analyses using the CSQ-R dimension scores; WHYMPI scores for Interference, Pain Severity, Self-Control and the daily activities dimension scores; PBQ Pain Avoidant and Pain Complaint behavior dimension scores, only, and several PCQ item scores, (4) multiple regressions using the Enter method, and (5) use of multiple analysis of covariance to test the relationship of socioeconomic status, age, coping, and pain behaviors.

Of the 159 women, 138 describe themselves as White (86.8%), 7 as Black (4.4%), 4 as Latino (2.5%), 2 as Asian (1.3%), 6 as Biracial (3.8%), 1 as Multiracial (.6%), and 1, with a non-response (.6%). Mean duration of IBS is 7.2 years (SD=7.8) and mode is 3.0 years. Mean participant age is 37.76 years (SD=12.94) and mode is 23 years. Mean education level is equivalent to two years of post-secondary education and mode is bachelor degree. Mean income is listed at the $31,000- $40,000 range; mode is $21,000- $30,000 range, and income ranges deviated from mean by $10,000 (incomes reflect full- or part-time employment, social security recipient, disability recipient, and public assistance recipient). Sixty-five (40.9%) participants live in a suburban community, 55 (34.6%) in an urban community, 33 (20.6%) in a rural community, 3 (1.9%) in a small town, 2 (1.3%) in a farm community, and 1 (.6%) in a city-suburban community. Sixty (37.7%) participants reported daily frequency of abdominal pain, 66 (41.5%) reported experiencing abdominal pain weekly, 8 (5%) every two weeks, 8 (5%) monthly, 6 (3.8%) every two to three months, the remaining 11 participants incrementally less. Eighty-five
(54.5%) participants report taking medication for IBS, compared to the 74 (46.5%) who do not. Twenty-one (13.2%) participants report they are “seeing someone for pain management.” However, 10 (6.3%) participants report seeing a psychologist for pain management and 25 (15.7%) previously saw a psychologist for pain management. Last, 62 (39%) participants are treated for IBS by their primary care physician, 47 (29.6%) by a gastroenterologist, 23 (14%) treat themselves, and the remaining 10 vary in utilizing professional services (tables 6a-6j; 7a-7c).

Hypothesis 1. Given the reported impact of coping styles on pain and consequent biopsychosocial well-being, it is hypothesized that Praying-Hoping and Catastrophizing (passive coping strategies) as measured by the CSR-Q will correlate positively with increased Pain Avoidance and Pain Complaint behaviors (measured by the PBQ) and decreased daily activities (measured by the WHYMPI). Conversely, it is hypothesized that Reinterpreting Pain Sensations, Ignoring Sensations, Coping Self-Statements, and Diverting Attention (active coping strategies) measured by the CSQ-R will have an inverse relationship with Pain Avoidance and Pain Complaint behaviors and a positive relationship with increased daily activities.

These relationships are examined by Pearson-product moment correlations and multiple regression of the passive coping strategies (Praying-Hoping and Catastrophizing), active coping strategies (Reinterpreting Pain Sensations, Ignoring Sensations, Coping Self-Statements, Diverting Attention), pain behaviors (Pain Avoidance and Pain Complaint), and daily activities (tables 1a, 1b, & 1c). No manual for interpretation is available; hence, data is to be analyzed in comparison to each
participant’s subscale scores. The Enter method is used to calculate multiple regression analysis as theoretical expectations of the factor interactions are established (mentioned in the literature review) and neither predictor variable is believed to be of greater relevance.
## Table 1a

Means and Standard Deviations for Dimensions of CSQ-R, WHYMPI, and PBQ

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean</th>
<th>SD</th>
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<tbody>
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<td>CSQ-R – Praying-Hoping</td>
<td>3.02</td>
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<td>159</td>
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<tr>
<td>CSQ-R – Catastrophizing</td>
<td>1.77</td>
<td>1.09</td>
<td>159</td>
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<tr>
<td>CSQ-R – Reinterpreting Pain Sensations</td>
<td>1.27</td>
<td>1.03</td>
<td>158*</td>
</tr>
<tr>
<td>CSQ-R – Ignoring Sensations</td>
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<td>CSQ-R – Coping Self-Statements</td>
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<td>CSQ-R – Diverting Attention</td>
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<td>PBQ – Pain Avoidance</td>
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<td>PBQ – Pain Complaint</td>
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<td>WHYMPI – Pain Severity</td>
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<td>WHYMPI – Interference</td>
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<td>WHYMPI – Life Control</td>
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<tr>
<td>WHYMPI – Household Chores</td>
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<tr>
<td>WHYMPI – Outdoor Work</td>
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<tr>
<td>WHYMPI – Activities Away From Home</td>
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<td>WHYMPI – Social Activities</td>
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<td>WHYMPI – General Activities</td>
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* (N=159, except as noted)
# Table 1b

Pearson-Product Moment Intercorrelations for Dimensions of CSQ-R, WHYMPI, and PBQ Measures

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<th>Dimension</th>
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<tr>
<td>2. CSQ-R-Catastrophizing</td>
<td>.372*</td>
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<td>3. CSQ-R-Reinterpreting</td>
<td>-.183*</td>
<td>-.226**</td>
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<tr>
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<td>.545**</td>
<td>.229*</td>
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<tr>
<td>6. CSQ-R-Diverting Attention</td>
<td>.215*</td>
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<td>.274**</td>
<td>.473**</td>
<td>.413**</td>
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<td>7. PBQ-Pain Avoidance</td>
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<td>.248*</td>
<td>-.192*</td>
<td>.099</td>
<td>.047</td>
<td>.147</td>
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<tr>
<td>8. PBQ-Pain Complaint</td>
<td>.071</td>
<td>.153</td>
<td>-.192*</td>
<td>.031</td>
<td>-.057</td>
<td>.091</td>
<td>.420**</td>
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<tr>
<td>9. WHYMPI-Household Chores</td>
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<td>10. WHYMPI-Outdoor Work</td>
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<td>-.032</td>
<td>-.010</td>
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<td>.013</td>
<td>.009</td>
<td>.359**</td>
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*Significant at the .05 level.
**Significant at the .01 level.
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<tr>
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<td>11.</td>
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<td>.028</td>
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<td></td>
<td>From Home</td>
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<tr>
<td>12.</td>
<td>WHYMPI-Social Activities</td>
<td>-.125</td>
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<td>.021</td>
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<td>-.078</td>
<td>.137</td>
<td>.167*</td>
<td>.182</td>
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<tr>
<td>13.</td>
<td>WHYMPI-General Activities</td>
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<td>-.126</td>
<td>-.002</td>
<td>-.005</td>
<td>.249**</td>
<td>.187*</td>
<td>-.031</td>
<td>.087</td>
<td>.671*</td>
<td>.635*</td>
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</table>

** correlation is significant at the 0.01 level (2-tailed)

* correlation is significant at the 0.05 level (2-tailed)
Table 1c

Regression Analysis Summary for Pain Behavior and Coping Strategies Predicting General Activities

<table>
<thead>
<tr>
<th>Variable</th>
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<th>SEB</th>
<th>β</th>
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</thead>
<tbody>
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<td>PBQ - Pain Avoidance</td>
<td>-1.37E-02</td>
<td>0.01</td>
<td>-0.12</td>
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<tr>
<td>PBQ - Pain Complaint</td>
<td>4.64E-02</td>
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<td>-0.11</td>
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<tr>
<td>CSQ-R - Reinterpreting Pain Sensations</td>
<td>-0.16</td>
<td>0.07</td>
<td>-0.22*</td>
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<td>CSQ-R - Ignoring Sensations</td>
<td>-6.35E-02</td>
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<td>CSQ-R - Coping Self-Statements</td>
<td>0.25</td>
<td>0.08</td>
<td>0.32*</td>
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<tr>
<td>CSQ-R - Diverting Attention</td>
<td>0.13</td>
<td>0.07</td>
<td>0.18</td>
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<tr>
<td>CSQ-R - Praying-Hoping</td>
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<td>0.04</td>
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<td>CSQ-R - Catastrophizing</td>
<td>-5.14E-02</td>
<td>0.06</td>
<td>-0.07</td>
</tr>
</tbody>
</table>

*p < .05; R² = .140; ΔR² = .093.

The relationships between passive coping strategies and daily activities were generally not significant. An exception is Catastrophizing (passive coping) which is significantly correlated with decreased Social Activities. Similarly, the relationships between active coping strategies and daily activities were generally not significant. However, Coping Self-Statements (active coping) is significantly correlated with increased Household Chores, Outdoor Work, and General Activities. Likewise, the active coping strategy, Diverting Attention, is significantly correlated with increased Social Activities and General Activities.
Regarding correlations between coping strategies and pain behaviors, passive coping is significantly correlated, as expected, with increased Pain Avoidance behaviors. However, Reinterpreting Pain Sensations (active coping) is significantly correlated in a negative direction with Pain Avoidance and Pain Complaints.

Regression analysis for coping strategies and pain behaviors predicting general activities indicates Adjusted R Square value is 9.3 percent and this suggests the proportion of the variance in the General Activities composite scores accounted for by the coping and pain behaviors predictor variables is low. Moreover, this seems to suggest that predictability of General Activities based on the coping strategies and pain behaviors is poor. Furthermore, a review of regression coefficients indicates only the Reinterpreting Pain Sensations (inverse relationship) and Coping Self-Statements significantly influenced the General Activities composite score. This is unexpected, given the means of the participants’ reported values of the criterion and predictor variables. In other words, Praying-Hoping (3.02) and Coping Self-Statements (2.84) reached or approached the CSQ-R measure mean (3) but the remaining four coping strategies were used far less. The General Activities (2.81) variable is a composite value that also falls short of the WHYMPI measure mean of 3. Last, the results of the regression analysis can be due to misspecification of the predictor and criterion variables because the General Activities composite score is used rather than the separate daily activities scores composing the criterion variable.

Hypothesis 2. Abdominal pain and/or discomfort is the primary symptom of IBS and generally the most common treatment-seeking complaint and disruptor of daily
activities. Therefore it is hypothesized that Pain Severity and Interference as reported on the WHYMPI will correlate with increased passive coping strategies (per the CSQ-R), increased Pain Avoidance and Pain Complaint behaviors (per the PBQ), and decreased daily activities (per the WHYMPI).

These relationships are examined by Pearson-product moment correlations and multiple regressions of Pain Severity and Interference criterion variables with passive and active coping strategies and Pain Avoidance and Pain Complaint predictor variables (tables 2a, 2b, & 2c). The Enter method is used to calculate multiple regression analysis as theoretical expectations of the factor interactions are established (mentioned in the literature review) and neither predictor variable is believed to be of greater relevance.
<table>
<thead>
<tr>
<th>Dimension</th>
<th>1</th>
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<tbody>
<tr>
<td>1. WHYMPI-Pain Severity</td>
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<td>2. WHYMPI-Interference</td>
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<tr>
<td>3. CSQ-R-Praying-Hoping</td>
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<td>.323</td>
<td>.298**</td>
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<tr>
<td>4. CSQ-R-Catastrophizing</td>
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<td>.438**</td>
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<tr>
<td>5. CSQ-R-Reinterpreting Pain Sensations</td>
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<td>-.289**</td>
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<tr>
<td>6. CSQ-R-Ignoring Sensations</td>
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<td>.050</td>
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<td>7. CSQ-R-Coping Self-Statements</td>
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<td>8. CSQ-R-Diverting Attention</td>
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<td>9. PBQ-Pain Avoidance</td>
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<td>.099</td>
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<td>10. PBQ-Pain Complaint</td>
<td>.284**</td>
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<td>.071</td>
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<td>.031</td>
<td>-.057</td>
<td>.091</td>
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<tr>
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<td>WHYMPI-General Activities</td>
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<td>-.005</td>
<td>.249**</td>
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**correlation is significant at the 0.01 level (2-tailed)**

* correlation is significant at the 0.05 level (2-tailed)
Table 2b

Regression Analysis Summary for Pain Behavior and Coping Strategy Variables

Predicting Pain Severity

<table>
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<tr>
<th>Variable</th>
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<th>SEB</th>
<th>β</th>
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<tbody>
<tr>
<td>CSQ-R - Praying-Hoping</td>
<td>0.13</td>
<td>0.05</td>
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<tr>
<td>CSQ-R - Catastrophizing</td>
<td>0.24</td>
<td>0.08</td>
<td>0.23*</td>
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<td>CSQ-R - Reinterpreting Pain Sensations</td>
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<td>CSQ-R - Diverting Attention</td>
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<td>PBQ - Pain Avoidance</td>
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<td>PBQ - Pain Complaint</td>
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* p < .05; R² = .247; ΔR² = .207.
Table 2c
Regression Analysis Summary for Pain Behavior and Coping Strategy Variables
Predicting Interference

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<td>CSQ-R - Coping Self-Statements</td>
<td>-.17</td>
<td>.11</td>
<td>-.12</td>
</tr>
<tr>
<td>CSQ-R - Diverting Attention</td>
<td>4.92E-02</td>
<td>.10</td>
<td>.04</td>
</tr>
<tr>
<td>PBQ - Pain Avoidance</td>
<td>8.91E-02</td>
<td>.01</td>
<td>.44</td>
</tr>
<tr>
<td>PBQ - Pain Complaint</td>
<td>-5.35E-02</td>
<td>.05</td>
<td>-.07*</td>
</tr>
</tbody>
</table>

* p <.05; R² = .405; ΔR² = .373.

Pain Severity significantly correlates with one passive coping strategy (Catastrophizing); however, Interference shows a significant relationship both with Castastrophizing and with Praying-Hoping. Similarly, both Pain Severity and Interference are significantly correlated in a negative direction with Reinterpreting Pain Sensations (active coping). Otherwise, Interference is significantly correlated in a negative direction with Coping Self-Statements (active coping). However, both Pain Severity and Interference are significantly correlated with Pain Avoidance and Pain
Complaint behaviors. Last, General Activities are significantly correlated in a negative direction with Pain Severity.

Regression analysis of pain behaviors and coping strategies predicting Pain Severity and Interference indicates that Adjusted R Square value for Pain Severity and Interference is 20.7 and 37.3 percent, respectively. This suggests that the proportion of the variance in Pain Severity scores accounted for by the coping and pain behaviors predictor variables is modestly low. Overall, this seems to suggest predictability of Pain Severity based on the coping strategies and pain behaviors remains poor. However, review of regression coefficients indicates Catastrophizing (passive coping) and Pain Avoidance behavior do significantly impact Pain Severity. Regarding Interference, the proportion of the variance in Interference scores accounted for by the coping and pain behaviors predictor variables appears moderate. Both Praying-Hoping and Catastrophizing (passive coping strategies) coefficients and the Pain Complaint behavior coefficient significantly impact Interference.

**Hypothesis 3.** According to Fordyce (1976), self-efficacy is pivotal to pain behavior attenuation and/or exacerbation. Hence it is hypothesized that Life-Control as reported on the WHYMPI will have a relationship with passive coping strategies and Pain Avoidance and Pain Complaint behaviors.

These relationships are examined by Pearson-product moment correlations and multiple regression of the Life Control variable, by coping strategies, and by Pain Avoidance and Pain Compliant behaviors (tables 3a & 3b). The Enter method is used to calculate multiple regression analysis as theoretical expectations of the factor interactions
are established (mentioned in the literature review) and neither predictor variable is believed to be of greater relevance.
Table 3a

Pearson-Product Moment Intercorrelations for Dimensions of WHYMPI, CSQ-R, and PBQ Measures

<table>
<thead>
<tr>
<th>Dimension</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHYMPI-Life Control</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSQ-R-Praying-Hoping</td>
<td>.213**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSQ-R-Catastrophizing</td>
<td>.478**</td>
<td>.327**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSQ-R-Reinterpreting</td>
<td>.242**</td>
<td>-.183</td>
<td>-.226**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain Sensations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSQ-R-Ignoring Sensations</td>
<td>.114</td>
<td>.050</td>
<td>.008</td>
<td>.379**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSQ-R-Coping Self-Statements</td>
<td>.350**</td>
<td>.007</td>
<td>-.191*</td>
<td>.545**</td>
<td>.299**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSQ-R-Diverting Attention</td>
<td>.185*</td>
<td>.215**</td>
<td>.010</td>
<td>.274**</td>
<td>.473**</td>
<td>.413**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBQ-Pain Avoidance</td>
<td>-.095</td>
<td>.208**</td>
<td>.248**</td>
<td>-.192**</td>
<td>.099</td>
<td>.047</td>
<td>.147</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBQ-Pain Complaint</td>
<td>-.015</td>
<td>.071</td>
<td>.153</td>
<td>-.192**</td>
<td>.031</td>
<td>-.057</td>
<td>.091</td>
<td>.420**</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level
**Significant at the .01 level
|   | WHYMPI-General Activities | 0.298** | -0.033 | -0.126 | -0.002 | -0.005 | 0.249** | 0.187* | -0.031 | -0.002 | 0.087 | ** |

** correlation is significant at the 0.01 level (2-tailed)

* correlation is significant at the 0.05 level (2-tailed)
Table 3b

Regression Analysis for Summary of Coping Strategies and Pain Behaviors Predicting Life Control

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSQ-R - Praying-Hoping</td>
<td>-5.87E-02</td>
<td>.05</td>
<td>-.09</td>
</tr>
<tr>
<td>CSQ-R - Catastrophizing</td>
<td>-.45</td>
<td>.08</td>
<td>-.40*</td>
</tr>
<tr>
<td>CSQ-R - Reinterpreting Pain Sensations</td>
<td>-3.11E-02</td>
<td>.11</td>
<td>-.03</td>
</tr>
<tr>
<td>CSQ-R - Ignoring Sensations</td>
<td>1.41E-02</td>
<td>.09</td>
<td>.01</td>
</tr>
<tr>
<td>CSQ-R - Coping Self-Statements</td>
<td>.31</td>
<td>.11</td>
<td>.25*</td>
</tr>
<tr>
<td>CSQ-R - Diverting Attention</td>
<td>.11</td>
<td>.10</td>
<td>.10</td>
</tr>
<tr>
<td>PBQ - Pain Avoidance</td>
<td>-6.79E-03</td>
<td>.01</td>
<td>-.04</td>
</tr>
<tr>
<td>PBQ - Pain Complaint</td>
<td>4.47E-02</td>
<td>.05</td>
<td>.07</td>
</tr>
</tbody>
</table>

* p < .05; R² = .315; ΔR² = .278.

Life Control closely relates to self-efficacy so it was expected that self-reports of low and high Life Control as indicated on the WHYMPI would reflect commensurate pain-related coping strategies and pain behaviors. In this study sample, Life Control is significantly correlated with the active coping strategies (Ignoring Sensations is the exception). On the other hand, Life Control is inversely correlated at significance with passive coping strategies. However, Pain Avoidance and Pain Complaint behaviors are not significantly correlated with Life Control.
Regression analysis for coping strategies and pain behaviors predicting life control indicates Adjusted R Square value is 27.8 percent, suggesting that the proportion of the variance in Life Control scores accounted for by the coping and pain behaviors predictor variables is modestly low. Unexpectedly, regression coefficients reveal only Catastrophizing (passive coping, inversely) and Coping Self-Statements (active coping) have a significant relationship with Life Control. Pearson-product moment correlation data shows Catastrophizing and Coping Self-Statements nearly double in quantitative value over other coping strategies. This may help to explain the regression analysis sensitivity to these predictor variables' impact.

**Hypothesis 4.** Pain-related coping and socioeconomic status (SES) has received little attention, yet studies in general indicate persons of lower SES readily engage in passive pain coping (Adler et al.) and report more pain-related limitations. Hence it is hypothesized that passive coping strategies, pain behaviors, and daily activities will have a greater instance among persons attaining less than a bachelor degree.

This exploratory hypothesis is examined by calculating a full factorial MANOVA model for education, for coping strategies, for pain behaviors, and for general activities factors (tables 4a and 4b). This model is preferred for purposes of capturing all factor main effects, all covariate main effects, and all factor-by-factor effects.
Table 4a

Mean Scores and Standard Deviations for Education as a Function of Coping, Pain Behaviors, and General Activities

<table>
<thead>
<tr>
<th>EDUCATION</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSQ-R - Praying-Hoping</td>
<td>3.76</td>
<td>1.55</td>
<td>68</td>
</tr>
<tr>
<td>Less than 4-year degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-year degree or more</td>
<td>2.44</td>
<td>1.77</td>
<td>89</td>
</tr>
<tr>
<td>CSQ-R - Catastrophizing</td>
<td>2.00</td>
<td>1.17</td>
<td>68</td>
</tr>
<tr>
<td>Less than 4-year degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-year degree or more</td>
<td>1.58</td>
<td>1.00</td>
<td>89</td>
</tr>
<tr>
<td>PBQ - Pain Avoidance</td>
<td>16.09</td>
<td>6.54</td>
<td>68</td>
</tr>
<tr>
<td>Less than 4-year degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-year degree or more</td>
<td>12.90</td>
<td>6.47</td>
<td>89</td>
</tr>
<tr>
<td>PBQ - Pain Complaint</td>
<td>7.11</td>
<td>1.78</td>
<td>68</td>
</tr>
<tr>
<td>Less than 4-year degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-year degree or more</td>
<td>6.76</td>
<td>1.98</td>
<td>89</td>
</tr>
<tr>
<td>WHYMPI - General</td>
<td>2.72</td>
<td>.77</td>
<td>68</td>
</tr>
<tr>
<td>Activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-year degree or more</td>
<td>2.88</td>
<td>.76</td>
<td>89</td>
</tr>
</tbody>
</table>
Table 4b
Multivariate and Univariate Analysis of Variance for Education as Predictor of Coping, Pain Behavior, and General Activities

<table>
<thead>
<tr>
<th>Source</th>
<th>Multivariate</th>
<th>Univariate</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df</td>
<td>F</td>
<td>df</td>
<td>F</td>
<td>η²</td>
<td>p</td>
</tr>
<tr>
<td>CSQ-R - Praying-Hoping</td>
<td>1</td>
<td>6.11*</td>
<td>1</td>
<td>23.72</td>
<td>.13</td>
<td>.00*</td>
</tr>
<tr>
<td>CSQ-R - Catastrophizing</td>
<td>1</td>
<td>6.11*</td>
<td>1</td>
<td>5.77</td>
<td>.04</td>
<td>.02*</td>
</tr>
<tr>
<td>PBQ - Pain Avoidance</td>
<td>1</td>
<td>6.11*</td>
<td>1</td>
<td>9.32</td>
<td>.06</td>
<td>.00*</td>
</tr>
<tr>
<td>PBQ - Pain Complaint</td>
<td>1</td>
<td>6.11*</td>
<td>1</td>
<td>1.34</td>
<td>.01</td>
<td>.25</td>
</tr>
<tr>
<td>WHYMPI - General Activities</td>
<td>1</td>
<td>6.11*</td>
<td>1</td>
<td>1.63</td>
<td>.01</td>
<td>.20</td>
</tr>
</tbody>
</table>

* p < .05

Multivariate F values indicate that coping utilization, exhibition of pain behaviors, and pain-related daily activities are greater for persons with less than a bachelor degree. Univariate analysis of F values reveals that Praying-Hoping, Catastrophizing, and Pain Avoidance significantly contribute to the overall effect. Observed power is 99.5 and this suggests that the probability of detecting a significant effect in the community is high.

_Hypothesis 5._ Pain literature indicates a nexus between age and pain-related coping; specifically, for older persons, who generally, adapt to pain better than younger persons. However, research in age and pain-related coping has yielded mixed results.
(Crane and Martin, 2004; Baker and Green, 2005). Using Baker and Green’s (2005) age parameters, it is believed that more Pain Avoidance and Pain Complaint behaviors, passive coping strategies, and pain-related daily activities will occur in persons less than 50 years-of-age.

This hypothesis is examined by performing a full factor MANOVA module for two age groups: (1) below 50 and (2) above 49 years-of-age (tables 5a and 5b). This model is preferred for purposes of capturing all factor main effects, all covariate main effects, and all factor-by-factor effects.
Table 5a

Mean Scores and Standard Deviations for Age as a Function of Coping, Pain Behaviors, and Daily Activities

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CSQ-R - Praying-Hoping</strong></td>
<td>18-49</td>
<td>2.97</td>
<td>1.81</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>50-70</td>
<td>3.25</td>
<td>1.77</td>
<td>27</td>
</tr>
<tr>
<td><strong>CSQ-R - Catastrophizing</strong></td>
<td>18-49</td>
<td>1.80</td>
<td>1.08</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>50-70</td>
<td>1.60</td>
<td>1.13</td>
<td>27</td>
</tr>
<tr>
<td><strong>PBQ - Pain Avoidance</strong></td>
<td>18-49</td>
<td>14.64</td>
<td>6.83</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>50-70</td>
<td>13.42</td>
<td>6.52</td>
<td>27</td>
</tr>
<tr>
<td><strong>PBQ - Pain Complaint</strong></td>
<td>18-49</td>
<td>7.21</td>
<td>1.71</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>50-70</td>
<td>5.59</td>
<td>1.89</td>
<td>27</td>
</tr>
<tr>
<td><strong>WHYMPI - General Activities</strong></td>
<td>18-49</td>
<td>2.81</td>
<td>.73</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>50-70</td>
<td>2.80</td>
<td>.91</td>
<td>27</td>
</tr>
</tbody>
</table>
Table 5b
Multivariate and Univariate Analysis of Variance for Age as Predictor of Coping, Pain Behavior and Daily Activities

<table>
<thead>
<tr>
<th>Source</th>
<th>Multivariate</th>
<th>Univariate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df</td>
<td>F</td>
</tr>
<tr>
<td>CSQ-R - Praying-Hoping</td>
<td>1</td>
<td>4.09*</td>
</tr>
<tr>
<td>CSQ-R - Catastrophizing</td>
<td>1</td>
<td>4.09*</td>
</tr>
<tr>
<td>PBQ - Pain Avoidance</td>
<td>1</td>
<td>4.09*</td>
</tr>
<tr>
<td>PBQ - Pain Complaint</td>
<td>1</td>
<td>4.09*</td>
</tr>
<tr>
<td>WHYMPI - General Activities</td>
<td>1</td>
<td>4.09*</td>
</tr>
</tbody>
</table>

* p <.05

Review of Multivariate F values indicates that age-related influences in pain behaviors, coping strategies, and pain-related daily activities in this study are significant. However, Univariate F values reveal only Pain Complaint significantly contributes to overall effect of age-related interactions in the current study. Observed power is 94.9 and this suggests that the probability of detecting a significant effect in the community is high.
Discussion

US epidemiological studies report that women are diagnosed as much as three times more with irritable bowel syndrome (IBS) than are men. Too, health-related quality-of-life (HRQoL) inquiries show that IBS sufferers seek more medical care, have more medically related expenditures, have more loss work productivity, and less fulfillment in their personal lives compared to US population norms. Chronic abdominal pain is a central feature of IBS and, as such, its management can be improved or exacerbated by the implementation of coping strategies.

The current study sought to learn the predictability of women’s IBS pain-related daily activities in connection with their coping strategies, pain behaviors, and personal characteristics. This study involved adult US women diagnosed with Rome II IBS criteria. Data analysis consisted of Pearson-product moment correlations, multiple regression (using the Enter method) preset at 0.05, and full factorial multiple analysis of variance (MANOVA, preset at 0.05) calculated with Statistical Package for Social Science (SPSS) Base 10.0 software (1999).

The study findings give mixed results regarding the predictability of pain related daily activities in conjunction with coping strategies utilized and pain behaviors exhibited. The initial hypothesis that pain-related daily activities would correlate with pain behaviors and aggregate passive and active coping strategies is not fully substantiated. First, the Praying-Hoping (passive coping) dimension of the Coping Strategies Questionnaire-Revised (CSQ-R) is correlated, though not significantly, with the four West Haven-Yale Multidimensional Pain Inventory (WHYMPI) daily activities
subscales and the WHYMPI General Activities composite subscale. The second CSQ-R (only two) passive coping strategy, Catastrophizing, is significantly correlated with one WHYMPI daily activity, Social Activities. The CSQ-R active coping strategy, Coping Self-Statements, is significantly correlated with three WHYMPI daily activities: (1) Household Chores, (2) Outdoor Work, and (3) the General Activities composite dimension. However, the CSQ-R active coping strategy, Diverting Attention, significantly correlates with the WHYMPI daily activity, Social Activities, and the WHYMPI General Activities composite dimension. The remaining CSQ-R active coping strategies, Reinterpreting Pain Sensations and Ignoring Sensations, did not reveal significant correlations with WHYMPI daily activities nor with the WHYMPI General Activities composite dimension. Last, the Pain Behavior Questionnaire (PBQ) Pain Avoidance and Pain Complaint dimensions do reveal inverse and positive relationships, respectively, with daily activities; however, none of these PBQ dimensions correlate significantly with this study sample.

Praying-Hoping and Catastrophizing are commonly viewed as passive coping strategies indicative of greater reliance on sources outside oneself to affect change. In contrast, Coping Self-Statements, Diverting Attention, Reinterpreting Pain Sensations, and Ignoring Sensations are considered active coping strategies that emphasize greater reliance on one's own ability to affect a desired outcome. Hence it appears that passive coping, while utilized, did not impact daily functioning as significantly as active coping practices. Moreover, the proportion of variance in the General Activities composite dimension accounted for by the predictor variables (coping strategies and pain behaviors)
based on the Adjusted R squared is only 9.3. This indicates a weak predictability of pain-related daily activities in this study based on passive coping strategies and pain behaviors. This finding is unexpected insofar as IBS research presents a demonstrable profile of treatment-seekers in a way consistent with more passive coping styles. For example, catastrophizing over abdominal pain is linked with promulgation of treatment-seeking.

The second hypothesis that WHYMPI Pain Severity and WHYMPI Interference dimensions will correlate with CSQ-R passive coping strategies is partially substantiated. Pain Severity represents gradients of subjective pain perception and pain-related suffering. The construct, Interference, pertains to disruption of daily activities and social support. Pain Severity is correlated with both passive coping strategies, although only significantly with Catastrophizing, but Interference shows a significant relationship with both passive coping strategies. The second assumption of hypothesis two is that both Pain Severity and Interference dimensions will significantly correlate with increased Pain Avoidance and Pain Complaint behaviors; this is substantiated. Furthermore, Pain Severity is correlated with the General Activities composite dimension as is Interference, although the latter is not statistically significant.

The third hypothesis investigated how Life Control as indicted in the WHYMPI is correlated with passive coping strategies and pain behaviors. The significance of this observation is rooted in locus-of-control (LoC) pain research and Fordyce’s (1976) writings that one’s perception of self-efficacy correlates with pain perception. In this study sample, Life Control is significantly correlated in a negative direction with both
passive coping strategies (Praying-Hoping and Catastrophizing). In contrast, three of the four active coping strategies (Reinterpreting Pain Sensations, Coping Self-Statements, and Diverting Attention) are significantly correlated in a positive direction with Life Control. Otherwise, Pain Avoidance and Pain Complaint behaviors are negatively correlated, although not significantly, with Life Control. This discovery may reflect the participants’ use of coping and pain behaviors relevant to their perceptions of Life Control. Given the median Life Control score (3.56, on a 7-Likert scale), it is not surprising that passive coping (Praying-Hoping and Catastrophizing) and pain behaviors are utilized less.

These findings are consistent with the role of self-efficacy (Bandura, 1977; Fordyce, 1976) and LoC (Phares, 1957, 1965) in pain research. Self-efficacy translates to the belief one has in his or her abilities and capabilities to perform the behaviors that will achieve the desirable results. Similarly, LoC refers to one’s subjective belief and, perhaps, self-evidence that a cause and effect relationship exists between effort (or lack thereof) and preferred outcome. Pain research has found that persons exhibiting greater self-efficacy and internal LoC, generally, perceive pain less intensely and experience less pain-related disruption to their daily activities. Overall, this sample appeared to perceive themselves as having moderate self-control (e.g., of pain and in general) during the study survey completion period.

It is arguable that Praying-Hoping can be viewed solely as a passive coping strategy to manage daily stress (i.e., pain) and novel situations. For example, Gall, Charbonneau, Clarke, Grant, and Joseph et al. (2005) and Snyder, Sigmon and Feldman
(2002) write that spiritual beliefs may promote an “active attitude” towards the coping process. The authors see this process being mediated by dynamic components such as prayer and hoping. Thus these elements are not viewed as inert constructs but rather as cognitive acts spurred by an internal LoC and goal-oriented intention. Likewise, Dunn and Horgas (2004) find that persons in chronic pain, who utilize prayer, characterize themselves as working with God as opposed to abdicating to God. Conversely, Rippentrop, Altmair, Chen, Found, and Keffera (2005) find that prayer is more often used palliatively by patients when perceiving their physical health as poor or dire.

Another related issue with coping and control stems from writings on positive psychology. Proponents of positive psychology place less emphasis on passivity and see an active decision maker as one whose choices can affect hopefulness or helplessness (Gable & Haidt, 2005; Seligman & Csikszentmihalyi, 2000; Seligman, Stenn, Park, & Peterson, 2005). At the individual level, positive psychology explores attributes or strengths such as interpersonal skills, perseverance, wisdom, spirituality, and other traits promoting subjective well-being (Seligman & Csikszentmihalyi, 2000). Empirical findings suggest that interventions emphasizing one’s strengths can improve self-evaluation and affect (Seligman, Stenn, Park, & Peterson, 2005). Although the aforementioned insights on spirituality and positive psychology were not addressed by the current study, they are mentioned in consideration of the evolution of advances stimulating pain and coping research.

The fourth hypothesis examined the relationship of pain adaptation and socioeconomic status (SES), a composite demographic variable, traditionally,
comprising occupation, income, and education. In the current study, education is the 
SES indicator used to investigate the relationship with pain and coping. Adler et al. 
writes that the mechanisms mediating education and chronic pain is not well understood; 
nonetheless, Pincus (1988) and Pincus and Callahan (1994) purport that lower education 
level is strongly related with learned helplessness, ineffective coping and poorer problem- 
solving skills, and decreased LoC. Thus the rationale for using education is that it is 
considered the most stable of the three components of SES across the adult life-span and 
is more strongly associated with HRQoL (Pincus, 1988; Pincus & Callahan, 1994; Roth 
& Geisser, 2002). Moreover, education is deemed relevant because medical and legal 
literature indicates that persons who have less education more often apply for disability 
for comparable pain generating problems (Cano, Mayo, & Ventimiglia, 2006; Roth & 
Geisser, 2002). However it is worth noting that persons with less education more often 
than more highly educated persons work in environments that aggravate or exacerbate 
physical pain problems and this may be an additional influence on rates of pain-seeking 
treatment or disability claims.

Generally, quantitative and qualitative research on academic attainment and pain 
have aggregated participants by non-formal (high school diploma or less) and formal 
(post-secondary school degree – some include vocational certification) education. The 
benchmark level of education chosen for the current study is the bachelor degree as 
opposed to the associate degree or vocational training. This is due to several of the 
writer's assumptions: (1) a bachelor degree may be viewed as the "standard" post- 
secondary education, (2) a bachelor degree ostensibly requires more time to complete, (3)
a bachelor degree may require more perseverance and resilience, and possibly (4) greater coping demands. Another concern is that some participants may have surpassed an equivalent of two-years of college towards a four-year degree but were bound by the limitations of the Personal Characteristics Questionnaire (PCQ) inquiry to report only their highest educational degree (i.e., high school diploma). Therefore the writer attempted to be as judicious as possible in dividing the groups into less educated and greater educated as opposed to non-formal and formal.

Therefore it was hypothesized that persons attaining less than a bachelor degree would report greater use of passive coping strategies, more pain behaviors, and decreased daily activities. In this study sample, persons with a bachelor degree or higher reported less use of passive coping strategies, less pain behaviors, and less pain-related disruption to their daily activities than their less well educated cohorts. Analysis of MANOVA F values indicates that the group mean-differences are significant; however, predictor and criterion interaction was not significant for Pain Complaint behavior and General Activities with Education. Overall, these findings appear to support current research that self-reported pain management differences do exist among persons of different education levels. To reiterate, internal LoC is ascribed to greater biopsychosocial functioning (i.e., adaptive coping) but the inverse applies to external LoC, generally. College educated persons may share a common attribute of innate internal orientation that augments their self-reliance and self-efficacy to think through and resolve various problems. However, the current study cannot infer that lower educated participants are externally oriented, inherently. Nor can the writer presume the reasons that the less educated
participants, who may have the aptitude, did not go to, or did not complete 4-years of college. Landu (1995) cautions that her work finds LoC and education level are independent of each other and that LoC had a greater impact on coping in her sample of women coping with the loss of a spouse.

The final hypothesis supposed that younger participants would demonstrate greater use of passive coping strategies and increased pain behaviors. Pain research reports mixed findings pertaining to age-related pain coping. Some authors believe that older persons may accept the inevitability of the pain source (or simply minimize pain as a natural aging experience), report pain less due to fear of losing independence (or becoming burdens on family and friends), and/or have learned adaptive coping (Baker & Green, 2005; Green, et al.; Lachapelle & Hadjistavropoulos, 2005; Miaskowski, 1999; Minocha, et al., 2006; Wells, Kaas, & Feldt, 1997). Conversely, younger pain sufferers may approach pain conceptually from the position that youth alone can quell pain problems. In other words, chronic pain can psychologically be disconfirming to the younger person’s self-concept of invincibility or to the belief that a younger body repairs faster from physical trauma. Hence younger persons may be more susceptible to pain-related frustration and maladaptive pain-related cognitions. Last, it should be noted that IBS research indicates that persons older than 60 years-of-age are diagnosed dramatically less and this may be an artifact of age-related IBS pain studies (Lacy & Lee, 2005).

The current study used age 50 as the dividing point for sample groupings, based on Baker and Green’s (2005) study. Using this age parameter is assumed to better capture and compare persons in their most physically active years with persons in their
less physically active years. Other age and pain coping comparison studies have been conducted using undergraduates (ranging in age from 18 to mid-30s) or with persons 65 years-of-age and older (Baker & Green, 2005; Green, et al.; Lachapelle & Hadjistavropoulos, 2005; Minocha, et al., 2006).

In the current study older participants do show less pain behavior and less pain-related disruption to daily activities. Regarding passive coping, the older participants report more use of Praying-Hoping but Catastrophizing is more prevalent among the younger participants. Further analysis of MANOVA F values reveals that the mean differences are significant; however, the predictor and criterion variables interaction is not significant except for Pain Complaint behavior. Nevertheless, the older cohort appears to cope better with IBS related-pain than the younger cohort.
Implications

An unexpected finding of this study sample is a lack of significant relationships between passive coping, pain behaviors, and decreased pain-related daily activities in general. This is surprising, given the fact that low HRQoL, IBS treatment-seeking, and passive coping are closely linked (Frank et al., 2002). Descriptive data reveals the passive coping strategies, Praying-Hoping and Catastrophizing, have means of 3.02 and 1.77, respectively, on a CSQ-R measure mean of 3. Similarly, only one active coping strategy, Coping Self-Statements (mean 2.89), approached the CSQ-R measure mean. The remaining active coping strategies fell one to two standard deviations below the CSQ-R mean. Likewise, Household Chores (mean 4.54) is the only daily activity to exceed the WHYMPI measure mean of 3. The remainder, (four), fall within one standard deviation or close to two standard deviations below the WHYMPI mean. Thus, it appears that the study sample does not demonstrate a predilection either for passive or for active coping strategies, nor does it appear that daily activities were grossly influenced by pain and this certainly contributes to the findings.

Also, the study sample reports a high abdominal pain frequency (79%), ample treatment-seeking behavior (85.2%) and low self-reported psychiatric (depression and/or anxiety) comorbidity (0.06%). The percentage of self-reported psychiatric troubles is atypical and inconsistent with the IBS treatment-seeker’s profile. Such mental health omission may be suggestive of somatization features/disorder associated with IBS (Lackner, Gudleski, & Blanchard, 2004; Miller et al., 2001). Although the current study did not aim to address somatization in IBS pain-related functioning, it is an
issue that the writer is inclined to acknowledge. This is particularly true because somatization features/disorder may complicate the presentation of IBS and hinder treatment success (Allen, Gara, Escobar, Waitzkin, & Silver, 2001).

The aforementioned notwithstanding, the current study reasonably corroborates contemporary coping and pain research, arguing a relationship between passive coping and less adaptive pain-related functioning. When controlling for education and age specifically, it has been found that less educated and younger participants utilize catastrophizing (passive coping) and report more pain complaints and pain avoidance behavior. In general, participants subscribing to catastrophizing reported more IBS-related pain severity and IBS-related interference (daily functioning). Conversely, participants endorsing coping self-statements report less IBS-related pain and less IBS-related daily disturbance; moreover, they believe they exert more self-control over their responses to IBS-related pain. The implications of these findings seem consistent with prevailing research that cognitive interpretation of pain and subsequent pain-related problem-solving is influenced by one’s proclivity to engage in either in passive or in active coping and in internal or in external LoC.

Thus the current study may highlight the constellation of IBS pain-related cognitive and behavioral characteristics that physicians and psychologists find useful. Physicians are frontline providers of physical and mental health care, yet the physician is constrained by time demands that limit in-depth, non-pharmacological treatments (Wang, Demler, Olfson, Pincus, Wells, et al., 2006). Increasingly, psychologists are practicing in co-located or interdisciplinary treatment facilities; however, a unit of treatment may be
no more than one half-hour away (Talen, Fraser, & Cauley, 2005). Even in traditional behavioral health settings, brief therapy (6 to 12/30-55 minute meetings) has become the norm (McGinn & Sanderson, 2001). Thus it is important to have a fundamental conceptualization of the IBS patient and treatment alternatives.

The current study continues to highlight the role that catastrophizing plays in pain avoidant behavior and in daily activities reduction. Physicians may include in their treatment protocol bibliotherapy (i.e., written material on IBS), rudimentary physiological education regarding the connection with diet and motility, benefits of physical activity (counter-intuitive to the patient) and improved motility and abdominal pain reduction, and acknowledge the treatment-seeker’s anxiety and perception of a more serious problem (Bengtsson, Ulander, Borghal, Christensson, & Ohlsson, 2006; Colwell, Prather, Phillips, & Zinmeister, 1998). Patient worry and perpetuation of complaint is the hallmark problem both for IBS patient and for healthcare provider.

Whether or not psychological care is co-located or is in a stand alone facility, a physician referral is delicate. Not only is there potential for referral rejection, especially from the somatizer, but some patients may feel a sense of abandonment and/or betrayal. Hence, patients may accept such referrals, justified as behavioral medicine (psychology). Thus, patients may be more accepting of psychology when their complaints are discussed in terms of the presenting problems’ developments rather than as a hurried disconfirmation of their positions (Guthrie, 1996). This beginning can anchor a working and therapeutic relationship and lessen attrition (Edlund, Wang, Berglund, Katz, Lin, & Kessler, 2002);
Masi, Miller & Olson, 2003; Reis & Brown, 2006). Contemporary psychotherapy for IBS (i.e., restructuring cognitive interpretation and evaluation of somatic sensations, stress management training to reduce severity and frequency of pain episodes, and so on) can be tailored with the psychologists’ awareness of the preponderance of catastrophizing, external LoC, education level, age, and/or somatization issues. This knowledge may help the psychologist with collaborative direction and efficiency of treatment, yet anticipating threats and avoiding pitfalls to the therapeutic process associated with aspects of the IBS patient profile.
Limitations

The current study's findings are bound by the limitations of a correlational study and exploratory investigations. This study uses self-report questionnaires that rely entirely on retrospective reporting. Hence, memory for pain perception, severity, situation (driving, awaken from sleep, etc.), cognitive interpretation and affective evaluation and reaction must be recalled; this inevitably limits accuracy of details. It is, however, expected the participants gave their best recollections of responses or of their “typical” IBS pain-related behaviors. Moreover, endorsement of WHYMPI daily activity items may be dependent on the respondent’s lifestyle (e.g., going to the movies or gardening may not be a preferred activity under any circumstance). Other limitations to this study may be the recruitment and data collection process because the majority of participants responded to website advertisements and participated via mail-in. However, Gosling, Vazire, Srivastava, and John (2004) report parity between internet and traditionally recruited research participants. Their findings indicate persons volunteering their participation in research via internet recruitment are no less truthful than traditionally recruited participants.

Clearly, this study focuses on women who describe themselves as treatment-seekers or persons currently experiencing Rome II symptom criteria. This study sample, though a national one, is recruited primarily from one IBS website. Lack of other catchments (though attempted) may have limited racial diversification because only 21 of the 159 participants identified themselves as racial minorities. Also, the dichotomization of education level is done in a manner that best represents “lower and higher” educated
persons as opposed to non-formal and formal educated persons. Similarly, age
parameters follow precedent (Baker & Green, 2005) but still represent arbitrary
appointment. Last, this study did not stipulate diagnoses of affective, anxiety, or,
somatization disorders. Therefore, the rates of IBS psychiatric comorbidity in the study
sample, although speculative, are believed to be grossly low for such a high treatment-
seeking sample.
Future Directions

The current study did not seek to learn if persons with a history for psychological pain management fared better than persons who had not. If IBS hampers persons above comparative U.S. norms as the epidemiology and HRQoL literature suggest, then, perhaps it is worth knowing if persons receiving psychotherapy cope differently. This is particularly true because psychotherapy protocols purport therapeutic effectiveness for IBS and yet meta-analyses studies give less impressive findings. What is not clear is the patient’s perspective on the interventions that are seen as practical and beneficial. Are professionals seeing frequent treatment-seekers that have never received psychological pain management, pain management drop outs, or relapsers?

A review of coping research (Folkman, 2004) shows a history for examining coping from the perspective of abject cognitive processing and behavioral responses to stress. Passive coping is the vernacular that infers coping deficiencies, including maligned methods such as prayer, supposedly. Use of prayer, in terms of passive coping, is characterized as an instance of resigning one’s cognitive efforts, abdicating personal responsibility, exhorting helplessness, and/or dependence on another. Yet prayer and spiritual connectedness is receiving more attention from the medical community for its relationship with improved health. The practice of spirituality and its relationship with good health outcome, in particular with subjective pain reduction, has been positive. Perhaps those who research coping need to revisit passive coping and the positive role of prayer. This would be a move aligned with positive psychology’s (Seligman, 2000)
increasing momentum and emphasis on the role that positive emotions play in stress reduction. Regarding IBS pain, perhaps it is worthwhile to remain open to prayer and hope as an active and vital therapeutic interventions rather than depreciating it. In addition, positive psychology’s emphasis on one’s strengths may assist the IBS sufferer with different and broadening views of his or her capacity to manage pain-related stress.
Postscript

The current study germinates from a more ambitious, but unsuccessful, racial comparison, investigating Black women’s and White women’s IBS coping strategies. Documented racial/ethnic pain research extends to the early 20th century, although such work gained momentum during the latter 20th century. However, until recently no investigations specific to epidemiology and HRQoL of Blacks with IBS existed (Andrews, Eaton, Hollis, Hopkins, Ameen, et al., 2005; Granlnek, Hays, Kilbourne, Chang, & Mayer, 2004; Wigington, Gowdy, Allen, Edmonson, Petrini, et al., 2003; Wigington, Johnson, Cosman, James, Grady, et al., 2003). Exploring race/ethnicity and IBS pain-related coping was deemed relevant, given that pain research informs researchers that minorities experience more pain-related impairment and pain under-treatment.

Despite the writer’s awareness of Black’s skepticism and reluctance to participate in medical research for historical reasons (e.g., Tuskegee Study), recruitment proved more challenging than anticipated. Announcement of the study was accomplished by mass e-mail to PCOM’s students, faculty, employees, and alumni specializing in family medicine and gastroenterology. Targeted solicitation of Black participants occurred at PCOM’s healthcare centers and family medicine clinic (2 of 4 sites serve a predominately Black demographic area), using recruitment fliers posted in the patient waiting areas and exam rooms. Requests were made to post research fliers at websites specific to Black women’s concerns or to other similar organizations, to no avail. Likewise, IBS websites and women’s health websites were solicited; two of these consented to post the
recruitment notice. Recruitment efforts extended to primary and gastroenterology practices in the Greater Philadelphia, Pennsylvania area; four of these practices consented to display recruitment fliers in their patients’ waiting area. Additional recruitment occurred at churches, at businesses specific to women, and in community centers in Philadelphia.

Chandra and Paul, III (2003), enumerate the barriers encountered by the writer to recruitment of Black research participants. First, distrust of the medical community is a major impediment, given the egregious deception and unauthorized experimentation on as many as 400 Alabamian Black men (Tuskegee Study) seeking help for syphilis, who without their knowledge, were treated with a placebo in order to compare the natural course of this untreated virulent disease in Blacks (Reverby, 2000). The writer found, during the recruitment process, that this issue remains relevant within the Black community. Second, the writer found that some potential participants were less interested in research connected to psychology. The implication was that they are not “crazy” and abdominal pain is “real.” Third, protection of personal data and allocation of personal time is a highly important issue. The recruitment flier read that participation was anonymous but this issue may have required more details that could not have been offered, in some cases, without one’s inquiry. Another concern may have been compensation; for, gift cards or cash were offered, although emphasis was on the former. Potential participants may have viewed redemption of gift cards difficult, given the fact that issuers were not located close to many predominately Black neighborhoods. Also, potential participants may simply have deemed the research as not important to their
needs; or perhaps, fundamental understanding, attitudes, beliefs, and perceptions about research may have been a problem. Last, this study was financially supported by the PCOM research department; still, operating expenses required personal resources. This limited marketing, relative to health care recruitment advertisements for radio, TV, and Philadelphia newspapers.
References


Appendices

Appendix A

West Haven-Yale Multidimensional Pain Inventory

BEFORE YOU BEGIN, PLEASE ANSWER 2 PRE-EVALUATION QUESTIONS BELOW:

1. Some of the questions in this questionnaire refer to your “significant other.” A significant other is a person with whom you feel closest. This includes anyone that you relate to on a regular or infrequent basis. It is very important that you identify someone as your “significant other.” Please indicate below who your significant other is (circle one):

- 1 Spouse
- 1 Neighbor
- 1 Partner/Companion, Housemate/Roommate
- 1 Parent/Child/Other relative
- 1 Friend
- 1 Other (please describe):

2. Do you currently live with this person? 1 YES 1 NO

When you answer questions in the following pages about “your significant other,” always respond in reference to the specific person you just indicated above.

Section 1

In the following 20 questions, you will be asked to describe your pain and how it affects your life. Under each question is a scale to record your answer. Read each question carefully and then circle a number on the scale under that question to indicate how that specific question applies to you.
1. Rate the level of your pain at the present moment.

0  1  2  3  4  5  6

No Pain  Very intense pain

2. In general, how much does your pain problem interfere with your day to day activities?

0  1  2  3  4  5  6

No interference  Extreme interference

3. Since the time you developed a pain problem, how much has your pain changed your ability to work?

0  1  2  3  4  5  6

No change  Extreme change

4. How much has your pain changed the amount of satisfaction or enjoyment you get from participating in social and recreational activities?

0  1  2  3  4  5  6

No change  Extreme change
5. How supportive or helpful is your spouse (significant other) to you in relation to your pain?

0 1 2 3 4 5 6
Not at all Extremely supportive

6. Rate your overall mood during the *past* week.

0 1 2 3 4 5 6
Extremely low mood Extremely high mood

7. On average, how severe has your pain been during the *last week*?

0 1 2 3 4 5 6
Not at all Extremely severe

8. How much has your pain changed your ability to participate in recreational and other social activities?

0 1 2 3 4 5 6
No change Extreme change
9. How much has your pain changed the amount satisfaction you get from family related activities?

0  1  2  3  4  5  6
No change  Extreme change

10. How worried is your spouse (significant other) about you in relation to your pain problems?

0  1  2  3  4  5  6
Not at all  Extremely worried

11. During the *past week* how much control do you feel that you have had over your life?

0  1  2  3  4  5  6
Not at all  Extremely in control

12. How much *suffering* do you experience because of your pain?

0  1  2  3  4  5  6
No suffering  Extreme suffering
13. How much has your pain changed your marriage and other family relationships?

0 1 2 3 4 5 6
No change Extreme change

14. How much has your pain changed the amount of satisfaction or enjoyment you get from work?

0 1 2 3 4 5 6
No change Extreme change

____ Check here, if you are not presently working.

15. How attentive is your spouse (significant other) to your pain problem?

0 1 2 3 4 5 6
Not at all Extremely attentive

16. During the past week how much do you feel that you’ve been able to deal with your problems?

0 1 2 3 4 5 6
Not at all Extremely well

17. How much has your pain changed your ability to do household chores?

0 1 2 3 4 5 6
No change Extreme change
18. During the past week how irritable have you been?

0 1 2 3 4 5 6

Not at all Extremely

irritable irritable

19. How much has your pain changed your friendships with people other than your family?

0 1 2 3 4 5 6

No change Extreme change

20. During the past week how tense or anxious have you been?

0 1 2 3 4 5 6

Not at all Extremely tense or anxious
tense or anxious

SECTION 2

In this section, we are interested in knowing how your spouse (or significant other) responds to you when he or she knows that you are in pain. On the scale listed below each question, circle a number to indicate how often your spouse (or significant other) generally responds to you in that particular way when you are in pain. Please answer all of the 14 questions. ***Please identify the relationship between you and the person you are thinking of _____________. 
1. Ignores me.
   
   0  1  2  3  4  5  6
   Never  Very often

2. Asks me what he/she can do to help.
   
   0  1  2  3  4  5  6
   Never  Very often

3. Reads to me.
   
   0  1  2  3  4  5  6
   Never  Very often

4. Expresses irritation at me.
   
   0  1  2  3  4  5  6
   Never  Very often

5. Takes over my jobs or duties.
   
   0  1  2  3  4  5  6
   Never  Very often

6. Talks to me about something else to take my mind off the pain.
   
   0  1  2  3  4  5  6
   Never  Very often

7. Expresses frustration at me.
   
   0  1  2  3  4  5  6
   Never  Very often
8. Tries to get me to rest.
   0 1 2 3 4 5 6
   Never Very often

9. Tries to involve me in some activity.
   0 1 2 3 4 5 6
   Never Very often

10. Expresses anger at me.
    0 1 2 3 4 5 6
    Never Very often

11. Gets me some pain medications.
    0 1 2 3 4 5 6
    Never Very often

12. Encourages me to work on a hobby.
    0 1 2 3 4 5 6
    Never Very often

13. Gets me something to eat or drink.
    0 1 2 3 4 5 6
    Never Very often

14. Turns on the T.V. to take my mind off my pain.
    0 1 2 3 4 5 6
    Never Very often
SECTION 3

Listed below are 18 common daily activities. Please indicate how often you do each of these activities by circling a number on the scale listed below each activity. Please complete all 18 questions.

1. Wash dishes.

0 1 2 3 4 5 6
Never Very often

2. Mow the lawn.

0 1 2 3 4 5 6
Never Very often

3. Go out to eat.

0 1 2 3 4 5 6
Never Very often

4. Play cards or other games.

0 1 2 3 4 5 6
Never Very often

5. Go grocery shopping.

0 1 2 3 4 5 6
Never Very often

6. Work in the garden.

0 1 2 3 4 5 6
Never Very often
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<td>7. Go to a movie.</td>
<td>0</td>
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<td>Very often</td>
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<td>8. Visit friends.</td>
<td>0</td>
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<td>Very often</td>
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<td>9. Help with the house cleaning.</td>
<td>0</td>
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<td>10. Work on the car.</td>
<td>0</td>
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<td>11. Take a ride in a car.</td>
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<td>12. Visit relatives.</td>
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<td>13. Prepare a meal.</td>
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14. Wash the car.

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15. Take a trip.

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16. Go to a park or beach.

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<th>Scale</th>
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17. Do a load of laundry.

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<th>Scale</th>
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18. Work on a needed house repair.

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<th>Scale</th>
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Appendix B

Coping Strategies Questionnaire-Revised

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 patients 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 experience pain, a 3 indicates you sometimes do that when you experience pain, and a 6 indicates you always do it when you are experiencing pain. Remember, you can use any point along the scale.

0 1 2 3 4 5 6
Never do Sometimes do that Always do that

*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 try to think of something pleasant.

__ 3. It’s terrible and I feel it’s never going to get any better.

__ 4. I tell myself to be brave and carry on despite the pain.

__ 5. I tell myself that I can overcome the pain.

__ 6. It’s awful and I feel that it overwhelms me.

__ 7. I feel my life isn’t worth living.
8. I pray to God it won’t last long.
9. I try not to think of it as my body, but rather as something separate from me.
10. I don’t think about the pain.
11. I tell myself I can’t let the pain stand in the way of what I have to do.
12. I don’t pay any attention to it.
13. I pretend it’s not there.
14. I worry all the time about whether it will end.
15. I replay in my mind pleasant experiences in the past.
16. I think of people I enjoy doing things with.
17. I pray for the pain to stop.
18. I imagine that the pain is outside of my body.
19. I just go on as if nothing happened.
20. Although it hurts, I just keep on going.
21. I feel I can’t stand it anymore.
22. I ignore it.
23. I rely on my faith in God.
24. I feel like I can’t go on.
25. I think of things I enjoy doing.
26. I do something I enjoy, such as watching TV or listening to music.
27. I pretend it’s not a part of me.

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Appendix C

Pain Behavior Questionnaire

Directions: The following are typical activities which people who suffer from pain often do. Please indicate whether you have done any of the following activities in relation to your IBS. Use this rating system:

1 = Yes  0 = No  X = Non-applicable (i.e., this activity never applies to you)

__1. Take a tablet prescribed by a doctor

__2. Avoid or minimize lifting heavy objects

__3. Avoid or minimize traveling by public transportation

__4. Apply some form of heat (e.g., heating pad)

__5. Avoid or reduce cooking

__6. Tell someone in your immediate family about the pain

__7. Avoid or minimize going to restaurants

__8. Avoid or minimize walking up and down stairs

__9. Avoid or reduce gentle exercise

__10. Grip, rub, or stroke the site of pain

__11. Avoid or reduce heavy housework (e.g., vacuum cleaning)

__12. Avoid or reduce bright lights

__13. Sit on a hard backed chair

__14. Cry

__15. Avoid or reduce going to work

__16. Avoid or minimize bending
17. Distract yourself by reading, TV, etc.
18. Avoid or minimize gardening
19. Avoid walking short distances
20. Avoid too much standing or sitting
21. Tell a close friend about the pain
22. Avoid or reduce time spent on hobbies not requiring physical exertion
23. Avoid or minimize cleaning the car
24. Avoid or minimize shopping
25. Limp, drag your leg
26. Avoid or reduce going out to the bar/pub
27. Avoid or reduce sexual intercourse
28. Take a tablet not prescribed by a doctor
29. Avoid or minimize going out to visit family or friends
30. Sigh, moan, or cry out
31. Avoid or reduce traveling in cars
32. Avoid or reduce going to parties
33. Lie on floor, hard bed
34. Avoid or reduce loud noise
35. Go swimming or try other forms of exercise to relieve pain
36. Avoid or reduce going to the theatre or movies
37. Change your posture
38. Avoid or minimize doing odd jobs around the house
39. Avoid spending time with people you live with
40. Have a strong alcoholic drink
41. Have your back massaged
42. Avoid or reduce light housework (e.g., dusting, washing up)
43. Talk to an acquaintance about your pain
44. Avoid or reduce going out to dances or dance clubs
45. Slow down in all your physical movements
46. Avoid or minimize stretching
47. Grimace or frown
48. Avoid or reduce having visitors around to see you
49. Avoid or reduce carrying
Appendix D

Personal Characteristics Questionnaire

Below are 20 questions about your experiences with irritable bowel syndrome and general ways of describing yourself. The questions require you to write an answer in a space provided or checkmark one box.

1. How long have you been diagnosed with irritable bowel syndrome (IBS)?
   Please write length of time on the line ______________________

2. Do you take medications for IBS?
   □ Yes, then skip questions 3 and please list medication(s) _________________
   □ No

3. Have you ever taken medications for IBS?
   □ Yes, please list medications __________________________________________
   □ No

4. How often do you experience continuous abdominal pain you believe is related to IBS?
   □ Daily
   □ Weekly
   □ Every two weeks
   □ Monthly
   □ Every 2 to 3 months
5. Do you see someone for pain management related to IBS other than your primary doctor or gastroenterologist?, for example, spiritual leader.

☐ Yes, please list other profession(s) ____________________________

☐ No

6. Do you have any other medical conditions?

☐ Yes, please list ________________________

☐ No

7. Do you see a psychologist or psychiatrist for pain management?

☐ Yes, skip questions 8

☐ No

8. Have you ever met with a psychologist or psychiatrist for pain management?

☐ Yes

☐ No

9. Do you see a psychologist or psychiatrist for depression or anxiety related to IBS?

☐ Yes, then skip question 10

☐ No

10. Have you ever met with a psychologist or psychiatrist for depression or anxiety related to IBS?

☐ Yes

☐ No
11. Do you have family members (mother, sister, uncle, other) diagnosed with IBS?

☐ Yes, please write relationship ______________________

☐ No

12. Which group best describes how you see yourself?

☐ Native American

☐ Asian (includes Pacific, South, and Southeast heritage)

☐ Black (includes, African, Caribbean, North, South and Central American, and European heritage)

☐ Latino or Hispanic (Non-Black)

☐ White

☐ Middle Eastern

☐ Biracial

☐ Other, please describe __________________________

13. Which group best describes your religious beliefs?

☐ Buddhist

☐ Christian

☐ Hindu

☐ Agnostic

☐ Sheik

☐ Jewish

☐ Indigenous

☐ Muslim
☐ Catholic

☐ Atheist

☐ Other, Please list ________________________________

14. What is your age in years and months?, for example, 46 years and 8 months.

Please write answer on line ________________________________

15. Which of the following relationships best describes yours?

☐ Engaged

☐ Married

☐ Common-law marriage

☐ Divorced

☐ Single with significant other

☐ Single without significant other

16. What is the highest academic degree you have earned? For example, 8th grade diploma, GED, high school diploma, technical school diploma, associates degree, and so on. Please write answer on line ________________________________

17. Which best describes your current employment status?

☐ Employed (full-time)

☐ Employed (part-time)

☐ Unemployed

☐ Retired

☐ Student

☐ On Disability
18. What is your yearly income range?

- [ ] below $11,000
- [ ] $11,000 - $20,000
- [ ] $21,000 - $30,000
- [ ] $31,000 - $40,000
- [ ] $41,000 - $50,000
- [ ] $51,000 - $60,000
- [ ] $61,000 - $70,000
- [ ] $71,000 - $80,000
- [ ] $81,000 - $90,000
- [ ] $91,000 - $100,000
- [ ] above $100,000

19. Which residential area of the choices below best describes where you live?

- [ ] Farm
- [ ] City
- [ ] Rural
- [ ] Suburb
- [ ] Other, please describe _____________________________

20. Who is treating you for IBS?

- [ ] Primary care physician
- [ ] Gastroenterologist
- [ ] Other, please write answer _____________________________
Appendix E

Rome II Symptom Criteria for IBS

☐ Over the past 12 months, have you experienced abdominal (stomach) discomfort or pain for at least 12 weeks (consecutive not required) of the preceding 12 months?

Was the abdominal/stomach discomfort or pain…(Please check all that apply)

☐ Relieved with a bowel movement and/or

☐ Onset associated with a change in the amount or frequency of bowel movements; and/or

☐ Onset associated with a change in form (appearance) of the bowel movement?

Have you had any of the following symptoms Please check all that apply.

☐ Abnormal bowel movement frequency (greater than 3 bowel movements/day or less than 3 bowel movements/week);

☐ Abnormal bowel movement form (lump/hard or loose/watery stool or pellets);

☐ Abnormal bowel movement passage (straining, urgency, or feeling of incomplete bowel movement passage);

☐ Passage of mucus;

☐ Bloating.
The Philadelphia College of Osteopathic Medicine, Philadelphia, PA, is conducting an anonymous survey study on women’s daily functioning with irritable bowel syndrome (IBS). We invite females 18-years-old and older diagnosed with IBS to participate in this study. For more details contact: Jeffery A. McCleary, MA, MS (267) 262-0494 or Troy Heckert, MA, MS (267-307-1006).
Appendix G

Cover Letter

IBS Study Packet Information

This packet is part of a research project being conducted by researchers from the Philadelphia College of Osteopathic Medicine (PCOM). The purpose of this research is to better understand female irritable bowel syndrome (IBS) patients’ anxiety, pain severity, fear of pain, pain behaviors, and quality of life.

Women diagnosed with IBS are being asked to fill out the questionnaires included in this packet for the purposes described above. In order to participate in this research study you must meet the following criteria: (1) you are a woman age 18 years and older, (2) you have been diagnosed with IBS by a physician at least 6 months ago, (3) you have no other chronic pain condition, and (4) you are fluent in English.

Your participation in this study is anonymous and you may choose not to participate at any time. If you agree to participate, you will complete this packet of questionnaires, which will take approximately 60 minutes to complete. When the completed packet is returned to the researcher or the person who gave you the packet, you will receive $10 (cash or gift card) for your participation. If you are returning the packet by mail, please email Troy Heckert (troyh@pcom.edu) or Jeffery McCleary (jefferymc@pcom.edu) to indicate that you have returned a packet and that you are due $10.00. This will allow your information to stay anonymous, as your name and questionnaires will not be linked. Your written responses will be stored in a locked file
cabinet in the principal investigator’s office. Again, you do not need to provide your name or any identifying information attached to your questionnaires.

This study may not benefit you personally; however, if you agree to participate, you will be providing needed data about specific experiences and needs of women who suffer from IBS. We have also included educational handouts and support resources in the packets that may provide you with further information about IBS. If you have any questions about the study at any time, please contact one of the investigators: Jeffery McCleary (267-262-0494) or Troy Heckert (267-307-1006).

Respectfully yours,

Jeffery McCleary, MA, MS and Troy Heckert, MA, MS
### Table 6a

**Frequency of abdominal pain**

<table>
<thead>
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<th>Pain</th>
<th>N</th>
<th>%</th>
<th>Cumulative %</th>
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<td>Weekly</td>
<td>66</td>
<td>41.5</td>
<td>79.2</td>
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<td>Every 2 weeks</td>
<td>8</td>
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</tr>
<tr>
<td>Monthly</td>
<td>8</td>
<td>5.0</td>
<td>89.3</td>
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<tr>
<td>Every 2 to 3 months</td>
<td>6</td>
<td>3.8</td>
<td>93.1</td>
</tr>
<tr>
<td>Other</td>
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<td>3.1</td>
<td>96.2</td>
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<td>1.3</td>
<td>97.2</td>
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<tr>
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Table 6b

Do you take medication for IBS?

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<th>Cumulative %</th>
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Table 6c

Do you see someone for pain?

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### Table 6d

**Do you see a psychologist or psychiatrist for pain?**

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### Table 6e

**Have you ever met with a psychologist or psychiatrist for pain management?**

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<th>Cumulative %</th>
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Table 6f

Which group best describes you?

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<th>Group</th>
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<th>Cumulative %</th>
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<td>1.3</td>
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<tr>
<td>Biracial</td>
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<td>.6</td>
<td>99.4</td>
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Table 6g

What is your highest educational degree?

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What is your yearly income range?

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### Table 6i

Which residential area best describes where you live?

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<th>Residence</th>
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<td>1.3</td>
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<td>City</td>
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Table 6j

<table>
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<th>Provider</th>
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<td>93.7</td>
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<td>1.9</td>
<td>95.6</td>
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<td>PCP &amp; Other</td>
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<td>Valid N (listwise)</td>
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Table 7b

Coping Strategies Questionnaire-Revised

<table>
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<th>Dimension</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>F</th>
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<tbody>
<tr>
<td>Reinterpreting Pain Sensations</td>
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Table 7c

Pain Behavior Questionnaire

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