THE COMORBIDITY OF EMOTIONAL DISTRESS WITH TWO COMMON ACUTE PAIN POPULATIONS: JAW AND LOW BACK

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To my family

THE COMORBIDITY OF EMOTIONAL DISTRESS WITH TWO COMMON ACUTE PAIN POPULATIONS: JAW AND LOW BACK

By

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THESIS

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The present study was undertaken to evaluate emotional distress in two common acute pain populations: jaw pain (JAW; n = 135) and low back pain (LB; n=71). Prevalence of psychopathology in each group was evaluated, using the Structured Clinical Interview of Diagnostic and Statistical Manual IV - I and II, and compared to general population estimates. Analyses also examined

discrepancies between low risk (LR) JAW and LR LB and high risk (HR) JAW and HR LB. Additionally, medication usage was evaluated to see if differences existed in types of medications used in these groups. Subjects were evaluated on a variety of psychosocial and functional measures, including the Beck Depression Inventory, Multidimensional Pain Inventory, Characteristic Pain Intensity, and Ways of Coping measures. Analyses revealed that there were significant differences between the JAW and LB groups, as well as differences between both risk status groups and the general population and specifically for DSM-IV Diagnoses. JAW subjects were found to have lower BDI and CPI scores, as well as a higher level of functioning on the Global Assessment of Functioning (GAF) from the DSM-IV. JAW patients had significantly more current Axis I and II diagnoses, while the LB group had significantly more lifetime Axis I and II disorders. Both acute pain groups had significantly more Axis I and II disorders than the general population. Additionally, it was discovered that the JAW group used more benzodiazepines, while the LB group used more Schedule II Narcotics. A logistic regression created from significant variables found a six-factor solution, created by the Characteristic Pain Intensity, MPI Coping Style Anomalous, Ways of Coping Problem-Solving, Global Assessment of Functioning, Anxiety Disorders, and Cluster C personality disorder diagnoses, that differentiates the JAW from the LB group. Overall, differences identified between these two groups indicate that the JAW group has increased current

psychopathology, while the LB group has more enduring psychopathology. Future treatment should more uniquely correspond to the specific acute pain group.

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AC	Adaptive MPI primary coping style
AN	Anomalous MPI coping style
ANOVA	One-way Analysis of Variance
BDI- I and II	Beck Depression Inventory- I and II
CI	Confidence Interval
CLBP	Chronic Low Back Pain
CNS	Central Nervous System
CPI	Characteristic Pain Intensity
CSA	Controlled Substances Act
CT	Computed Tomographic
D	Dysfunctional MPI primary coping style
DEA	Drug Enforcement Administration
df	Degrees of Freedom
DSM-III	Diagnostic and Statistical Manual, Third Edition
DSM-III-R	Diagnostic and Statistical Manual, Third Edition-Revised
DSM-IV	Diagnostic and Statistical Manual, Fourth Edition
FDA	Food and Drug Administration
GAD	Generalized Anxiety Disorder
GAF	Global Assessment of Functioning

GMC	General Medical Condition
HR	High Risk
HY	Hybrid MPI coping style
IASP	International Association for the Study of Pain
ID	Interpersonally Distressed MPI primary coping style
JAW	Jaw Pain
LB	Low Back Pain
LR	Low Risk
$\underline{M}$	Mean
MAOI	Monoamine Oxidase Inhibitors
MAP	Multiaxial Assessment of Pain
MDD	Major Depressive Disorder
MMPI	Minnesota Multiphasic Personality Inventory
MPI	West Haven-Yale Multidimensional Pain Inventory
MRI	Magnetic Resonance Imaging
NERI	Norepinephrine Reuptake Inhibitor
NOS	Not Otherwise Specified
NSAIDs	Nonsteroidal anti-inflammatory drugs
OCD	Obsessive Compulsive Disorder
OCPD	Obsessive Compulsive Personality Disorder
OR	Odds Ratio

OTC	Over-the-Counter
PD	Personality Disorder
PTSD	Post-traumatic Stress Disorder
RDC	Research Diagnostic Criteria
SCID I and II	Structured Clinical Interview for DSM-IV
SSRI	Selective Serotonin Reuptake Inhibitors
TCA	Tricuclic Antidepressants
TMD	Temporomandibular Disorder
TMJ	Temporomandibular Joint
UA	Unanalyzable MPI coping style
UTSWMC	University of Texas Southwestern Medical Center
WOC	Ways of Coping measure
X^2	Chi-square

CHAPTER ONE
Introduction

Musculoskeletal pain is an increasingly costly and debilitating medical condition in industrialized countries. The abundance of literature on musculoskeletal pain focuses on chronic pain, with fewer studies focusing on the area of acute pain. As more is being learned about both of these conditions, the importance of psychological and social factors in understanding pain has become increasingly recognized. Pain is now widely viewed as a biopsychosocial phenomenon, in which biological, psychological, and social factors dynamically interact with one another. As psychological (i.e., behavioral, cognitive, and affective) factors have been explored, it has become increasingly evident that pain is associated with high rates of diagnosable psychopathology.

The purpose of the present study is to examine the prevalence of Axis I and Axis II psychopathology in two common acute pain populations, and to compare them to prevalence estimates in the general population. Finally, the relationship among acute pain, psychopathology, and psychotropic medications was investigated. The present study extends the research literature by examining comorbid mental disorders associated with acute pain more thoroughly by comparing the prevalence of diagnosed psychological disorders across distinct subpopulations of acute pain. The major goals of the present investigation are to

add a current understanding of acute pain populations and investigate differences in treatment of acute pain with psychotropic and analgesic medications

CHAPTER TWO
Review of Literature

Theories of Pain

Pain is a universal phenomenon, experienced by people across all ages, cultures, and socio-economic levels. It is an extremely complex entity, varying in incidence, prevalence, scope, nature, and clinical significance. Scientists, clinicians, philosophers, writers, clergy, and many others have long sought a better understanding of the phenomenon of pain. Advances in knowledge of anatomy and sensory physiology in the 19th century led to early theories of pain based primarily, if not exclusively, on anatomy and physiology. These theories, reflecting a biomedical model of causation, focused on the role of external stimuli that impinge on specific sensory receptors in the peripheral nervous system and to the modulation and transmission of this information from the periphery to the central nervous system; the final endpoints are various regions within the brain at which the sensory information triggers a signal that is experienced as pain (Turk & Flor, 1999).

The inability of the biomedical model to produce treatments that alleviated pain, particularly chronic pain, in many suffering individuals, gave rise to alternate conceptualizations, highlighting the importance of psychosocial factors in the development and maintenance of pain. Engel (1959) hypothesized that,

while pain may originally develop from an external source, it often becomes a psychosocial phenomenon. Engel outlined characteristics, such as significant guilt and unsatisfied aggressive impulses, which he believed predispose certain individuals to chronic pain. He coined the terms "psychogenic pain" and, later, "pain-prone disorder," to describe these phenomena. Other authors pinpointed psychological, vocational, and cultural variables which they believed played a role in pain. Among these were hypochondriasis, depression, employment in unskilled or semi-skilled labor, and Italian or Jewish ethnicity (Mersky, 1965; Sternbach & Tursky, 1965; Tursky & Sternbach, 1967).

Subsequently, the limitations of categorizing pain in a dichotomous fashion, biomedical/organic versus psychogenic/functional, have become evident (Sternbach, 1974). Gatchel (1996) described that pain, particularly chronic pain, is a complex psychophysiological behavior pattern that cannot be broken down into distinct psychological and physical components. Attempting to do so creates an artificial distinction between mind and body that can be traced back to the philosopher Rene Descartes in the 18th century (Turk & Flor, 1999). Modern definitions of pain reflect a current understanding of this condition as both a physical and psychosocial phenomenon. For example, the International Association for the Study of Pain offers the following definition: "Pain is an unpleasant sensory and emotional experience associated with actual or potential

tissue damage, or described in terms of such damage" (Merskey & Boguck, 1994, p.210).

The first significant attempt to integrate physical and psychological phenomena was made by Melzack and Wall (1965), who presented a "Gate-Control Theory of Pain." These theorists hypothesized that central nervous system mechanisms provide the physiological basis for psychological involvement in pain perception. More specifically, the Gate-Control Theory asserts that a mechanism in the dorsal horn substantia gelatinosa of the spinal cord acts as a spinal gating mechanism that inhibits or facilitates transmission of nerve impulses, regulating the transmission and intensity of nerve signals from peripheral fibers to the central nervous system. Melzack and Wall further proposed that this spinal gating mechanism is influenced not only by peripheral afferent activity, but also by efferent neural impulses that descend from the brain. Consequently, the Gate-Control Theory describes the integration of peripheral stimuli with cortical variables such as mood and anxiety, in the perception of pain. Prior to the gate-control theory of pain, psychological correlates of pain were conceptualized as epiphenomena (Turk, 1996).

In addition to physiological and psychological factors, social variables have also been demonstrated to play an important role in the onset and maintenance of pain. Mechanic (1966; 1972) noted that the manner in which patients respond to their symptoms may be conceptualized as a function of the

social implications of that behavior. Some examples of this include evasion of unwanted work and responsibilities, special attention from others, and financial compensation. Fordyce (1976) placed these ideas within an operant learning framework, in which the behavioral manifestations of pain, rather than pain, per se, are of central importance. The operant view suggests that "pain behaviors," such as limping to protect a wounded limb, may come under the control of external contingencies of reinforcement, such as positive reinforcement (e.g., attention from a spouse) and negative reinforcement (e.g., avoidance of undesired activities), resulting in the prolongation of the pain experience.

Despite increasing knowledge about the importance of psychological and cultural factors in the pain experience, many researchers continued to believe that modern technical advances in medicine would eventually allow more accurate identification of the anatomical and physiological processes responsible for causing pain, with the biomedical model regaining its dominant position. However, recent improvements in diagnostic imaging instrumentation, such as computed tomographic (CT) and magnetic resonance imaging (MRI), have shown this belief to be a fallacy (Deyo, 1998). Only a small minority of chronic pain sufferers, especially those with spinal pain, receive an operational pathoanatomic diagnosis (Hazard, 1994a). Even when imaging studies reveal identifiable lesions, the presence of such lesions in asymptomatic populations raises doubts about their significance in a given patient (Boden et al., 1990, Jenson et al, 1994). Finally,

efforts to cure and rehabilitate chronic pain patients are frequently confounded by weak correlations between self-reports of pain and disability and their observed physical capacities (Gatchel, 1996; Hazard, Haugh, Green, & Jones, 1994; Waddell, 1987). It has been estimated that only 50% of the total disability experienced by a patient suffering from chronic low back pain (CLBP) can be attributed to physical impairment (Waddell, Main, & Morris, 1984). In fact, attempts to predict which individuals with an acute back pain injury will go on to develop chronic difficulties, including a poor response to rehabilitation treatment, have demonstrated that psychosocial factors, more than physical factors, are instrumental in failure to return to work after spinal injury (Frymoyer & Cats-Baril, 1987; Gatchel & Gardea, 1999; Gatchel, Polatin, & Kinney, 1995; Gatchel, Polatin, & Mayer, 1995; Lehmann, Spratt, & Lehmann, 1994; Polatin, Cox, Gatchel, & Mayer, 1997; Polatin et al., 1989; Volinn, Van Koevering, & Loeser, 1991).

With the hope for a purely biomedical understanding of pain further discredited, the identification of psychological and social factors associated with pain has taken on even greater urgency. It is within this context that Turk and Rudy (1987) proposed a multidimensional, biopsychosocial model of pain. Although a biopsychosocial model of pain was introduced as early as the 1960s by Melzack and colleagues (Melzack & Casey, 1968; Melzack & Wall, 1965), Turk and Rudy (1987) were the first to comprehensively consider physiological,

biological, cognitive, affective, behavioral, and social factors in making a thorough assessment of the chronic pain experience. Turk and Rudy (1987) conceptualize these factors as interdependent, with dynamic and reciprocal interplay between them. For example, organic conditions may initiate and perpetuate a psychological disturbance, while psychological factors influence patients' perception and assessment of physical stimuli. Social factors, in turn, may impact upon individuals' behavior in reaction to their pain experience. The biopsychosocial model suggests that psychosocial factors take on increasing significance in exacerbating and perpetuating pain behavior and suffering as the episode of pain progresses from acute to chronic pain

Acute Pain vs. Chronic Pain

Pain can be classified as either acute or chronic. The primary element involved in the classification is, of course, the duration of the pain experience. Acute pain has a recent onset and usually signals injury, is of brief duration, subsides as healing occurs, may be associated with hyperactivity of the autonomic nervous system, and is often accompanied by anxiety (Fields, 1987; McCaffery & Beebe, 1989). This type of pain generally accompanies acute injury, disease, or surgery but, given appropriate treatment, the pain is usually relieved within several months (Weir & Crook, 1992). Encompassed within acute pain is the

notion of episodic pain, which is acute pain that recurs at various points in time. These episodes may recur over one's lifetime or for a prolonged period.

Chronic pain, as defined by the International Association for the Study of Pain (IASP) (1986), persists past the normal time of healing. The time frame may range from one month to more than six months, but the definition cited three months as the "most convenient point of division between acute and chronic pain" (IASP, 1986, p. S5). Some pain may be viewed as chronic, but associated with medical conditions such as arthritis or some types of cancer in which persistent tissue damage occurs. In contrast, other chronic pain syndromes, such as low back pain or headache, may occur in the absence of demonstrable tissue damage. Chronic pain can be accompanied by adaptation of the autonomic nervous system, and often is associated with such symptoms as depression, sleep disturbance, constipation, and changes in appetite.

Low Back Pain

Epidemiology and costs. Low back (LB) pain is a common and costly medical condition. While LB pain rarely indicates a serious disorder, it is a major cause of pain, disability, and social cost. The annual prevalence of LB pain in the United States is estimated at 15% to 20%, and the lifetime prevalence is between 60% to 80% (Atlas & Deyo, 2001; Jones, 1997). More than 28% of the industrial workforce will have lost days of work as a result of this condition (Atlas & Deyo,

2001). The costs associated with LB pain include the direct cost of medical care and the indirect costs of time lost from work, disability payments, and diminished productivity. In the workplace, LB pain is the most costly ailment, with an average cost of $8,000 per claim, and accounts for one third of workers' compensation costs. The estimated annual national bill for the care of LB pain is $28 to $50 billion (Atlas & Deyo, 2001).

LB pain is the fifth most common reason for all physician visits, and is the second most common symptomatic reason (upper respiratory symptoms are first) (Atlas & Deyo, 2001). Although more than half of visits for LB pain are to primary care physicians, LB pain constitutes the most common reasons for visits to orthopedists and neurosurgeons. Although back pain is a leading reason for visiting health care providers, many affected individuals never seek medical care. In a random telephone survey of North Carolina residents, only 39% of persons with LB pain sought medical care (Atlas & Deyo, 2001).

Etiology. LB pain refers to spinal and paraspinal symptoms in the lumbosacral region. Acute LB pain is typically defined as a duration of less than 2 to 4 weeks, subacute is up to 12 weeks, and chronic typically refers to more than 12 weeks. For most patients with acute LB pain in primary care settings, the etiology is thought to be a mechanical cause involving the spine and surrounding structures. Unfortunately, in most cases, a precise pathoanatomic cause cannot be reliably confirmed by physical examination or diagnostic testing. This is due to

weak associations among symptoms, examination findings, and anatomic changes. In contrast to the nonspecific etiology of most mechanical causes, nonmechanical causes (such as cancer or infection) can be diagnosed with greater certainty. However, they represent a small fraction of acute LB pain and an exact etiology is identifiable in only about 15% (Atlas & Deyo, 2001).

Jaw Pain and Temporomandibular Disorders

Epidemiology and costs. Pain is the most common reason people in the United States seek medical or dental care (Wright et al., 2004). Lipton and colleagues (1993) found that, based on a survey of 45,711 households, 22% of the U.S. population experienced orofacial pain on more than one occasion in a 6-month period. Estimates also have been made that 65% to 85% of the U.S. population experience some temporomandibular disorder, or TMD, symptoms during their lives (Dworkin, Huggins et al., 1990). It is estimated that 5% to 12% of the population has progressed from having acute to chronic TMD symptoms (Lipton, Ship, & Larach-Robinson, 1993; Dworkin, Huggins et al., 1990; Svensson & Graven-Nielsen, 2001; Duckro, Tait, Margolis, & Deshields, 1990). Dao and LeResche (2000) found that 8% to 15% of women had chronic TMD, while the prevalence among men was 3% to 10%. During the mid-1990s in a survey of the literature, little cost data regarding TMD pain were found outside of estimates from the 1970s, which indicated that 40% of the total cost of treatment

for chronic pain was attributed to craniofacial pain, including TMD. More recently, it was found that managed care treatment costs for a patient with orofacial pain often ranged from $12,000 to $20,000 annually (Brotman, 1997).

Etiology. Temporomandibular disorders (TMD) are a heterogeneous group of disorders that can be organized into two broad diagnostic categories. These categories include functional disorders of the musculature of the face, head, neck, shoulders, and upper back, and disorders pertaining to the hard structures and soft tissues of the temporomandibular joint (TMJ). The majority of TMD cases involve muscle disorders, internal derangements of the TMJ, degenerative changes in the TMJ, or a combination of any of these (Glaros & Glass, 1993). TMD is characterized by three primary symptoms: 1) pain and tenderness of the muscles of mastication and the TMJ; 2) sounds in the joint such as popping, clicking, or crepitus of the jaw; and 3) limited mandibular movement (McNeill, 1997; Moss & Garrett, 1984; Moss, Garrett, & Chiodo, 1982). Additionally, TMD patients may report headache, other facial pains, earache, dizziness, and tinnitus (ringing in the ears), as well as neck, shoulder, and upper and lower back pain (Glaros & Glass, 1993).

Emotional Distress and Pain

For purposes of this investigation, emotional distress is defined as an anxiety and/or a depressive disorder which are both described by the Diagnostic

and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994). An additional contribution to emotional distress includes underlying personality disorders. To evaluate the contributions of each of these axes on pain, evidence for Axis I and II diagnoses will be described below. General findings for mood disorders include the following:

Axis I anxiety disorders. Anxiety disorders are serious medical illnesses that affect 18.1% of the U.S. population, (Kessler, Chiu, Demler, & Walter, 2005). Each anxiety disorder has its own distinct features, but they are all bound together by the common theme of excessive, irrational fear and dread. Generalized anxiety disorder (GAD) affects 3.1% of the population in a given year, and is characterized by at least 6 months of persistent and excessive anxiety and worry. Obsessive-compulsive disorder (OCD) is characterized by obsessions (which cause marked anxiety or distress) and/or by compulsions (which serve to neutralize anxiety), and affects about one percent of the U.S. population (Kessler, Chiu, Demler, & Walter, 2005). Panic disorder, which affects 2.7% of the U.S. population (Kessler, Chiu, Demler, & Walter, 2005), is characterized by panic attacks which are discrete periods in which there is the sudden onset of intense apprehension, fearfulness, or terror, often associated with feelings of impending doom (DSM-IV, 1994). During these attacks, symptoms such as shortness of breath, palpitations, chest pain or discomfort, choking or smothering sensations, and fear of losing control are present. Other types of anxiety disorders are:

agoraphobia, anxiety or avoidance of places or situations from which escape might be difficult or help might not be available in the event of having panic attack symptoms, affecting 0.8% of the population; specific phobia, anxiety provoked by exposure to a specific or feared object or situation, which affects 8.7% of the population; social phobia, anxiety provoked by exposure to certain types of social or performance situation, which affects 6.8% of the population; and posttraumatic stress disorder (PTSD), a re-experiencing of a traumatic event accompanied by symptoms of increased arousal and avoidance of situations associated with trauma; and acute stress disorder, symptoms similar to PTSD that occur immediately in the aftermath of an extremely traumatic event, which affects 3.5% of the population (Kessler, Chiu, Demler, & Walter, 2005; DSM-IV, 1994). Anxiety disorders frequently co-occur with depressive disorders ("The Numbers Count," 2001).

Axis I depressive disorders. Depression is an affective disorder characterized by loss of interest or pleasure in almost all of a person's usual activities or pastimes. Accompanying this condition are: feelings of intense sadness and despair; diminished energy; decreased sexual drive; mental slowing and loss of concentration; pessimism; feelings of worthlessness or self-reproach; inappropriate guilt; recurrent thoughts of death, suicide, and hopelessness; blunted affect; fatigue; and insomnia (DSM-IV, 1994). Depression is a common psychiatric disorder. In a given year about 9.5% of American adults, age 18 or

older, have a depressive disorder—a depressive disorder includes: major depressive disorder, dysthymic disorder, and bipolar disorder ("The Numbers Count," 2001). In general, depressive disorders are subclassified by type and duration of the mood episode. Major depressive disorder (MDD) is characterized by one or more major depressive episodes (i.e., at least 2 weeks of depressed mood or loss of interest accompanied by at least four additional symptoms of depression. This disorder affects approximately 6.7% of the U.S. population, 18 and older, annually (Kessler, Chiu, Demler, & Walter, 2005). Dysthymic disorder, a disorder that reportedly affects 1.5% of the U.S. population during their lifetime, is characterized by at least 2 years of depressed mood for more days than not, accompanied by additional depressive symptoms that do not meet criteria for a Major Depressive Episode (Kessler, Chiu, Demler, & Walter, 2005).

Specific evidence for Axis I pathology within LB pain. The association between chronic pain and depression has generated more research and theoretical interest than any other in the chronic pain/psychopathology literature. Much of this interest can be attributed to the frequency with which chronic pain patients suffer from depression (Polatin, 1991), along with evidence that those with both back pain and depression use twice the sick days and incur twice the health care costs as those with either problem separately, and the presence of depression has been found to complicate the treatment of back pain (Carroll, Cassidy, & Cote, 2004). A number of studies (Burton, Polatin, & Gatchel, 1997; Kinney, Gatchel,

Polatin, Fogarty, & Mayer, 1993; Polatin, Kinney, Gatchel, Lillo, & Mayer, 1993) identified extremely high rates of MDD in chronic pain patients, with current and lifetime rates of this disorder of about 45% and 65%, respectively, in the CLBP population. Interestingly, Kinney, Gatchel, Polatin, Fogarty, and Mayer (1993) found chronic LB pain patients had higher rates of MDD while acute LB pain patients were diagnosed with more Anxiety Disorders. This pattern of results was also true in jaw pain patients.

Specific evidence for Axis I pathology within jaw pain. In a study by Gatchel, Garofalo, Ellis, & Holt (1996), psychological disorders were assessed in 50 patients with chronic TMD and 51 patients with acute TMD. Both groups had high rates of psychopathology that exceeded the base rates of the general population. In the acute group, anxiety disorders were the most widely diagnosed, followed by affective disorders, and substance abuse disorders, respectively. The chronic group was most frequently diagnosed with affective disorders, followed by somatoform disorders, and substance abuse disorders. This study is consistent with other research which has found that acute pain is characterized by anxiety, and that chronic pain is associated with depression (Kight, 1996). These researchers discovered that 80% of the acute TMD patients and 86% of the chronic TMD patients had at least one Axis I disorder before the onset of their TMD symptoms.

Additionally, Wright, Gatchel, Wildenstein, Riggs, Buschang, and Ellis (2004) used self-report measures and physical examinations to examine differences between high risk (HR) and low risk (LR) jaw pain patients and the likelihood of these groups developing chronic jaw pain. They found that the HR groups had significantly higher levels of self-reported pain as measured by the Characteristic Pain Inventory and significantly higher levels of depression, as measured by the Beck Depression Inventory-II. Other results from this study showed that LR Jaw pain subjects were 11 times more likely to have a DSM-IV Axis I clinical diagnosis. Specifically, subjects in the HR group had significantly higher rates of somatoform pain disorder and generalized anxiety disorder, or GAD; no subjects in their LR group had GAD.

Axis II personality disorders and general findings. In addition to the numerous studies supporting the idea that pain patients, including those with low back and jaw pain, often have various psychological diagnoses, there is also a large amount of literature that supports a relationship between Axis II disorders, also called personality disorders (PDs), and these pain problems. Axis II disorders are defined as "rigid and maladaptive behaviors and traits that cause significant impairment in adaptive functioning or subjective distress" (Kinney, Gatchel, Ellis, and Holt, 1992, p. 49). A recent study by Grant, Hasin, Stinson, Dawon, Chou, Ruan, and Pickering (2004) estimated that 14.79% of adult Americans had at least 1 personality disorder. They reported that the most

prevalent PD in the general population was Obsessive-Compulsive Personality Disorder (OCPD), 7.88%; followed by Paranoid PD, 4.41%; Antisocial PD, 3.63%; Schizoid PD, 3.13%; Avoidant PD, 2.36%; Histrionic PD, 1.84%; and Dependent PD, 0.49 % (Grant, et. al, 2004).

Specific evidence for Axis II pathology within LB pain. A study performed by Gatchel, Polatin, and Kinney (1995) evaluated acute LB pain patients, who failed to return to work six months after the initial assessment, by using a diverse battery of tests. Among other measures, the patients were administered the SCID and SCID-II in order to determine both Axis I and Axis II disorder diagnoses based on the Diagnostic and Statistic Manual of Mental Disorders, Third Edition, Revised (DSM-III-R; American Psychiatric Association, 1987). The results showed that three measures were relevant in differentiating those acute pain patients who return to work six months later, versus those who did not: self-reported pain and disability, the presence of a PD, and scores on Scale 3 of the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1942). This study was helpful in that it pinpointed specific psychological and personality factors that, if treated, could possibly prevent the rate of acute LB pain patients who are not returning to their jobs. These findings in this study support the notion that there is a psychosocial component that contributes to the development of chronic pain. The researchers discovered evidence to support the idea that LB pain is more than a physical disorder because of the presence of PDs

and consistently elevated Scale 3 scores on the MMPI in those patients who were acute and became chronic. Gatchel, Polatin, and Mayer (1995) assessed the same patients mentioned in the above study, one year later. They discovered that the diagnosis of a PD was not found to be predictive of the rate of return to work for acute LB pain at one-year follow-up.

Gatchel, Polatin, Mayer, and Garcey (1994) performed a study in which they examined the relationship between psychopathology and the rehabilitation of patients with CLBP disability. The sample consisted of 152 chronic LB pain patients who were assessed using a structured clinical interview to identify psychopathology based on the DSM-III-R (American Psychiatric Association, 1987) criteria. More than 90% of the patients were diagnosed with an Axis I disorder, while more than 50% were diagnosed with an Axis II disorder. Paranoid, Passive-Aggressive, and Borderline PDs were the most commonly diagnosed PDs in this study. After the interview, the subjects began a three-week, intensive, functional restoration treatment program and, after completing the program, they were followed-up at one year post-treatment. Return to work was the primary treatment outcome. The researchers discovered that Axis I and Axis II diagnoses did not predict a patient's return to work successfully. The type or severity of the psychological diagnosis also did not affect the return to work status of these patients. The study concluded that the diagnosis of an Axis I or II disorder was not a predictive measure when determining if a patient would return

to work successfully. The researchers hypothesized that if the appropriate treatment plan is implemented to deal properly with psychopathology, then it does not have to have a negative effect on treatment outcome or return to work status.

Polatin, Kinney, Gatchel, and Mayer (1993) found that out of a sample of 200 chronic pain patients, 51% met the criteria for one at least one personality disorder. Using a SCID-II, 30% of the patients met criteria for more than one PD, and Paranoid PD was the most common, with 33% of the patients diagnosed with this Axis II disorder. Of their sample, 15% of the individuals were diagnosed as Borderline PD, 14% as Avoidant PD, and 12% with Passive-Aggressive PD.

Reich and Thompson (1987) investigated the prevalence of PD clusters in chronic pain patients. These researchers studied three groups of patients: patients suffering from chronic pain; psychiatric patients applying for disability, and psychiatric patients going through mental competency hearings. All three groups of individuals were given semi-structured interviews for Axis I and II disorders using the DSM-III. The results showed that chronic pain patients were more likely to have a PD than the patients going through mental competency hearings. The most common PD cluster found in the chronic pain patient population was Cluster C (Avoidant, Dependent, and Obsessive-Compulsive), and these same individuals were more likely to have Cluster B diagnoses (Histrionic, Borderline, Narcissistic, and Antisocial) then the patients undergoing competency hearings. Overall, 37% of the chronic pain patients were diagnosed with a PD, and only

11.8% of the patients undergoing mental competency hearings were diagnosed with an Axis II disorder.

In a study performed by Fishbain, Goldberg, Meagher, Steele, and Rosomoff (1986), 283 mixed chronic pain patients (including low back, neck, headache, etc.) were assessed, and 58% were diagnosed with an Axis II disorder. The Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III; American Psychiatric Association, 1980) was used during the testing, and Dependent PD was the most common diagnosis, with 17.4% of the patients meeting criteria for this particular disorder. Approximately 14.9% of the patients were diagnosed with Passive-Aggressive PD, and 11.7% were diagnosed with Histrionic PDs. For the patients who were not diagnosed with a PD, a personality type was given, and it was reported that 24.5% were Compulsive and 10.6% were Dependent with this particular population.

Specific evidence for Axis II pathology within jaw pain. As previously mentioned, Wright, Gatchel, Wildenstein, Riggs, Buschang, and Ellis (2004) found that HR jaw pain subjects were three times more likely to have a DSM-IV Axis II personality disorder. In addition, cluster analysis of the Axis II personality disorders also revealed that subjects in the HR group were nearly four times as likely as subjects in the LR group to have a cluster C diagnosis (that is, avoidant personality disorder, dependent personality disorder, or obsessive-

compulsive personality disorder, or OCPD). This study also notably reported that the HR group was three times more likely to have OCPD than the LR group.

As mentioned before Kinney, Gatchel, Ellis and Holt (1992) identified chronic TMD patients and interviewed them using the SCID NP and the SCID II to determine DSM-III-R (1987) Axis I clinical disorders and Axis II PDs. The researchers found that 40% of the patients met the criteria for at least on Axis II disorder. The following diagnoses were the top three most frequently seen personality disorders in the study: Paranoid (18%), Obsessive-Compulsive (10%), and Borderline (10%). In the general population, about 18% of all people have an Axis II disorder, so this chronic TMD population had a much higher prevalence of PDs than the general population. Furthermore, this study revealed that chronic TMD patients exceeded the base rates of the population in the diagnosis of PDs. As far as Axis I disorders were concerned, 84% of the patients met the criteria for one or more of these disorders. Of these patients, 74% were diagnosed with major depression and 30% were diagnosed with substance abuse disorders.

In the same study as mentioned earlier, Gatchel, Garofalo, Ellis, and Hold (1996) found that Paranoid PD was the most frequently diagnosed Axis II disorder for 50 chronic TMD patients and 51 acute TMD patients. The SCID I and II were used during the assessment, and it was discovered that both the acute and chronic TMD patients had a higher percentage of Axis II disorders than did the general population. Paranoid PD accounted for 18% of the chronic patients,

while obsessive-compulsive and borderline PDs accounted for 10% of the diagnoses. Axis II disorders were more prevalent in chronic TMD patients; however, the difference was not statistically significant. Also, in the chronic group, the most frequently diagnosed Axis I disorders were affective disorders, somatoform disorders, and substance abuse disorders. Another important factor discovered in this study was that 80% of acute TMD patients had the diagnosis of at least one Axis I disorder before they began having TMD symptoms, and 86% of the chronic TMD patients in this study also had at least one Axis I disorder. Despite the multifactorial etiology of pain, i.e., biological, psychological, and social factors, typical first course treatment involves medication.

Pharmacological Treatments

Pharmacologic agents are generally the first course of treatment because they typically produce quick symptomatic relief, and do so in a cost-efficient manner. There are several classes of medications used in pain management: 1) analgesics, including non-opioid and opioid; 2) COX-2 inhibitors; and 3) psychotropic medications. Each of these will be described in detail below.

Analgesics refer to the class of drugs that includes most painkillers. Within this class, there are two primary subcategories of analgesics: 1) nonsteroidal anti-inflammatory drugs (NSAIDs); and 2) narcotics, a.k.a. opioids (Julien, 2001).

NSAIDs are widely prescribed due to their primary effect of reducing the inflammatory responses within tissues. Nonprescription or over-the-counter (OTC) pain relievers are generally used for mild to moderate pain, while prescription pain relievers, sold through a pharmacy under the direction of a physician are for more moderate to severe pain. Aspirin may be the most widely used pain-relief agent and has been sold OTC since 1905 as a treatment for fever, headache, and muscle soreness (Julien, 2001). Ibuprofen is a member of the aspirin family of analgesics. It is sold over the counter and also comes in prescription-strength preparations. Although acetaminophen may have some anti-inflammatory effects, it is generally distinguished from the traditional NSAIDs (Julien, 2001). Acetaminophen is the basic ingredient found in Tylenol and its many generic equivalents. It is sold OTC as well as in a prescription-strength preparation and also in combination with codeine.

Opioid analgesics (narcotics) provide pain relief by blocking pain messages to the brain. Examples of brand name prescription opioid analgesics include Actiq, Dilaudid, OxyContin, Percocet and Vicodin (Julien, 2001).

The narcotic class is one of five classes of drugs outlined in the Controlled Substances Act of 1970 from the U.S. Drug Enforcement Administration (DEA) (Julien, 2001). Depressants, stimulants, hallucinogens, anabolic steroids make up the other four classes ("Drug Classes," 2004). Each class is sub-divided into five schedules according to the substance's potential for being harmful, value for

medical purposes, and the potential for abuse, physical dependence, or addiction. These schedules are reviewed on an annual basis except where control is required by U.S. obligations under an international treaty, convention, or protocol. ("Controlled Substances Act, " 1996). The findings required for each of the schedules are delineated below.

- Schedule I drugs have a high potential for abuse. These drugs have not currently been accepted for medical treatment in the United States. They lack safety for use under medical supervision because of their high potential for abuse. Examples of Schedule I drugs are: heroin, methequalone, LSD, etc.
- Schedule II drugs have a high potential for abuse as well. These drugs have been accepted for medical use in the U.S. These drugs may lead to severe psychological physical dependence. Examples of Schedule II drugs include: morphine, codeine, oxycodone, Ritalin, amobarbital, Dexedrine, PCP, etc.
- Schedule III may lead to moderate or low physical dependence or high psychological dependence. These drugs have been accepted for medical use in the U.S. Examples of Schedule III drugs are: Tylenol #4, hydocodone (Vicodin), butalbital, benzphetamine, etc.
- Schedule IV and V drugs have less potential for abuse than their preceding schedule and are currently accepted for medical use in treatment in the U.S. Schedule IV and V drugs may lead to limited physical dependence or psychological dependence. Schedule IV drugs include: propoxphene,

Phenobarbital, diet pills/decongestants, etc. Examples of Schedule V drugs are: Lomotil and Robitussin ("Controlled Substances Act, " 1996).

- Drugs and substances which are not scheduled according to this classification schema include: caffeine, nicotine, ethyl alcohol, and volatile hydrocarbon inhalants.

COX-2 Inhibitors. A recent approach to pain relief involves a class of compounds known as COX-2 inhibitors. COX-2 inhibitors work by inhibiting COX-2 enzymes which in addition to COX-1 enzymes are involved with many functions of the body, including the production of pain and swelling. Therefore, inhibiting COX-2 enzymes should decrease pain and inflammation while not affecting the gastrointestinal tract, like NSAIDs often do. This is because COX-2 inhibitors have less inhibition on COX-1 enzymes, a needed enzyme for gastrointestinal functioning in the body. Because COX-2 inhibitors tend to have few gastrointestinal side effects, patients may be able to take this medication in larger doses than aspirin and other drugs that have irritating side effects (Julien, 2001). In 1999, the Food and Drug Administration approved two COX-2 inhibitors-rofecoxib (Vioxx) and celecoxib (Celebrex), but in September 2004, Merck, the company which produces Vioxx, voluntarily recalled Vioxx due to its link with increased frequency of heart attacks and strokes. Clearly, long-term effects of COX-2 inhibitors still need to be evaluated.

Psychotropic medications. Psychoactive drugs, like antidepressants and anxiolytics, specifically benzodiazapines, are sometimes used for the treatment of pain. The use of benzodiazapines is controversial; however, low doses claim to have muscle relaxant and analgesic properties, which can be used in the management of muscular-related symptoms. Currently, physicians usually try to treat the condition with analgesics before prescribing these drugs because of the addictive properties of benzodiazapines (Davies, 2004).

Antidepressants appear to work by increasing the availability of certain chemicals in the brain. These chemicals, called neurotransmitters, are necessary for each nerve in the brain to send messages to other nerves (Julien, 2001). The information needed to maintain mood is conveyed in part with these chemical signals. In some forms of depression, these chemical signals, or neurotransmitters, may be too weak. The most widely discussed neurotransmitters in reference to depression are: serotonin, dopamine, and norepinephrine. Antidepressants work on these neurotransmitters in different ways but essentially the more of these substances available to the nerve cells the more regulated the mood. Antidepressants can serve to strengthen the signal and help return the low mood to a normal range. Often, it takes two to four weeks for depression to respond fully to these medications, although some people may respond in a matter of days. There are four types of antidepressant medications:

Tricyclics, Selective Serotonin Reuptake Inhibitors (SSRIs), Monoamine Oxidase Inhibitors (MAOIs), and atypical medications (Julien, 2001).

Examples of Tricyclics Antidepressants (TCAs) are amitriptline (Elavil), desipramine (Norpramin), and imipramine (Tofranil). Tricyclics were named for the presence of three rings in their chemical structure. The primary effect of most of the TCAs is to block the re-uptake of norepinepherine and/or serotonin (Julien, 2001). SSRIs, like fluoxetine (Prozac), sertraline (Zoloft), fluvoxamine (Luvox), paroxetine (Paxil) and citalopram (Celexa), act in the brain on a chemical messenger called serotonin. This type of medication enhances the signals in nerves that transmit messages with serotonin. Another group of antidepressants is the monoamine oxidase inhibitors (MAOIs). They work by preventing the chemical messengers (serotonin and norepinepherine) between nerve cells from being destroyed by the enzyme monoamine oxidase. As with the other antidepressants, this increases the strength of the chemical signal. The two most commonly used MAOIs are tranylcypromine (Parnate) and phenelzine (Nardil). These are rarely prescribed because of significant side effects. Lastly are atypical medications like nefazadone (Serzone), a medication that seems to act primarily on the serotonin system having effects in antianxiety and antidepressant actions. Venlafaxine (Effexor), in low doses, behaves much like an SSRI, with minimal effect on the norepinepherine system; however, in the higher dose range it also exhibits norepinepherine reuptake inhibition. Bupropion's (Wellbutrin)

mechanism of action is unclear. Its action may be mediated by its major metabolite, hydroxybupropion, a norepinepherine reuptake inhibitor. In addition to its use as an antidepressant, it may be used to treat nicotine addiction (smoking), attention deficit disorder and social phobia (Julien, 2001).

Common anxiolytics are benzodiazepines which are often used therapeutically to produce sedation, induce sleep, relieve anxiety and muscle spasms, and to prevent seizures. In general, benzodiazepines act as hypnotics in high doses, anti-anxiety agents in moderate doses, and sedatives in low doses. Of the drugs marketed in the U.S. that affect central nervous system function, benzodiazepines are among the most widely prescribed medications. Fifteen members of this group are presently marketed in the U.S. Benzodiazepines are controlled under the Schedule IV of the Controlled Substances Act (CSA; Julien, 2001).

Short acting benzodiazepines are generally prescribed at night for patients with sleep-onset insomnia (difficulty falling asleep) without daytime anxiety, while longer-duration benzodiazepines utilized to treat both insomnia and daytime anxiety. These benzodiazepines include alprazolam (Xanax), diazepam (Valium), lorzepam (Ativan), oxaxepam (Serax). Clonazepam (Klonopin), diazepam, and clorazepate are also used as anticonvulsants, and are therefore frequently prescribed for the management of pain conditions, such as restless leg syndrome, etc. Benzodiazepines are classified in the CSA as depressants. Two drugs --

zolpidem (Ambien) and zaleplon (Sonata) -- are benzodiazepine-like CNS depressants that have been approved for the short-term treatment of insomnia. Both of these drugs share many of the same properties as the benzodiazepines, and are in the Schedule IV of the CSA. Benzodiazepines should only be prescribed for short periods of time because it is possible to become dependent on them after as little as four weeks' use as directed by a doctor (Julien, 2001).

Future of Acute Pain Treatment

Drug companies want to know the most productive and profitable way to market their drugs. Research has suggested that many psychoactive drugs have multiple benefits, which opens a new avenue in drug possibilities. FDA regulations state that a drug can only be marketed for one purpose. This binding regulation has pharmaceutical companies searching for research that will help them to find their optimal market. The desire for optimal marketing has created a need to investigate the relationships between acute pain and psychopathology. This possible relationship poses questions for those with emotional distress whose predominate symptom is acute pain: Is emotional distress overlooked because of pain and therefore under- treated? Is it possible that neurotransmitters linked to depression and anxiety (like the ones that many of the psychotropic drugs mentioned above work on) are related to pain? If this is the case, is it possible that these medications may create an effective pain treatment? Literature and

evidence exploring these possibilities is limited for acute pain (R.J. Gatchel, personal communication, March 1, 2004).

Purpose of the Present Study

The purpose of this study is to evaluate emotional distress in two common acute pain populations, low back (LB) and jaw (JAW), in comparison to general population estimates, as well as compared to each other. This study will also examine the relationship between acute pain, emotional distress, and psychotropic and analgesic medications. This investigation will also look at what types and specificity which medications are prescribed to the differing acute pain populations (LB and jaw pain populations). Examining medication treatments used with acute pain populations may help drug companies to reach optimal marketing levels. This study is important because there is little information on acute pain, particularly, when acute pain populations are compared to each other.

Hypotheses:

1. It is hypothesized that the JAW and LB groups will differ significantly on demographic data. Specifically, in the areas of:
    a. Income: The JAW group will have a higher monthly income;
    b. Education: The JAW group will have more years of education;

   c. Employment: There will be more working individuals in the LB group.

2. It is hypothesized that the JAW and LB groups will have similar performances on the CPI, MPI, and WOC measures.
3. It is hypothesized that the LB group will have higher BDI scores than the JAW group.
4. It is hypothesized that acute pain populations: JAW and LB, will have higher rates of Axis I and II disorders than the general population.
5. It is hypothesized that the JAW group will have a higher prevalence of Axis I anxiety-related disorders, while the LB group will have an increased rate of Axis I depression-related disorders.
6. It is hypothesized that more psychotropic medications will be prescribed to the JAW group than to the LB group.
7. It is hypothesized the LB patients will receive more analgesic medications than the JAW

CHAPTER THREE
Method

Subjects

For purposes of this study, two different acute pain population subject pools were used: LB and JAW. Subject data were collected retrospectively from on-going research programs at the University of Texas Southwestern Medical Center (UTSWMC) in Dallas. Both programs are similar in that they shared the same primary investigator, shared the same researchers, and had similar methodology in recruitment of subjects and test methods.

Low back pain. Subjects were recruited from several orthopedic practices near UTSWMC. Seventy-one subjects participated in this study. The sample was composed of 32 women (45.1%) and 39 men (54.9%); the mean age was 41.39 years. Subjects were excluded if they had some other significant pain-exacerbating physical condition (such as cancer or fibromyalgia), six or more DSM-IV Axis I diagnoses, current psychosis, or suicidal ideation. Subjects had to meet the following inclusion criteria in order to be eligible for the study: (a) no more than 2 months since ALBP onset; (b) constant daily pain when performing activities, from initial onset to current evaluation; (c) decreased ability to perform normal job requirements because of the pain; (d) no history of chronic episodic back pain (i.e., two or more disabling episodes at least 4-6 months apart during the past 2 years, with fluctuating low grade discomfort between episodes); (e) no

current need for surgery. The surgery determination was made according to appropriate orthopedic practice, prior to consideration for the study. Specifically, every patient underwent appropriate tests as well as a complete orthopedic and neurological evaluation for back pain. If these evaluations were positive (e.g., neurological findings on examination suggested a disc herniation, i.e., muscle weakness with particular pattern and hyposthesia), then they were referred for possible surgical evaluations and were ineligible for the study.

Subjects were divided into risk group categories based on their likelihood of developing chronic pain disability problems: low risk (LR) and high risk (HR). Predicting risk status offers clinicians an opportunity to identify at-risk patients early and initiate adjunctive or alternative treatments, thus reducing the likelihood of the development of chronic LB pain. Gatchel, Polatin, and Mayer (1995) systematically evaluated 421 patients on a standard battery of psychosocial assessments tests (Structured Interview for the DSM-III-R Diagnosis, Minnesota Multiphasic Personality Inventory (MMPI), and Million Visual Pain Analog Scale within 6 weeks of acute back pain onset. From there, logistic regression analyses were conducted to differentiate between patients who were back at work after 1 year versus patients who were not because of the original back injury. These analyses revealed, with 90.7% accuracy, the importance of three psychosocial measures: self-reported pain and disability, scores on Scale 3 of the MMPI, and workers' compensation and personal injury insurance status. Using the logarithm

created from these three variables, 38 (53.5%) LR LB patients and 33 (46.5%) HR LB patients were identified in this study.

Jaw pain. One hundred thirty-five subjects with complaints of jaw pain or facial discomfort of less than six months' duration participated in the assessment phase of this study. The sample was composed of 107 women (79.3%) and 28 men (20.7%); the mean age was 37.36 years, with a range from 18.00-66.25 years. General dentists and oral surgeons in the Dallas/Fort Worth metropolitan area referred patients to the TMD Clinical Research Project at the University of Texas Southwestern Medical Center at Dallas. In addition, fliers at local universities and advertisements were placed in local newspapers to recruit subjects. Inclusion criteria for the study included the following: adults between the ages of 18 and 70 years who had acute jaw or facial pain (defined as being present for less than six months). Potential subjects were excluded if they had a comorbid pain-exacerbating physical condition (such as cancer or fibromyalgia) or a history of jaw pain.

Subjects were also divided into risk group categories based on their likelihood of developing chronic pain: LR and HR. As was true for the LB group, predication of risk status allows for early identification and conservative treatment which may decrease the likelihood of costly, more invasive treatments, lost time from work, and social repercussions of chronic pain and disability. Epker, Gatchel, & Ellis, 1999) compared acute TMD data which demonstrated

differences in scores on numerous biopsychosocial indexes between the group that went on to develop chronic TMD and the group that did not. Through a logistic regression analysis, Epker and colleages (1999) were able to identify a two-variable predictive model consisting of the presence of a muscle disorder and scores on the Characteristic Pain Intensity (CPI) meausre. This analysis accurately classified 91% of the subjects who went on to develop chronic TMD. Using this logarithm, this sample identified 46 LR JAW (34.1%) patients and 89 HR JAW (65.9%) patients. Separate analysis were run comparing LR JAW and LR LB, as well as HR JAW and HR LB to better identify significant difference which may be attributed to difference in risk status, HR subjects tend to more significant pain.

Procedure

Low back pain. Subjects were informed of the study by their orthopedic specialists or they were recruited from fliers placed at local universities and advertisements in local newspapers. They were then told that, to be considered for the study, they could complete a screening packet, which contained an informed consent for the screening, a patient information form, and a voucher which provided a $20 incentive for completing the packet. The screening packets were collected from the orthopedic offices and reviewed for potential eligibility. The patients who met inclusion criteria were contacted by phone and offered $50

to participate in a more in-depth evaluation, at which point the study data were collected (Pulliam, Gatchel, & Gardea, 2001). These evaluations were conducted by licensed professionals at the Eugene McDermott Center for Pain Management, The University of Texas Southwestern Medical Center at Dallas.

Jaw pain. On completion of the self-reported measures and the structured interview, subjects received physical examinations according to the Research Diagnostic Criteria (RDC) (Dworkin & LeResche, 1992) examination form (Wright et al., 2004). Trained research personnel then administered a chewing performance evaluation to all subjects in which they chewed an artificial test food substance. Assessment was only for the presence or absence of myofacial pain. This determination was based on the administration of the Axis-I-Group 1a of the RDC examination form, which consists of palpation of 20 muscle sites involved in the diagnosis of myofacial pain, as well as on the subjects' responses to Question #3 on the RDC history questionnaire (that is, "Have you had pain in the face, jaw, temple, in front of the ear, or in the ear in the past month?"; Wright et al., 2004) . An oral surgeon knowledgeable in the RDC trained and periodically recalibrated the clinical research personnel. The assessment took approximately 2.5 hours. All subjects were paid $70 for participating in the study.

Measures

Both studies collected similar measures and followed similar protocols. In both instances, clinical psychology research personnel (psychologists and masters-level counselors) reviewed the purpose and procedures with subjects before obtaining informed consent for the in-depth evaluation. All subjects then completed the following self-report measures: general information questionnaire; the Beck Depression Inventory-II (BDI-II), a measure of depression (Beck, Steer & Brown, 1996); the West Haven-Yale Multidimensional Pain Inventory (MPI; Kerns, Turk, & Rudy, 1985), a measure of pain intensity, related life interference and the ability to manage pain; Ways of Coping (WOC; Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986), an empirically-derived inventory of specific ways in which people might cope with a stressful event; and the Characteristic Pain Intensity (CPI; Dworkin & LeResche, 1992), a measure of pain. The research personnel then interviewed all subjects using the Structured Clinical Interview (SCID I and II) for the DSM-IV, determine DSM-IV Axis I clinical disorders and Axis II personality disorders.

General information questionnaire. Separate questionnaires were given to the different study populations (i.e., LB and JAW). The questionnaires were similar in that they included demographic information, such as name, gender, age, marital status, contact information, referral source, occupation, and education.

Other questions were related to general health, medications, onset of low back/jaw pain, date sought treatment for low back/jaw pain, and previous treatment for low back/TMD.

The Beck Depression Inventory-II (BDI-II). The BDI is a self-report measure containing 21 items related to physical and emotional symptoms of depression. It is scored 0 to 3 for each item to yield a total score. Currently, it is one of the most widely used measures of depression in both medical and psychological research. The BDI was originally developed by Beck, Ward, Mendelson, Mock, and Erbaugh (1961) and revised by Beck, Steer, and Brown in 1996 to align with DSM-IV criteria. It offers reliable and valid measure of the presence and/or severity of depression. Beck, Steer and Garbin (1988) suggested cutoff scores of: <10 for absence of depression; 10-18 for mild to moderate depression; 19-29 for moderate to severe depression; and >29 for severe depression. The reliability of the BDI-II is good, with a coefficient Alpha of 0.92, which is higher than the BDI at 0.86. The BDI has been demonstrated to be a valid measure of depression in chronic pain patients (Geisser, Roth, & Robinson, 1997; Novy, Nelson, Berry, & Averill, 1995; Romano & Turner, 1985; Turner & Romano, 1984), although some researchers have recommended the removal of several items (Wesley, Gatchel, Garofalo, & Polatin, 1999) and/or modification of depression cutoff scores (Geisser et al., 1997; Wesley et al., 1999) because somatic (but not cognitive/affective) items of the BDI were found to be

confounded with pain sympomatology (Wesley, Gatchel, Polatin, Kinney, & Mayer, 1991).

Structured Clinical Interview for DSM-IV (SCID-I). The SCID-I (First et al., 1995) is a semi-structured interview designed to assess the presence or absence of current and past (or lifetime) DSM-IV Axis I disorders. The evaluator reads questions to the patient and formulates a differential diagnosis based upon the elicited responses. Unlike a fully structured interview, in which inquiries may not be made about responses to questions, subsequent, follow-up questions may be asked, depending on the subject's response to the first question. This procedure allows the clinically trained evaluator to continue gathering relevant information until the diagnostic decision is clear. In sum, the semi-structured SCID-I offers a balance between consistent procedures and flexibility that allows cross-study comparisons between different groups of researchers while also taking into account the clinical expertise of the evaluator.

Previous versions of the SCID demonstrated good test-retest reliability, with coefficients exceeding .60 for current and lifetime diagnoses in patient samples (Williams et al., 1992); 82% and 86% agreement between raters for MDD and Generalized Anxiety Disorder, respectively (Riskind, Beck, Berchick, Brown, & Steer, 1987); and interrater agreement exceeding .70 for a number of the most commonly diagnosed disorders (Skre, Onstad, Torgerson, & Kinglen, 1991). Studies in which joint interviews or videotaped interviews were used to

assess reliability reported interrater agreement ranging from .70 to 1.0 for particular diagnostic groups (Segal, Hersen & Van Hasselt, 1994; Strakowski, Keck, McElroy, 1995; Stukenberg, Dura, & Kiecolt-Glaser, 1990). Few studies have investigated the validity of the SCID. However, the SCID was developed to be consistent with DSM-IV diagnostic criteria. In addition, Kranzler, Ronald, and Burleson (1995) found that diagnoses obtained using the SCID demonstrated superior validity when compared with the standard clinical interview on intake in a sample of substance abusers.

In addition to making a distinction between current and past DSM-IV diagnoses, the SCID-I evaluator determined when the injury resulting in pain symptoms occurred before or after the onset of each psychiatric disorder based on the patient's age, date of injury, and age of onset of psychological symptoms. The evaluator also made a determination of global assessment of functioning (GAF) based on DSM criteria. An additional piece of information collected as part of the SCID-I evaluation is childhood history of physical and/or sexual abuse.

All SCID interviewers who participated in this study had graduate training in clinical psychology and had a through understanding of DSM diagnostic criteria. In addition, interviewers had a regular conference with a psychiatrist knowledgeable in regard to diagnosis.

For purposes of this study, SCID diagnoses were grouped into the following categories: current, past, and lifetime. A *Current* SCID-IV diagnoses was created from the compilation of all current diagnoses, i.e., the patient at the time of the interview was experiencing the disorder. These diagnoses include: current, sub-current, and current & lifetime. A *Past* SCID-IV diagnoses was created from the compilation of all past diagnoses, i.e., the patient was not at the time of the interview experiencing this disorder but had in the past. These diagnoses include: lifetime (defined by the absence of no current diagnosis) and sub-past. Finally, a *Lifetime* DSM-IV diagnosis was created from the compilation of both of these categories combined, i.e., current, sub-current, current & lifetime, lifetime, and sub-past diagnoses.

Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II). The SCID-II consists of 120-item questionnaire to be completed by the patient, followed by a semi-structured evaluation of positive answers by the evaluator. From this, DSM-IV personality disorder diagnosis are derived. The interrater reliability of previous versions of the SCID-II appears to be fair to good, with kappa values of .24 to .87 in studies in which the subject was evaluated by different interviewers (First, Spitzer, & Gibbon, 1995; Spitzer, Williams, Gibbon, & First, 1989; Williams et al., 1992), and kappa values of .56 to .89 in studies in which a second evaluator uses audiotapes (or videotapes) of the first interviewer as data (Brooks, Baltazar, & McDowell, 1991; Rennenberg, Chambless, &

Dowdall, 1992; Wonderlich, Swift, & Slotnick, 1990). Concurrent validity of the SCID-II was demonstrated by Hueston, Mainous, and Schilling (1996) in a study of primary care patients. Those patients with a personality disorder diagnosis had lower functional status, lower satisfaction with healthcare, and higher risk for depression and substance abuse. However, most concurrent validity studies comparing the SCID-II to other personality measures are difficult to interpret because of a lack of a "gold" standard (First, Gibbon, Spitzer, Williams, & Benjamin, 1997).

The diagnoses provided by the SCID-II will determine whether an individual fits into the Cluster A, B, or C personality category. Although these wider clusters are not entirely mutually exclusive or exhaustive, they will be utilized in this study because there is great overlap between specific PD diagnoses (e.g., Widiger et al, 1987), and because the clusters share clinically relevant descriptive similarities. Moveover, Reich and Thompson (1987) found the PD clusters to be a useful way to categorize chronic pain patients, with these patients showing higher rates of clusters B and C than psychiatric patients undergoing mental competency hearings. According to the DSM-IV (1994), Cluster A includes odd, eccentric, and suspicious individuals; Cluster B includes dramatic, emotional, and erratic individuals; and Cluster C includes anxious and fearful individuals.

Characteristic Pain Intensity (CPI). The CPI (Dworkin & LeResche, 1992) is defined as the mean of visual analog scale scores for "pain right now," "worst pain," and "average pain." Disability is measured by the extent of pain-related interference with daily activities and number of lost activity days (ie, days unable to go to work or school or to attend to household responsibilities) attributed to low back or TMD pain. The characteristic pain intensity ranges from 0 (least pain) to 100 (most intense pain), and is scored by calculating the mean of current pain, worst pain, and average pain scores, and then multiplying by 10.

Multidimensional Pain Inventory (MPI). The Mulidimensional Pain Inventory (MPI), developed by Kerns, Turk, and Rudy (1985), is a self-report questionnaire, consisting of 61 items in which subjects rate their answers on a scale from 0-6. A fifth grade reading level is required. The MPI consists of three sections. Section One examines 5 significant dimensions of the pain experience (perceived interference, support of significant other, severity of pain, self-control, and negative mood) and contains 28 items. Section Two, consisting of 14 items, evaluates the patient's perception of responses of significant others to communication of pain, and measures 3 scales (punishing responses, solicitous responses, and distracting responses). Section Three contains 19 items, and assesses level of common daily activities on 5 scales (household chores, outdoor work, activities away from home, social activities, and general activity level). This measure has been found to have strong psychometric properties (Bernstein,

Jaremko, & Hinkley, 1995; Kerns et al., 1985; Turk & Rudy, 1988). Kerns et al. (1985) used factor analysis to ascertain that the MIP has satisfactory construct validity. The reliability or internal consistency estimates ranged from .70 to .90, and test-retest reliability correlation coefficients were in the .62 to ,91 range over a two-week interval. According to Bernstein et al. (1995), the MPI has good reliability, internal structure, and convergent validity, and Turk and Rudy (1988) found the MPI to have good reliability and external validity.

The MPI assesses subjective distress experienced by pain patients in terms of the impact of pain on the patients' lives, the responses of others to the patients' expressions of pain, and the extent to which patients are able to carry out daily activities (Kerns, Turk, & Rudy, 1985). The MPI employs a classification system based on the Multiaxial Assessment of Pain (MAP; Rudy, 1989) to categorize individuals according to subgroups of Dysfunctional, Interpersonally Distressed, and Adaptive Coper. The Dysfunctional profile is characterized by one who reports higher than average levels of pain severity, higher than average levels of interference, higher than average of affective distress, lower than average levels of life control, and lower than average levels of general activity. The Interpersonally Distressed profile describes a person who has lower than average levels of perceived social support, higher than average levels of perceived distracting responses from a significant other. The Adaptive Coper is one who communicates lower than average levels of pain severity, lower than average

levels of interference, higher than average levels of life control, lower than average levels of affective distress and higher than average levels of general activity.

Ways of Coping (WOC). The Ways of Coping (Revised; Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986) is a 66-item questionnaire containing a wide range of thoughts and acts that people use to deal with the internal and/or external demands of specific stressful encounters. Usually the encounter is described by the subject in an interview or in a brief written description saying who was involved, where it took place and what happened. Sometimes a particular encounter, such as a medical treatment, is selected by the investigator as the focus of the questionnaire. The Ways of Coping is not designed to assess coping styles or traits as a process measure. It is possible though to look for consistency (style) across occasions by administering the measure repeatedly and then doing intraindividual analyses. Each administration, however, is focused on coping processes in a particular stressful encounter and not on coping styles or traits.

The WOC relative scoring method was developed by Vitaliano to provide a measure of a participant's coping style that accounts for the interrelationships among various coping styles (Vitalino et. al 1985; Vitalino et al 1987). Using this method, a percentage of coping effort, represented by each coping style may be assessed. Five styles are assessed that may be cateforized into adaptive and

maladaptive: Adaptive styles include the *Problem-Focused* and *Seeks Social Support* styles; while the maladaptive styles include the *Blame-Self, Wishful Thinking* and *Avoidance* styles. Higher scores on the adaptive styles and lower scores on the maladaptive styles represent a greater proportion of coping effort that is adaptive.

Statistical Analyses

Emotional distress was evaluated using Axis I and II diagnosis from the SCID I and II, as well as from the BDI, MPI and WOC. Chi-square analyses were conducted to determine the frequency of DSM-IV Axis I and II diagnoses in acute jaw and LBP populations compared to the general population. Independent two-tailed t-tests were conducted for BDI, CPI, and MPI data to compare the acute pain populations mean scores to each other. Chi-square analyses were also used to examine the frequency, as well as types of medications used by the two different acute pain populations. Chi-square analyses and independent two-tailed t-tests were also used in evaluating specific demographic data, such as gender, education, marital status, and employment.

Summary of Design

The current study represents a retrospective review of data involving two acute pain populations: JAW and LB. These ongoing projects were

comprehensively evaluated to examine psychopathology within two these acute pain populations. Prevalence of DSM-IV Axis I and II psychiatric disorders were determined and compared to general population estimates. Frequencies, as well as types of medications prescribed for the two differing acute pain populations were also examined. Demographic data similarities and differences between the two acute pain populations were also examined.

CHAPTER FOUR
Results

Demographic Characteristics

Descriptive analyses and frequency distributions were performed on the study sample and are presented in Table 1. Of the combined subject population, 135 subjects (65.5%) had acute jaw pain (JAW), while 71 (34.5%) had acute low back pain (LB). Within the JAW group there were 28 males (20.7%) and 107 females (79.3%). The LB group had 39 males (54.9%) and 32 females (45.1%). A significant difference was found between these two groups, with significantly more females than males in the JAW group, X^2 (1)=24.782, $p<0.01$. A significant difference was found between the JAW and LB for the mean age at intake, indicating that LB were significantly older t(203)= -2.314, $p=0.022$ (JAW M= 37.36 years; LB M= 41.39 years). A significant difference was also shown between the two groups for mean years of education, revealing that the JAW group had more years of education, t(206)= 2.878, $p<0.01$ (JAW M= 15.52 years; LB M= 14.49 years). No significant difference was found between LB and JAW when examining days of pain, t(203)= -0.197, $p=8.44$ (JAW M= 96.50 days; LB M = 104.90 days). In regards to race, there was a significant difference between the groups when assessed as Caucasian versus non-Caucasian X^2 (1)=10.214, $p<0.01$. The jaw population was primarily Caucasian (80%), but also included 8 African American subjects, 8 Latino subjects, 8 Asian subjects, and 3 subjects not

otherwise included in the preceding categories. The majority of the LB pain group was also Caucasian (59.2%), but 25.4% were African American; also included were 6 Latino subjects, 3 Asian subjects, and 2 subjects not otherwise included in these categories. No significance was found in marital status between these two groups X^2 (1)= 2.450, p=0.484. A significant difference was found in the mean number of adults over 18 living in the home between the two groups, revealing that the JAW group had more adults over 18 living in the home, t(204)=7.066, p<0.01 (JAW M= 1.99 adults; LB M= 1.17 adults).

No significant difference was found between the two groups and employment status, X^2 (1)=0.164, p=0.686. The majority of both the JAW and LB groups are working. The mean monthly income before taxes revealed that the JAW group earned significantly more money than the LB group, t(184)=3.107, p<0.01 (JAW M= $7,087; LB M= $2,140).

CHAPTER FIVE
Results

JAW versus LB

Physical Measures

The LB group was characterized by significantly higher scores on the CPI, $t(192) = -4.655$, $p < 0.01$ (JAW $M = 51.38$; LB $M = 63.66$) (see Table 2).

Psychosocial Measures

Coping Measures. Overall, it was found that subjects in the JAW and LB groups differed significantly from each other on many psychosocial variables. Using the Ways of Coping (WOC) measure (see Table 2), LB subjects scored significantly higher on the adaptive style, Problem Solving, $t(204) = -3.330$, $p < 0.01$ (JAW $M = 41.38$; LB $M = 45.21$). LB subjects also scored higher on the maladaptive coping styles: Wishful Thinking, $t(204) = -2.519$, $p = 0.013$ (JAW $M = 18.48$; LB $M = 20.54$) and Avoidance, $t(204) = -3.263$, $p < 0.01$ (JAW $M = 19.61$; LB $M = 22.31$). Maladaptive coping styles, Problem-Seeking and Self-Blame showed no significance between JAW and LB (although Self-Blame showed a trend toward significance at $t(204) = -1.940$, $p = 0.54$ (JAW $M = 6.34$; LB $M = 7.06$).

The MPI was also used to assess coping styles. Comparison of the primary MPI coping styles Adaptive (AC), Dysfunctional (D), and Interpersonally Distressed (ID) were compared to all other styles (AC, D, ID, Anomalous (AN), Hybrid (HY), and Unanalyzable (UA) to evaluate significant differences between

the JAW and LB groups (See Table 3). No significances were found in analyzing these groups: Adaptive, X^2 (1)=0.121, p=0.728, Odds Ratio = 1.108 (95% C.I.: 0.621-1.979); Dysfunctional, X^2 (1)=0.685, p=0.408, Odds Ratio = 0.715 (95% C.I.: 0.322-1.587); Interpersonally Distressed, X^2 (1)=0.480, p=0.489, Odds Ratio =0.762 (95% C.I.: 0.352-1.649).

Analyses were also done comparing the primary MPI coping styles (AC, D, ID) compared to all other primary styles (AC, D, ID) for comparing JAW to LB (See Table 4). No significance was found in any of the primary groups: Adaptive, X^2 (1)=0.831, p=0.362, Odds Ratio = 1.363 (95% C.I.: 0.699-2.658); Dysfunctional, X^2 (1)=0.383, p=0.536, Odds Ratio = 0.772 (95% C.I.: 0.340-1.754); Interpersonally Distressed, X^2 (1)=0.982, p=0.322, Odds Ratio =0.675 (95% C.I.: 0.310-1.472).

Mood Measures. The LB group was characterized by significantly higher scores on the BDI (see Table 2), t(202)= -2.410, p=0.016 (JAW M= 8.56; LB M= 11.64). The SCID I and II were also used to evaluate DSM-IV psychopathology in both acute pain populations:

Current SCID Diagnoses. Significant differences were found between the two groups (see Table 5). Specifically, the JAW group had significantly higher rates of the following Axis I diagnoses: Generalized Anxiety Disorder (GAD), X^2 (1)=6.052, p=0.023, Odds Ratio = 0.371 (95% C.I.: 0.154-0.895); and Somatoform Pain Disorder, X^2 (1)=4.544, p=0.023, Odds Ratio = 0.529 (95%

C.I.: 0.293-0.953). The LB group had significantly higher rates of the following current Axis I and Axis II disorders: Dysthymia, $X^2(1)=6.052$, $p=0.014$, Odds Ratio = 6.141 (95% C.I.: 1.206-31.278); and Adjustment Disorder, $X^2(1)=12.339$, $p<0.01$, Odds Ratio = 17.032 (95% C.I.: 2.084-139.178). No significances were found in the following disorders: MDD, $X^2(1)=2.439$, $p=0.118$; Bipolar, $X^2(1)=1.477$, $p=0.224$; Mood Disorder Due to a GMC, $X^2(1)=0.529$, $p=0.467$; Other Depressive Disorder, $X^2(1)=1.909$, $p=0.167$; Panic Disorder, $X^2(1)=0.659$, $p=0.417$; Agoraphobia, $X^2(1)=0.215$, $p=0.643$; Specific Phobia, $X^2(1)=1.424$, $p=0.233$; Social Phobia, $X^2(1)=1.909$, $p=0.167$; OCD, $X^2(1)=0.002$, $p=0.966$; PTSD, $X^2(1)=1.477$, $p=0.224$; Somatiziation, $X^2(1)=12.965$, $p=0.085$; Alcohol Abuse, $X^2(1)=0.233$, $p=0.630$; Cannabis Abuse, $X^2(1)=1.909$, $p=0.167$; Stimulant Abuse, $X^2(1)=0.529$, $p=0.467$; and Polysubstance Abuse, $X^2(1)=0.215$, $p=0.643$. The following disorders were screened using the SCID in both the JAW and LB groups but were found to have no prevalence in either sample: Cyclothymia; Substance Induced Mood Disorder; Organic Mood Disorder; Organic Anxiety; Hypochondria; Anorexia; Bulimia; Binge Eating Disorder; Other Anxiety Disorder; Other Axis I Disorders; Schizophrenia; Delusional Disorder; Psychosis NOS; R/O Organic Psychosis; Somatiform Disorder; Undifferentiated Somatofrom Disorder; and Opioid, Cocaine, Halluncinogen, and Other Drug Use.

Past SCID Diagnoses. Past psychopathology was also evaluated using the SCID. Significant differences were found between the two groups as well (see Table 6). Specifically, the LB group had significantly higher rates of the following Axis I and Axis II disorders: Specific Phobia, $X^2(1)=3.894$, $p=0.048$; Social Phobia, $X^2(1)=5.785$, $p=0.016$; Post-traumatic Stress Disorder (PTSD), $X^2(1)=17.893$, $p<0.01$; and Stimulant Abuse, $X^2(1)=3.838$, $p=0.050$. No significance was found in the following disorders: MDD, $X^2(1)=0.583$, $p=0.445$; Bipolar, $X^2(1)=0.529$, $p=0.467$; Substance Induced Mood Disorder, $X^2(1)=1.909$, $p=0.167$; Mood Disorder Due to a GMC, $X^2(1)=0.529$, $p=0.467$; Organic Mood Disorder, $X^2(1)=0.521$, $p=0.460$; Panic Disorder, $X^2(1)=0.255$, $p=0.635$; OCD, $X^2(1)=1.909$, $p=0.167$; Anorexia, $X^2(1)=1.648$, $p=0.199$; Bulimia, $X^2(1)=0.529$, $p=0.467$; Binge Eating Disorder, $X^2(1)=1.909$, $p=0.167$; Adjustment Disorder, $X^2(1)=1.909$, $p=0.167$; Other Axis I Disorder, $X^2(1)=1.909$, $p=0.167$; Somatization, $X^2(1)=1.909$, $p=0.167$; Alcohol Abuse, $X^2(1)=6.030$, $p=0.167$; Sedative/Anxiolytic Abuse, $X^2(1)=0.529$, $p=0.467$; Cannabis Abuse, $X^2(1)=0.414$, $p=0.520$; Cocaine Abuse, $X^2(1)=1.909$, $p=0.167$; and Polysubstance Abuse, $X^2(1)=0.069$, $p=0.749$. The following disorders were screened using the SCID in both JAW and LB groups but were found to have no prevalence in either sample: Cyclothymia, Dysthymia, Agoraphobia, GAD, Organic Anxiety, Hypochondria, Other Depressive Disorder, Other Anxiety Disorder, Schizophrenia, Delusional Disorder, Psychosis NOS, R/O Organic Psychosis,

Somatoform Pain Disorder, Undifferentiated Somatoform Disorder, Opioid Abuse, Hallucinogen Abuse, and Other Drug Abuse.

Lifetime SCID Diagnoses. DSM-IV categories that combine both current, sub-current, current & lifetime, lifetime, and sub-past diagnoses were also shown to have significant differences between the two groups (see Table7). Specifically, the JAW group had significantly higher rates of GAD, X^2 (1)=5.154, p=0.023, Odds Ratio = 0.371 (95% C.I.: 0.154-0.895); Somatoform Pain Disorder, X^2 (1)=4.544, p<0.01, Odds Ratio = 0.529 (95% C.I.: 0.293-0.953); Axis I Disorders, X^2 (1)=4.539, p=0.033, Odds Ratio = 0.517 (95% C.I.: 0.281-0.953); Somatoform Disorders, X^2 (1)=22.050, p<0.01, Odds Ratio = 0.237 (95% C.I.: 0.128-0.440); Avoidant PD, X^2 (1)=14.424, p<0.01, Odds Ratio = 0.054 (95% C.I.: 0.007-0.409); OCPD, X^2 (1)=20.912, p<0.01, Odds Ratio = 0.239 (95% C.I.: 0.127-0.450); Axis II Disorders, X^2 (1)=19.683, p<0.01 Odds Ratio = 0.243 (95% C.I.: 0.128-0.463); and Cluster C, X^2 (1)=28.486, p<0.01, Odds Ratio = 0.162 (95% C.I.: 0.080-0.329). The LB group was shown to have significantly more Dysthmia, X^2 (1)=6.052, p=0.014, Odds Ratio = 6.141 (95% C.I.: 1.206-31.278); Social Phobia, X^2 (1)=7.753, p<0.01; PTSD, X^2 (1) 17.469, p<0.01, Odds Ratio = 13.552 (95% C.I.: 2.478-17.979) Adjustment Disorder, X^2 (1)=14.350, p<0.01, Odds Ratio = 19.475 (95% C.I.: 2.413-157.166); Somatization, X^2 (1)=4.701, p=0.030, Odds Ratio = 8.000 (95% C.I.: 0.877-73.009); Antisocial PD, X^2 (1)=7.753, p<0.01; and Schizoid PD, X^2 (1)=5.785, p=0.016. No significance was

found in the following disorders: MDD, $\underline{X^2}$ (1)=0.315, $\underline{p}$=0.575; Bipolar Disorder, $\underline{X^2}$ (1)=0.659, $\underline{p}$=0.417; Substance Induced Mood Disorder, $\underline{X^2}$ (1)=1.909, $\underline{p}$=0.167; Mood Disorder Due to GMC, $\underline{X^2}$ (1)=1.063, $\underline{p}$<0.303; Organic Mood Disorder, $\underline{X^2}$ (1)=0.521, $\underline{p}$=0.470; Other Depressive Disorder, $\underline{X^2}$ (1)=1.909, $\underline{p}$=0.167; Panic Disorder, $\underline{X^2}$ (1)=0.837, $\underline{p}$=0.360; Agoraphobia, $\underline{X^2}$ (1)=0.215, $\underline{p}$=0.643; Specific Phobia, $\underline{X^2}$ (1)=3.533, $\underline{p}$=0.060; OCD, $\underline{X^2}$ (1)=0.435, $\underline{p}$=0.510; Anorexia, $\underline{X^2}$ (1)=1.648, $\underline{p}$=0.199; Bulimia, $\underline{X^2}$ (1)=0.529, $\underline{p}$=0.467; Binge Eating Disorder, $\underline{X^2}$ (1)=1.909, $\underline{p}$=0.167; Alcohol Abuse, $\underline{X^2}$ (1)=3.703, $\underline{p}$=0.054; Sedative/Anxiolytic Abuse, $\underline{X^2}$ (1)=1.063, $\underline{p}$=0.303; Cannabis Abuse, $\underline{X^2}$ (1)=1.909, $\underline{p}$=0.167; Stimulant Abuse, $\underline{X^2}$ (1)=1.909, $\underline{p}$=0.167; Cocaine Abuse, $\underline{X^2}$ (1)=1.909, $\underline{p}$=0.167; Polysubstance Abuse, $\underline{X^2}$ (1)=0.225, $\underline{p}$=0.635; Other Axis I Disorders, $\underline{X^2}$ (1)=1.909, $\underline{p}$=0.167; Affective Disorders, $\underline{X^2}$ (1)=0.026, $\underline{p}$=0.873; Anxiety Disorders, $\underline{X^2}$ (1)=0.087, $\underline{p}$=0.768; Substance Abuse Disorders, $\underline{X^2}$(1)=0.028, $\underline{p}$=0.867; Borderline PD, $\underline{X^2}$ (1)=3.418, $\underline{p}$=0.065; Dependent PD, $\underline{X^2}$(1)=0.476, $\underline{p}$=0.490; Histrionic PD, $\underline{X^2}$ (1)=0.438, $\underline{p}$=0.508; Narcissistic PD, $\underline{X^2}$(1)=3.643, $\underline{p}$=0.056; Paranoid PD, $\underline{X^2}$ (1)=0.012, $\underline{p}$=0.914; Schizotypal, $\underline{X^2}$(1)=0.529, $\underline{p}$=0.467; Cluster A, $\underline{X^2}$ (1)=0.657, $\underline{p}$=0.418; and Cluster B, $\underline{X^2}$(1)=0.022, $\underline{p}$=0.881. The following disorders were screened using the SCID in both JAW and LB groups but were found to have no prevalence in either sample: Cyclothymia, Organic Anxiety, Hypochondria, Other Anxiety Disorders,

Schizoid, Delusional Disorder, R/O Organic Anxiety, Opioid Abuse, Hallucinogen Abuse, Other Drug Use and PD NOS.

Additionally, the Global Assessment of Functioning (GAF) rating from the SCID revealed significant differences between the two groups; $t(201)=9.286$, $p<0.01$ (JAW $M= 76.21$; LB $M= 66.04$), revealing that LB had lower overall functioning levels.

Prediction of Pain Group: JAW and LB

A primary intent of the current study was to differentiate the qualities of acute jaw pain from acute low back pain. The two groups were evaluated for differences between the groups. It was therefore considered beneficial to determine which array of variables differentiated the groups, in order to identify a smaller hallmark variable that distinguishes the two types of acute pain from each other. Such a variable might allow for more tailored treatment of differing forms of acute pain. Variables selected for inclusion in the logistic regression were determined by statistical differences that emerged from the baseline analyses. Items considered for inclusion in the regression, based on their ability to distinguish a statistical difference or trend between JAW and LB groups, were: the CPI total score; the BDI total score; each MPI coping style; each WOC coping style; the GAF; use of a Schedule II Narcotic or Benzodiazipine; a possible Affective Disorder; a possible Anxiety Disorder; a possible Somatoform

Disorder; a possible Substance Abuse Disorder; and a Cluster C Personality Disorder Diagnoses. In order to prevent criterion contamination, the presence of an Axis I or Axis II diagnosis were used instead of specific DSM-IV diagnostic disorders because, otherwise, the predictor variables would have been redundant.

The final model was analyzed using the SPSS version 12 Binary Logistic procedure. This procedure resulted in a six-factor solution that predicted membership in the JAW and LB group with 6.2% sensitivity and 18.3% specificity. This model correctly classified 91.7% of the JAW subjects and 86.0% of the LB subjects for a total of 89.9% correctly classified. The predictor factors were the CPI, Anomalous coping style from the MPI, WOC problem-solving coping style, GAF, a diagnosis of an Anxiety Disorder, and a diagnosis of a Cluster C PD (see Table 9).

Medications

Significant differences in medication usage were found between JAW and LB (see Table 8): Schedule II Narcotics, $\underline{X}^2(1)=13.778$, $\underline{p}<0.01$; and Benzodiazapines, $\underline{X}^2(1)=5.528$, $\underline{p}=0.019$. No significant differences were found for the following medications: NSAIDS, $\underline{X}^2(1)=2.388$, $\underline{p}=0.122$; Schedule III Narcotics, $\underline{X}^2(1)=0.415$, $\underline{p}=0.520$; Muscle Relaxants, $\underline{X}^2(1)=0.564$, $\underline{p}=0.453$; SSRIs, $\underline{X}^2(1)=1.078$, $\underline{p}=0.299$; Multireceptor, $\underline{X}^2(1)=3.313$, $\underline{p}=0.069$; Lithium, $\underline{X}^2(1)=0.216$, $\underline{p}=0.642$; Anti-convulsants, $\underline{X}^2(1)=0.162$, $\underline{p}=0.687$; Non-Benzo

Sedatives, X^2 (1)=0.330, p=0.566; Beta Blockers, X^2 (1)=0.475, p=0.491; Calcium Channel Blocker, X^2 (1)=0.528, p=0.467; and Tramadol, X^2 (1)=1.911, p=0.167. The following medications had no prevalence in either sample: Tricyclic Antidepressants, NERIs Antidepressants, Neuroleptics, 5HT Antagonists, Topical Cream, Non-Benzo Anxiolytics, and Alpha Adrenergic Agonists.

CHAPTER SIX
Results

LR JAW versus LR LB

Physical Measures

The LR LB group was characterized by significantly higher scores on the CPI, $t(77)= -9.177$, $p<0.01$ (LR JAW $M= 32.54$; LR LB $M=57.17$) (see Table 10).

Psychosocial Measures

Coping Measures. Overall, it was found that subjects in the LR JAW and LR LB groups differed significantly from each other on many psychosocial variables. Using the Ways of Coping (WOC) measure (See Table 10), LR LB subjects scored significantly higher on the adaptive style, Problem Solving, $t(82)= -3.382$, $p<0.01$ (LR JAW $M= 39.59$; LR LB $M= 44.95$). LR LB subjects also scored higher on the maladaptive coping styles: Self-blame, $t(82)= -2.441$, $p=0.017$ (LR JAW $M= 5.85$; LR LB $M= 7.18$); Wishful Thinking, $t(82)= -2.472$, $p=0.016$ (LR JAW $M= 17.02$; LR LB $M= 19.82$); and Avoidance, $t(82)= -3.539$, $p<0.01$ (LR JAW $M= 18.11$; LR LB $M= 22.47$). No significance was found on Problem Seeking coping style, $t(82)= 0.100$, $p=0.920$ (LR JAW $M= 16.61$; LR LB $M= 16.53$).

The MPI was also used to assess coping styles. Comparison of the primary MPI coping styles AC, D, and ID were compared to all other styles (AC, D, ID, AN, HY, and UA to evaluate significant differences between the LR JAW

and LR LB groups (See Table 11). LR JAW subjects were significantly more Interpersonally Distressed than LR LB, X^2 (1)=6.308, p=0.012. No significance was found for the other primary coping styles examines: Adaptive, X^2 (1)=0.577, p=0.448, Odds Ratio = 0.714 (95% C.I.: 0.299-1.704); and Dysfunctional, X^2(1)=0.081, p=0.776, Odds Ratio = 1.235 (95% C.I.: 0.288-5.307).

Analyses were also done comparing the primary MPI coping styles (AC, D, ID) compared to all other primary styles (AC, D, ID) for comparing LR JAW to LR LB (See Table 12). LR JAW subjects were found to have an Interpersonally Distressed coping styles, X^2 (1)=6.430, p=0.011. No significance was found in any of the other primary coping style groups: Adaptive, X^2(1)=1.090, p=0.296, Odds Ratio = 1.964 (95% C.I.: 0.546-7.066); and Dysfunctional, X^2 (1)=0.551, p=0.458, Odds Ratio = 0.772 (95% C.I.: 0.394-7.771).

Mood Measures. No significant difference was found between LR JAW and LR LB using the BDI, t(80)= -1.173, p=0.244 (LR JAW M= 6.87; LR LB M= 8.64), see Table 10.

Current SCID Diagnoses. Current psychopathology was also evaluated in the two LR groups and a significant difference was found (see Table 13). Specifically, the LR LB group had significantly higher rates of Adjustment Disorder, X^2 (1)=6.476, p=0.011. No significance was found in the following disorders: MDD, X^2 (1)=0.081, p=0.298; Bipolar, X^2 (1)=2.493, p=0.114;

Dysthymia, X^2 (1)=1.516, p=0.218; Other Depressive Disorder, X^2 (1)=1.231, p=0.267; Panic Disorder, X^2 (1)=0.584, p=0.445; Agoraphobia, X^2 (1)=1.231, p=0.267; Specific Phobia, X^2 (1)=2.493, p=0.114; Social Phobia, X^2 (1)=1.231, p=0.267; OCD, X^2 (1)=0.020, p=0.888; GAD, X^2 (1)=0.964, p=0.326; PTSD, X^2 (1)=3.787, p=0.052; Somatiziation, X^2 (1)=1.231, p=0.267; Somatoform Pain Disorder, X^2 (1)=0.504, p=0.478; Alcohol Abuse, X^2 (1)=0.208, p=0.648; Cannabis Abuse, X^2 (1)=1.231, p=0.267; and Polysubstance Abuse, X^2 (1)=0.020, p=0.888 . The following disorders were screened using the SCID in both the JAW and LB groups but were found to have no prevalence in either sample: Cyclothymia; Substance Induced Mood Disorder; Mood Disorder Due to a GMC; Organic Mood Disorder; Organic Anxiety; Hypochondria; Anorexia; Bulimia; Binge Eating Disorder; Other Anxiety Disorder; Other Axis I Disorders; Schizophrenia; Delusional Disorder; Psychosis NOS; R/O Organic Psychosis; Somatiform Disorder; Undifferentiated Somatofrom Disorder; and Sedative/Anxiolytic, Stimulant, Opioid, Cocaine, Halluncinogen, and Other Drug Abuse.

Past SCID Diagnoses. Examination of lifetime psychopathology of the LR groups revealed significant differences in that the LR LB group had significantly higher rates of PTSD, X^2 (1)=6.476, p=0.011. See Table 14 for further information. No significant difference was found in the following DSM-IV Diagnoses: No significance was found in the following disorders: MDD,

X^2(1)=3.123, p=0.077; Substance Induced Mood Disorder, X^2 (1)=1.231, p=0.267; Organic Mood Disorder, X^2 (1)=0.810, p=0.368; Social Phobia, X^2 (1) 2.493, p=0.114; Anorexia, X^2 (1)=1.214, p=0.271; Adjustment Disorder, X^2 (1)=1.231, p=0.267; Alcohol Abuse, X^2 (1)=6.030, p=0.167; Sedative/Anxiolytic Abuse, X^2 (1)=1.759, p=0.185; Cannabis Abuse, X^2 (1)=0.040, p=0.841; Stimulant Abuse, X^2 (1)=1.231, p=0.267; and Polysubstance Abuse, X^2 (1)=1.231, p=0.267. The following disorders were screened using the SCID in both JAW and LB groups but were found to have no prevalence in either sample: Bipolar Disorder, Cyclothymia, Dysthymia, Mood Disorder due to GMC, Other Depressive Disorder, Panic Disorder, Agoraphobia, Specific Phobia, OCD, GAD, Organic Anxiety, Hypochondria, Other Anxiety Disorder, Bulimia, Binge Eating Disorder, Schizophrenia, Delusional Disorder, Psychosis NOS, R/O Organic Psychosis, Somatization, Somatoform Pain Disorder, Undifferentiated Somatoform Disorder, Sedative/Anxiolytic Abuse, Opioid Abuse, Cocaine Abuse, Hallucinogen Abuse, and Other Drug Abuse.

Lifetime SCID Diagnoses. DSM-IV categories that combine both current, current & lifetime, and lifetime diagnoses were also shown to have significant differences between the two LR groups (see Table 8). Specifically, the LR JAW group had significantly higher rates Somatoform Disorders, X^2 (1)=13.275, p<0.01, Odds Ratio = 0.145 (95% C.I.: 0.048-0.439); Avoidant PD, X^2 (1)=7.289, p<0.01; OCPD, X^2 (1)=5.990, p=0.014, Odds Ratio = 0.292 (95% C.I.: 0.106-

0.802); Cluster C PDs, $\underline{X^2}(1)=6.071$, $\underline{p}=0.014$, Odds Ratio = 0.235 (95% C.I.: 0.070-0.787). LR LB were found to have significantly more PTSD, $\underline{X^2}(1)=10.782$, $\underline{p}<0.01$; and Adjustment Disorders, $\underline{X^2}(1)=7.873$, $\underline{p}<0.01$. No significant difference was found in the following disorders: MDD, $\underline{X^2}(1)=0.937$, $\underline{p}=0.333$; Bipolar Disorder, $\underline{X^2}(1)=2.493$, $\underline{p}=0.114$; Dysthymia, $\underline{X^2}(1)=1.516$, $\underline{p}=0.218$; Substance Induced Mood Disorder, $\underline{X^2}(1)=1.231$, $\underline{p}=0.267$; Organic Mood Disorder, $\underline{X^2}(1)=0.810$, $\underline{p}=0.368$; Other Depressive Disorder, $\underline{X^2}(1)=1.231$, $\underline{p}=0.267$; Panic Disorder, $\underline{X^2}(1)=0.584$, $\underline{p}=0.445$; Agoraphobia, $\underline{X^2}(1)=1.213$, $\underline{p}=0.367$; Specific Phobia, $\underline{X^2}(1)=2.493$, $\underline{p}=0.114$; Social Phobia, $\underline{X^2}(1)=3.787$, $\underline{p}=0.052$; OCD, $\underline{X^2}(1)=0.020$, $\underline{p}=0.888$; GAD, $\underline{X^2}(1)=0.964$, $\underline{p}=0.326$; Anorexia, $\underline{X^2}(1)=1.214$, $\underline{p}=0.271$; Somatization, $\underline{X^2}(1)=1.231$, $\underline{p}=0.267$; Somatoform Pain Disorder, $\underline{X^2}(1)=0.504$, $\underline{p}=0.478$; Alcohol Abuse, $\underline{X^2}(1)=0.563$, $\underline{p}=0.453$; Cannabis Abuse, $\underline{X^2}(1)=0.476$, $\underline{p}=0.490$; Stimulant Abuse, $\underline{X^2}(1)=1.231$, $\underline{p}=0.267$; Polysubstance Abuse, $\underline{X^2}(1)=0.584$, $\underline{p}=0.445$; Other Axis I Disorders, $\underline{X^2}(1)=1.909$, $\underline{p}=0.167$; Affective Disorders, $\underline{X^2}(1)=0.558$, $\underline{p}=0.455$; Anxiety Disorders, $\underline{X^2}(1)=0.441$, $\underline{p}=0.506$; Substance Abuse Disorders, $\underline{X^2}(1)=0.025$, $\underline{p}=0.874$; Antisocial PD, $\underline{X^2}(1)=2.493$, $\underline{p}=0.114$; Borderline PD, $\underline{X^2}(1)=2.616$, $\underline{p}=0.106$; Histrionic PD, $\underline{X^2}(1)=0.847$, $\underline{p}=0.358$; Narcissistic PD, $\underline{X^2}(1)=0.062$, $\underline{p}=0.803$; Paranoid PD, $\underline{X^2}(1)=0.584$, $\underline{p}=0.445$; Axis II Disorders, $\underline{X^2}(1)=3.355$, $\underline{p}=0.067$; and Cluster B, $\underline{X^2}(1)=0.026$, $\underline{p}=0.871$. The following disorders were screened using the SCID in both LR JAW and LR LB groups but were found to

have no prevalence in either sample: Cyclothymia, Mood Disorder due to GMC, Organic Anxiety, Hypochondria, Other Anxiety Disorders, Bulimia, Binger Eating Disorder, Schizoid, Delusional Disorder, R/O Organic Anxiety, Sedative/Anxiolytic Abuse, Cocaine Abuse, Opioid Abuse, Hallucinogen Abuse, Other Drug Use, Dependent PD, Schizoid PD, Schizotypal PD, PD NOS, and Cluster A Personality Disorders.

There were significant difference in the GAF between the two LR groups, $t(80)= 6.275$, $p<0.01$ (LR JAW $M= 78.40$; LR LB $M= 68.54$), revealing that LR LB had lower overall functioning levels.

Medications

There were no significant differences found for medication use in the LR groups (see Table 16): NSAIDS, $X^2(1)=1.588$, $p=0.208$; Schedule III Narcotics, $X^2(1)=0.836$, $p=0.361$; Schedule II Narcotics, $X^2(1)=2.480$, $p=0.115$; Muscle Relaxants, $X^2(1)=0.694$, $p=0.405$; SSRIs, $X^2(1)=0.059$, $p=0.808$; Multireceptor, $X^2(1)=2.570$, $p=0.109$; Anti-convulsants, $X^2(1)=1.225$, $p=0.268$; Benzodiazapines, $X^2(1)=0.836$, $p=0.361$; Non-Benzo Sedatives, $X^2(1)=1.692$, $p=0.193$; and Beta Blockers, $X^2(1)=0.694$, $p=0.405$. The following medications had no prevalence in either sample: Tricyclic Antidepressants, NERIs Antidepressants, Lithium, Neuroleptics, 5HT Antagonists, Topical Cream, Non-

Benzo Anxiolytics, Alpha Adrenergic Agonists, Calcium Channel Blocker, and Tramadol.

CHAPTER SEVEN
Results

HR JAW versus HR LB

Physical Measures

The HR LB group was characterized by significantly higher scores on the CPI, $t(113) = -4.026$, $p<0.01$ (HR JAW $M = 61.11$; HR LB $M = 71.89$).

Psychosocial Measures

Coping Measures. No significant difference was found between HR JAW and HR LB on the WOC measure: Problem-Solving, $t(120) = -1.923$, $p=0.057$ (HR JAW $M = 42.30$; HR LB $M = 45.52$); Problem-Seeking, $t(120) = -1.122$, $p=0.264$ (HR JAW $M = 17.33$; HR LB $M = 16.39$); Self-Blame, $t(120) = -0.611$, $p=0.543$ (HR JAW $M = 6.60$; HR LB $M = 6.91$); Wishful-Thinking, $t(120) = -1.823$, $p=0.071$ (HR JAW $M = 19.24$; HR LB $M = 21.36$); and Avoidance, $t(120) = -1.523$, $p=0.130$ (HR JAW $M = 20.39$; HR LB $M = 22.12$).

The MPI was also used to assess coping styles. Comparison of the primary MPI coping styles AC, D, and ID were compared to all other styles AC, D, ID, AN, HY, and UA to evaluate significant differences between the HR JAW and HR LB groups (See Table 18). No significances were found in analyzing these groups: AC, $X^2(1) = 0.125$, $p=0.724$, Odds Ratio = 1.163 (95% C.I.: 0.503-2.685); D, $X^2(1) = 0.447$, $p=0.504$, Odds Ratio = 0.709 (95% C.I.: 0.258-1.949); ID, $X^2(1) = 1.775$, $p=0.183$, Odds Ratio = 1.816 (95% C.I.: 0.750-4.396).

Analyses were also done comparing the primary MPI coping styles AC, D, ID compared to all other primary styles (AC, D, ID) for comparing HR JAW to HR LB (See Table 19). No significance was found in any of the primary groups: A, $\underline{X^2}$ (1) =0.004, $\underline{p}$=0.953, Odds Ratio = 0.974 (95% C.I.: 0.404-2.348); D, $\underline{X^2}$ (1) =0.971, $\underline{p}$=0.324, Odds Ratio = 0.596 (95% C.I.: 0.212-1.678); ID, $\underline{X^2}$ (1) =0.833, $\underline{p}$=0.361, Odds Ratio =1.516 (95% C.I.: 0.618-3.717).

Mood Measures. Overall, it was found that subjects in the HR JAW and HR LB groups differed significantly on the BDI, t(120)= -2.886, $\underline{p}$<0.01 (HR JAW $\underline{M}$= 9.43; HR LB $\underline{M}$= 14.91) (see Table 17).

Current SCID Diagnoses. To evaluate the presence of current psychopathology among the 2 HR groups, the SCID was used to evaluate DSM-IV disorders. Significant differences were found between the two groups (see Table 20). Specifically, the HR LB group had significantly higher rates of MDD, $\underline{X^2}$ (1)=3.910, $\underline{p}$=0.048, Odds Ratio = 2.361 (95% C.I.: 0.996-5.597); Dysthymia, $\underline{X^2}$ (1)=4.751, $\underline{p}$=0.029, Odds Ratio = 8.700 (95% C.I.: 0.871-86.854); and Adjustment Disorder, $\underline{X^2}$ (1)=4.751, $\underline{p}$=0.029, Odds Ratio = 8.700 (95% C.I.: 0.871-86.854). No significance was found in the following disorders: Bipolar Disorder, $\underline{X^2}$ (1)=0.057, $\underline{p}$=0.811; Mood Disorder to GMC, $\underline{X^2}$ (1)=0.378, $\underline{p}$=0.539; Panic Disorder, $\underline{X^2}$ (1)=0.057, $\underline{p}$=0.811; Agoraphobia, $\underline{X^2}$ (1)=0.378, $\underline{p}$=0.539; Specific Phobia, $\underline{X^2}$ (1)=0.992, $\underline{p}$=0.319; OCD, $\underline{X^2}$ (1)=0.378, $\underline{p}$=0.539; GAD, $\underline{X^2}$ (1)=3.098, $\underline{p}$=0.078; PTSD, $\underline{X^2}$ (1)=0.763, $\underline{p}$=0.383, Somatization,

X^2(1)=2.407, p=0.121; Somatofrom Pain Disorder, X^2 (1)=2.558, p=0.110; Alcohol Abuse, X^2 (1)=0.358, p=0.550; Sedative/Anxiolytic Abuse, X^2 (1)=0.378, p=0.539; and Stimulant Abuse, X^2 (1)=0.378, p=0.539. The following disorders were screened using the SCID in both the HR JAW and HR LB groups but were found to have no prevalence in either sample: Cyclothymia; Substance Induced Mood Disorder; Organic Mood Disorder; Other Depressive Disorder; Phobia; Organic Anxiety; Hypochondria; Anorexia; Bulimia; Binge Eating Disorder; Other Anxiety Disorder; Other Axis I Disorders; Schizophrenia; Delusional Disorder; Psychosis NOS; R/O Organic Psychosis; Somatiform Disorder; Undifferentiated Somatoform Disorder; Cannabis, Opioid, Cocaine, Hallucinogen, Polysubstance, and Other Drug Abuse.

Past SCID Diagnoses. Past psychopathology was also evaluated using the SCID. Significant differences were found between the two HR groups as well (see Table 13). Specifically, the HR LB group had significantly higher rates of the following Axis I and Axis II disorders: Specific Phobia, X^2 (1)=5.593, p=0.018; Post-traumatic Stress Disorder (PTSD), X^2 (1)=11.031, p<0.01; Alcohol Abuse, X^2 (1)=6.740, p<0.01, Odds Ratio = 3.163 (95% C.I.: 1.296-7.721). No significance was found in the following disorders: No significance was found in the following disorders: MDD, X^2 (1)=0.429, p=0.513; Bipolar, X^2 (1)=0.378, p=0.539; Mood Disorder Due to a GMC, X^2 (1)=0.378, p=0.539; Panic Disorder, X^2 (1)=0.910, p=0.340; Social Phobia, X^2 (1)=2.689, p=0.101; OCD,

X^2(1)=2.689, p=0.10; Anorexia, X^2(1)=0.378, p=0.539; Bulimia, X^2(1)=0.378, p=0.539; Binge Eating Disorder, X^2(1)=2.689, p=0.101; Other Axis I Disorder, X^2(1)=2.689, p=0.101; Somatization, X^2(1)=2.689, p=0.101; Sedative/Anxiolytic Abuse, X^2(1)=0.378, p=0.539; Cannabis Abuse, X^2(1)=0.426, p=0.514; Stimulant Abuse, , X^2(1)=2.689, p=0.101; Cocaine Abuse, X^2(1)=2.689, p=0.101; and Polysubstance Abuse, X^2(1)=0.011, p=0.917. The following disorders were screened using the SCID in both HR JAW and HR LB groups but were found to have no prevalence in either sample: Cyclothymia; Dysthymia; Substance Induced Mood Disorder; Organic Mood Disorder; Agoraphobia, GAD, Organic Anxiety, Hypochondria, Other Depressive Disorder, Other Anxiety Disorder, Adjustment Disorder, Schizophrenia, Delusional Disorder, Psychosis NOS, R/O Organic Psychosis, Somatoform Pain Disorder, Undifferentiated Somatoform Disorder, Opioid, Hallucinogen, and Other Drug Abuse.

Lifetime SCID Diagnoses. DSM-IV categories that combine both current, sub-current, current & lifetime, lifetime, and sub-past diagnoses were also shown to have significant differences between the two groups (see Table 22). Specifically, the HR LB group had significantly higher rates of MDD, X^2(1)= 5.531, p=0.019, Odds Ratio =2.791 (95% C.I.: 1.166-6.679); Dysthymia, X^2(1)= 4.751, p=0.029, Odds Ratio = 8.700 (95% C.I.: 0.871-86.854); PTSD, X^2 (1)=4.939, p=0.026, Odds Ratio = 5.931 (95% C.I.: 1.032-34.089); Adjustment Disorder, X^2(1)=4.751, p=0.029, Odds Ratio = 8.700 (95% C.I.: 0.871-86.854);

Somatization, $\underline{X^2}$ (1)=4.751, $\underline{p}$=0.029, Odds Ratio = 8.700 (95% C.I.: 0.871-86.854); Alcohol Abuse, $\underline{X^2}$ (1)=4.609, $\underline{p}$=0.032, Odds Ratio = 2.505 (95% C.I.: 1.069-5.871); Antisocial PD, $\underline{X^2}$ (1)=5.423, $\underline{p}$=0.020; Narcissistic PD, $\underline{X^2}$ (1)= 5.886, $\underline{p}$=0.015, Odds Ratio =4.667 (95% C.I.: 1.225-17.776); and Schizoid PD, $\underline{X^2}$ (1)=8.203, $\underline{p}$=0.004. HR JAW had significantly more Somatoform Pain Disorder, $\underline{X^2}$ (1)=2.558, $\underline{p}$=0.110, Odds Ratio = 0.509 (95% C.I.: 0.221-1.173); Somatoform Disorders (as a group), $\underline{X^2}$ (1)=4.880, $\underline{p}$=0.027, Odds Ratio = 0.398 (95% C.I.: 0.174-0.912); Avoidant PD, $\underline{X^2}$ (1)=6.492, $\underline{p}$=0.011, Odds Ratio = 0.106 (95% C.I.: 0.014-0.827); OCPD, $\underline{X^2}$ (1)=10.891, $\underline{p}$<0.01, Odds Ratio = 0.253 (95% C.I.: 0.109-0.587); Axis II Disorders, $\underline{X^2}$ (1)=19.683, , $\underline{p}$<0.01, Odds Ratio = 0.243 (95% C.I.: 0.128-0.463); Cluster C Disorders, $\underline{X^2}$ (1)=17.794, $\underline{p}$<0.01, Odds Ratio =0.157 (95% C.I.: 0.063-0.391). No significance was found in the following disorders: Bipolar Disorder, $\underline{X^2}$ (1)=0.011, $\underline{p}$=0.917; Mood Disorder Due to GMC, $\underline{X^2}$ (1)=0.763, $\underline{p}$=0.383; Panic Disorder, $\underline{X^2}$ (1)=0.890, $\underline{p}$=0.345; Agoraphobia, $\underline{X^2}$ (1)=0.378, $\underline{p}$=0.539; Specific Phobia, $\underline{X^2}$ (1)=3.712, $\underline{p}$=0.054; Social Phobia, $\underline{X^2}$ (1)=2.689, $\underline{p}$=0.101; OCD, $\underline{X^2}$ (1)=0.520, $\underline{p}$=0.467; GAD, $\underline{X^2}$ (1)=3.098, $\underline{p}$=0.078; Anorexia, $\underline{X^2}$ (1)=0.378, $\underline{p}$=0.539; Bulimia, $\underline{X^2}$(1)=0.378, $\underline{p}$=0.539; Binge Eating Disorder, $\underline{X^2}$ (1)=2.689, $\underline{p}$=0.101; Sedative/Anxiolytic Abuse, $\underline{X^2}$ (1)=0.763, $\underline{p}$=0.383; Cannabis Abuse, $\underline{X^2}$(1)=0.426, $\underline{p}$=0.514; Stimulant Abuse, $\underline{X^2}$ (1)=0.530, $\underline{p}$=0.467; Cocaine Abuse, $\underline{X^2}$ (1)=2.689, $\underline{p}$=0.101; Polysubstance Abuse, $\underline{X^2}$ (1)=0.011, $\underline{p}$=0.917; Other Axis

I Disorders, X^2 (1)=2.689, p=0.101; Axis I Disorder, X^2 (1)=0.807, p=0.369; Affective Disorders, X^2 (1)=2.342, p=0.126; Anxiety Disorders, X^2 (1)=0.053, p=0.819; Substance Abuse Disorders, X^2 (1)=0.162, p=0.687; Borderline PD, X^2(1)=1.445, p=0.229; Dependent PD, X^2 (1)=0.139, p=0.709; Histrionic PD, X^2(1)=0.022, p=0.881; Paranoid PD, X^2 (1)=0.003, p=0.955; Schizotypal, X^2(1)=0.378, p=0.539; Cluster A, X^2 (1)=0.125, p=0.724; and Cluster B, X^2(1)=0.013, p=0.908. The following disorders were screened using the SCID in both HR JAW and HR LB groups but were found to have no prevalence in either sample: Cyclothymia, Substance Induced Mood Disorder, Organic Mood Disorder, Other Depressive Disorder, Organic Anxiety, Hypochondria, Other Anxiety Disorders, Schizoid, Delusional Disorder, R/O Organic Anxiety, Opioid Abuse, Hallucinogen Abuse, Other Drug Use, and PD NOS.

Additionally, GAF rating revealed significant differences between the two groups; t(119)= 8.024, p<0.01 (HR JAW M= 75.09; HR LB M= 63.24), revealing that HR LB had lower overall functioning levels.

Medications

A significant difference was found between HR JAW and HR LB groups in terms of medication use (see Table 23). Specifically, Schedule II Narcotic use was more prevalent in the HR LB group, X^2 (1)=14.061, p<0.01. No significant differences were found for the following medications: NSAIDS, X^2

(1)=1.498, p=0.221; Schedule III Narcotics, X^2 (1)=2.285, p=0.131; Muscle Relaxants, X^2 (1)=0.006, p=0.940; SSRIs, X^2 (1)=1.154, p=0.283; Multireceptor, X^2 (1)=0.918, p=0.338; Lithium, X^2 (1)=0.543, p=0.461; Anti-convulsants, X^2 (1)=1.140, p=0.286; Benzodiazapines, X^2 (1)=3.603, p=0.058; Non-Benzo Sedatives, X^2 (1)=0.126, p=0.722; Beta Blockers, X^2 (1)=0.374, p=0.541; Calcium Channel Blocker, X^2 (1)=0.347, p=0.541; and Tramadol, X^2 (1)=2.719, p=0.099. The following medications had no prevalence in either sample: Tricyclic Antidepressants, NERI Antidepressants, Neuroleptics, 5HT Antagonists, Topical Cream, Non-Benzo Anxiolytics, and Alpha Adrenergic Agonists.

CHAPTER EIGHT
Results

PREVALENCE RATES OF DSM-IV AXIS I AND II DISORDERS IN THE JAW GROUP AND THE GENERAL POPULATION

Table 24 presents comparisons of the prevalence rates of DSM Axis I (current, current & lifetime, and lifetime) and Axis II disorders in the JAW group and the general population for disorders in which population estimates were available. To facilitate comparisons between JAW patients and the general population, confidence intervals were established around each prevalence estimate for the JAW group. Nonoverlapping JAW confidence intervals and population estimates indicate a significant difference between the two groups (JAW and the general population). Formulas for statistics in Table 24 and 25 were as follows, where x = proportion of DSM-IV diagnoses in the given acute pain population and y = proportion of DSM-IV diagnoses in the general population: Standard Error (SE) = square root of [x*(1-x)/N]; 95% Confidence Intervals = [x - (1.96*SE), x + (1.96*SE)]; and Odds Ratio (OR) = y(1-x) / x(1-y). Analyses of the prevalence rates of DSM-IV Axis I (clinical) and II (personality) disorders (current and lifetime) and the general population revealed much higher rates psychopathology in JAW patients, as well as higher rates of personality disorders.

Table 24 presents a comparison of the prevalence rates of current, current & lifetime, and lifetime DSM-IV Axis I and II and the general population. The DSM-IV Axis I general population estimates were obtained between 2001 and 2003 from a nationally representative face-to-face household survey that constituted the US National Comorbidity Survey Replication (NSC-R) (Kessler, Chiu, Demler, & Walters, 2005). The World Health Organization World Mental Health Survey Initiative version of the Composite International Diagnostic Interview, based on DSM-IV criteria, was used as the case-identification instrument in the NSC-R study.

The comparisons presented in Table 24 show the JAW subjects received more DSM-IV Axis I diagnoses than persons in the general population. More specifically, the JAW group demonstrated higher rates of Major Depressive Disorder (MDD), Generalized Anxiety Disorder (GAD), as well as more Axis I disorders in general. On the other hand, the prevalence rate of Specific Phobia was found to be higher in the general population. Bipolar Disorder, Dysthymia, Panic Disorder, Agoraphobia, Specific Phobia, OCD, and PTSD rates found in the general population fell into the 95% C.I. of the JAW group estimates, and therefore were determined to not be significant.

Table 24 also presents a comparison of the prevalence rates of DSM-IV Axis II Personality Disorders in the JAW group and the general population. The general population estimates are based on data derived from the 2001-2002

National Epidemiologic Survey on Alcohol and Related Conditions (Grant, Hasin, Stinson, Dawson, Chou, Ruan, & Pickering, 2004). Diagnoses were made using the Alcohol Use Disorder and Associated Disabilities Interview Schedule—DSM-IV Version.

The comparisons presented in Table 24 indicated that JAW subjects received more DSM-IV Axis II Personality Disorder (PD) diagnoses than persons in the general population. Specifically, the JAW subjects demonstrated higher rates of Avoidant PD, Histrionic PD, Obsessive-Compulsive PD, and more Axis II diagnoses in general. Antisocial PD, Dependent PD, Paranoid PD, and Schizoid PD general population estimates fell within the 95% C.I. for the JAW group, and therefore are not viewed as significant differences between the JAW group and the general population.

CHAPTER NINE
Results

PREVALENCE RATES OF DSM-IV AXIS I AND II DISORDERS IN THE LB GROUP AND THE GENERAL POPULATION

Table 25 presents comparisons of the prevalence rates of current and lifetime DSM Axis I and II disorders in the LB group and the general population for disorders in which population estimates were available. Table 25 was created identically to Table 24 and should be interpreted the same way.

The comparisons presented in Table 24 show the LB group demonstrated higher rates of Major Depressive Disorder (MDD), Post-traumatic Stress Disorder (PTSD), as well as more Axis I disorders in general. Bipolar Disorder, Panic Disorder, Agoraphobia, Specific Phobia, Social Phobia, OCD, and GAD general population estimates all fell within the LB 95% C.I. and therefore are interpreted as not significantly different.

Analyses of Axis II diagnoses revealed that the LB group had significantly more diagnoses of Obsessive-Compulsive PD (OCPD) than the general population. Antisocial PD, Avoidant PD, Dependent PD, Histrionic PD, Paranoid PD, Schizoid PD, and any Axis II diagnoses were not significantly different between the LB group and the general population because these diagnoses fell within the 95% C.I. for the JAW group psychopathology estimates.

For both JAW and LB groups, the most common disorders were found to be MDD, Axis I disorders in general, and OCPD. Although it should be noted that 73.7% of the JAW group had an Axis I disorder compared to 59.2% of the LB group (and 26.20% of the general population). Also, 60.9% of the JAW group had OCPD while only 27.1% of the LB group met criteria for this disorder (the general population estimate for OCPD was 7.88%).

CHAPTER TEN
Discussion

The purpose of the present study is to examine the prevalence of Axis I and Axis II psychopathology in two common acute pain populations, and to compare them to prevalence estimates in the general population. Also, physical and psychosocial measures are examined between the two pain populations. Finally, the relationship among acute pain, psychopathology, and psychotropic medications was investigated. The present study extends the research literature by examining comorbid mental disorders associated with acute pain more thoroughly by comparing the prevalence of diagnosed psychological disorders across distinct subpopulations of acute pain. The major goals of the present investigation are to add a current understanding of acute pain populations and investigate differences in treatment of acute pain with psychotropic and analgesic medications.

Hypothesis 1

It was hypothesized that the JAW and LB groups would differ significantly on demographic data, including, income, education, and employment. Specific hypotheses were that the JAW group would have a higher monthly income and have more years of education, while the LB group would be more employed. Findings revealed that the JAW group had significantly more

years of education and earned a higher monthly income than those in the LB group. This may be related to the fact that often LB injuries are the result of manual labor, work that often requires less education and more physical demands, thus creating a higher likelihood of back injury and lower income. Additionally, higher education and higher income are often related, giving reason as to why this finding occurred.

It was also hypothesized that the LB group would be more employed than the JAW group because. This hypothesis was found to be incorrect, as there was no significant difference found in employment status between the two groups. It could be speculated that since TMD is more widely found in females, these females are often from higher income families, evidenced in this study by the significantly higher income in the JAW group, which might decrease their need for a second income-producing member in the family and thus equalizing unemployment levels between the two groups. It was mentioned previously that the JAW group had significantly more females; in addition to this finding, a significant difference was also found in ethnicity: the JAW group had significantly more Caucasian group members. These results are consistent with the clinical population norms of jaw pain and TMD patients.

Age was also found to be significant but the reason for this finding is unknown. The JAW group had significantly more adults over the age of 18 in the household which may increase stress levels, perhaps affecting their performance

on the measures given in this study. Days of pain was not found to be significant between JAW and LB groups.

Hypotheses 2

It was hypothesized that there would be no significance found on the CPI, MPI, and WOC because of the similar acute pain status of both populations. However, a significant difference was found for CPI between the JAW and LB populations, revealing that the LB population communicated higher scores of pain intensity. One conclusion that could be drawn from these results is that since LB pain affects the spine, the center of movement for the body, it may be more distressing because of likely decreased mobility. Additionally, possible associations between pain and unavoidable activity, i.e., walking, standing, sitting, etc., may also explain higher CPI scores in the LB group. Significance was also found on several of the coping styles used in the WOC. Significant results from the WOC revealed that LB subjects used Problem-Solving, an adaptive coping style, significantly more than the JAW group, but LBs also displayed more Wishful Thinking and Avoidance, which are maladaptive coping styles. This finding reveals that while LB had significantly higher rates of an adaptive coping style they are still impaired by significant maladaptive coping styles which might relate to their increased psychopathology and lower general functioning, as reported by lower GAF scores, increased past psychopathology,

and higher BDI scores. No significance was found on the MPI, as was hypothesized, showing that there was no significant difference between the two groups in assessment of pain impact on their lives, others responses to their pain, and their ability to carry out daily life activities.

To achieve a more extensive examination of the biopsychosoical variables of JAW and LB groups, risk status was analyzed and the groups were reassessed for similarities or differences. To do this, the groups were broken down into sub-categories of LR and HR of developing chronic pain. LR JAW and LR LB revealed similar results to the main categories JAW and LB, in that the physical measure, the CPI was found to be significant, as were the psychosocial measures of Problem-Solving, Wishful Thinking, and Avoidance coping styles of the WOC. In addition to these findings, Self-Blame coping style was also found to be significant. Also, although it would be assumed that most subjects would present with a maladaptive coping style at intake (because at this time they are more likely to be at risk), almost half of all patients were identified as Adaptive copers. Significance was noted in the JAW group on the MPI primary coping style Interpersonally Distressed when compared to all other styles (AC, D, ID, AN, UA, and HY) as well as the other three primary coping styles (AC, D, ID). No significance was found for the other coping styles.

Examination of the HR JAW and HR LB revealed the same discrepancy on the CPI between the two groups but no significances were found on any of the

WOC coping styles, perhaps revealing that at the HR level of either group, coping is maladaptive, which may result in the categorization of the initial HR status. Finally, there was also no significance noted on the MPI in the HR comparison, as was similar to the main and LR comparisons.

Hypothesis 3

As was hypothesized, the LB group had significantly higher BDI scores, which is likely related to the idea that acute LB pain presents with more depressed symptomatology than acute JAW pain. This finding was also found to be true for HR LB pain, as well. No significance was found for LR LB and LR JAW. It could be rationalized that because LR groups are less likely to develop into chronic pain, they are less likely to have correlated high depressive symptoms, thus limiting a BDI score.

Hypothesis 4

Hypothesis 4 investigated whether there were significant increases of Axis I and II psychopathology of acute JAW and LB pain compared to general population estimates. Results from analyses revealed that this hypothesis was true. The JAW group was more likely to have an Axis I and II diagnoses than the general population (JAW: $\underline{M}$= 73.7%, GPE: $\underline{M}$= 26.2%), especially specific disorders like MDD, GAD, Avoidant PD, Histrionic PD, and most notably,

OCPD. LB subjects were more likely to have an Axis I disorder than the general population (LB: 59.2%; GPE: 26.2%), especially specific disorders like MDD and PTSD. These results reveal that these acute pain groups are more overwhelmed with psychopathology than general population, which may perhaps affect their experience of pain. By noting the emotional distress experienced by JAW and LB groups biopsychosocial treatments may be better oriented to the specific problems of these unique pain groups. For example, high rates of PDs were found in the JAW group. Knowledge of how underlying PDs may help in successfully treating acute JAW pain patients before they evolve into chronic pain patients.

The high rate of PTSD could be explained by the assumption that LB pain may often be the result of an accident and because of its often debilitating effect, can cause significant impairment and stress that seriously impairs and effects living, working, socializing, etc., activities. Perhaps more importantly in this finding is the revelation that the JAW group had several significantly more Lifetime (current, sub-current, current & lifetime, lifetime, and sub-past) psychopathology than the LB group when compared to the general population, mainly they were the presence of an Axis II disorder, i.e., Avoidant, Histrionic, and most notably OCPD.

Hypothesis 5

It was hypothesized that the JAW group would have a higher prevalence of Axis I anxiety-related disorders, while the LB group would have an increased rate of Axis I depression-related disorders. Significant findings revealed that Current DSM-IV diagnoses did meet the hypothesis in that the JAW group had a higher prevalence of GAD (JAW: M=23.3 %; LB: M=10.1%), while the LB group had a higher rate of Dysthymia (JAW: 1.5 %: LB: 8.6 %). However, when Past DSM-IV diagnoses were examined, significant anxiety-related difference were only found in the LB group, in areas such as: Specific Phobia (JAW M= 0%; LB: M= 2.9%); Social Phobia (JAW: M= 0%; LB: M= 4.3%); and PTSD (JAW: M= 0%; LB: M= 12.9%). Analyses of Current psychopathology also revealed that Adjustment Disorder was significantly higher in the LB group (JAW: M= 0.8%; LB: M= 11.4%); while the JAW group has significantly higher rates of Somatoform Pain Disorder (JAW: M= 65.4%; LB: M= 50.0%). Perhaps this finding reveals insight into difference of how JAW and LB patients handle their pain: JAW patients may tend to be more likely to experience pain as their dominant injury and interruption in their life; while LB patients also experience pain, they are more concerned with adjustment issues resulting from their pain, as opposed to pain itself. Past SCID analyses reflect that LB have more enduring psychopathology than the JAW group, and that LB psychopathology is likely to be anxiety related (this conclusion was further supported by similar HR LB

results). An assumption could be made from this observation that LB has more chronic psychopathology that is less likely to alleviate over time.

When comparing Lifetime Axis I psychopathology the same patterns exist as were mentioned previously for Current and Past diagnoses, although the addition of significantly higher Somatization in the LB group was found (JAW: M= 0.8%; LB: M= 5.7%); significantly more Axis I disorders in the JAW group (JAW: M= 73.7%; LB: M= 59.2%); and significantly more Somatoform Disorders in the JAW group (JAW: M= 65.4%; LB: M= 31.0%). Lifetime Axis II Diagnoses were also analyzed and differences were found. The JAW group displayed significantly more Axis II diagnoses (JAW: M= 56.4%; LB: M= 23.9%), specifically in those that fall into the Cluster C categories, such as Avoidant PD and OCPD. Over sixty percent of JAW subjects were diagnosed with OCPD during their Lifetime. This statistic is staggering and plays largely into why the JAW groups has high total Axis II Disorders, represented in this data. OCPD is a personality disorder often associated with anxiety, a significant quality seen in many JAW patients analyzed in this data, thus trending towards consistency with the original hypothesis that JAW pain patients are more anxious. This was also true with broken down into LR and HR groups, as well. Those with Cluster C disorders are thought to appear anxious or fearful. The LB group presented with Antisocial Personality Disorder (JAW: M= 0.0%; LB: M= 5.7%), which is described as a pervasive pattern of disregard for and violation of the

rights of others (this was also found when LB was broken down into LR and HR groups). This personality disorder is often associated with low socioeconomic status, which was a factor discovered in analyses of the LB group (analyses showed that the LB group earned significantly less in monthly income). Similar results were found for both JAW and LB groups found on further examination of current HR SCID diagnoses. It should be noted that Schizoid PD was also found to be significantly higher in the LB group (JAW: M= 0.0%; LB: M= 4.3%).

A logistic regression analysis of significant variables revealed a six-factor solution that isolated out most the significant variables used to differentiate JAW from LB. The predictor factors were the CPI, Anomalous coping style from the MPI, WOC problem-solving coping style, GAF, a diagnosis of an Anxiety Disorder, and a diagnosis of a Cluster C PD (see Table 9). This analyses partial supports the hypothesis that the JAW group would have more anxious symptomology, because of the significance of an Anxiety Disorder diagnosis. Additionally, the increased Cluster C diagnoses for JAW subjects supports the hypotheses as well, since these PDs tend to be associated with more anxious behavior. There were not significant depressive measures to differentiate JAW from LB but overall level of functioning from the SCID was deemed appropriate for this task.

Hypotheses 6 & 7

It was hypothesized that the JAW group used more psychotropic medications, while analgesic medications were used more by the LB group. Findings revealed that when comparing JAW to LB that, in fact, more Schedule II Narcotics, an analgesic medication, were prescribed to the LB group (this was further supported by similar results discovered from more in-depth analyses of HR status, although analyses of LR statistics saw no such discrepancies). Benzodiazapines were used more with the JAW group. This finding supports what was mentioned earlier in the DSM-IV diagnoses discussion, in that the JAW population presented with more Somatoform Pain Disorders, revealing a relationship between psychopathology and pain in acute JAW pain, creating a need for more psychotropic medication therapy in this acute pain group. Analgesic treatment for the LB group fits with the theory that the pain that is causing such significant adjustment problems is thought best to be treated by pain medication. This theory can be seriously questioned after examination of the increased lifetime DSM-IV diagnoses over the JAW group, in that the LB group displayed more severe Axis I and Axis II psychopathology. Concluding that perhaps psychotropic medication might be a helpful addition to pain-relieving therapy in reducing the amount of chronic psychopathology.

Conclusions

This study showed that there are significant differences between acute jaw pain and acute low back pain, and the general population. Demographically speaking, JAW and LB groups look very different, with more Caucasian females' higher amounts of education and higher monthly income in the JAW group. Additionally, evidence was found to support the hypotheses that JAW and LB pain groups have significantly more Axis I and II psychopathology than the general population; JAW pain does exhibit more anxiety-related symptoms; and LB pain does exhibit more depressive symptoms, at least when assessing current psychopathology. LB pain was revealed to have more chronic psychopathology, as well as lower general functioning levels and maladaptive coping styles. It was observed in this study that general differences between JAW and LB within each group were a result of the increased psychopathology of the HR group that is a part of both groups. Logistical regression analysis revealed a six-factor model that differentiates JAW from LB by examining CPI score, Anomalous coping style from the MPI, WOC problem-solving coping style, GAF, a diagnosis of an Anxiety Disorder, and a diagnosis of a Cluster C PD with 89.9% accuracy.

In the future, it may be helpful for physicians or psychologists to be aware of the differing qualities of acute jaw and acute low back pain for treatment. This would be helpful in understanding differences in acute pain groups, which may lead to more specific and beneficial biopsychosocial treatments. Additionally,

drug companies might be better able to market their medications, as well as have more in-depth understanding of these specific acute pain problems.

Some of the limitations of the study and recommendations for future research should be noted. The sample consisted mostly of Caucasian, female subjects. This lack of diversity in the sample evaluated could have possibly affected the results of the study. Another limitation of this study was the difference in quantity and quality of subjects between the two groups (there were more subjects in the JAW group, and most of these group members were Caucasian females), which also could have affected the results.

APPENDIX A
Materials

CPI

How would you rate your pain on a 0 – 10 scale at the present time, that is right now, where 0 is "no pain" and 10 is "pain as bad as could be"?

NO PAIN — PAIN AS BAD AS COULD BE

0 1 2 3 4 5 6 7 8 9 10

Intake: In the past three months, how intense was your worst pain rated on a 0 – 10 scale, where 0 is "no pain" and 10 is "pain as bad as could be"?

6th: Since we began meeting, how intense was your worst pain rated on a 0-10 scale, where 0 is "no pain" and 10 is "pain as bad as could be"?

12 month: Over the past three months, how intense was your worst pain rated on a 0 – 10 scale, where 0 is "no pain" and 10 is "pain as bad as could be"?

NO PAIN — PAIN AS BAD AS COULD BE

0 1 2 3 4 5 6 7 8 9 10

Intake: In the past three months, on the average, how intense was your pain (that is, your usual pain at the times you were experiencing pain) rated on a 0 – 10 scale, where 0 is "no pain" and 10 is "pain as bad as could be"?

6th: Since we began meeting, on the average, how intense was your pain (that is, your usual pain at the times you were experiencing pain) rated on a 0 – 10 scale, where 0 is "no pain" and 10 is "pain as bad as could be"?

12 month: Over the past three months, on the average, how intense was your pain (that is, your usual pain at the times you were experiencing pain) rated on a 0 – 10 scale, where 0 is "no pain" and 10 is "pain as bad as could be"?

NO PAIN — PAIN AS BAD AS COULD BE

0 1 2 3 4 5 6 7 8 9 10

SCORING - Total score / 3 = _____ x 10 = _____

Comments:

Name_____ Date_____

MULTIDIMENSIONAL PAIN INVENTORY

Instructions: An important part of our evaluation includes examination of pain from **your** perspective. You know your pain better than anyone, so the information you give is very helpful in planning a treatment program for you.

Please read each question carefully and then do your best to answer each one. **Do not skip any questions.** If there is a question that you think does not apply to you, please **circle the number** of that question. After you have completed the questionnaire, check your responses to make sure that you have answered each question. Please use the last page to add any additional information or comments that you think would be of help to us in better understanding your pain problem.

A. 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 frequent basis. It is very important that you identify someone as your "significant other." Please indicate below who your significant other is (circle one):

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

B. Do you currently live with this person? YES NO

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

SECTION 1

This part asks questions to help us learn more about your pain and how it affects your life. Under each question is a scale to mark your answer. Read each answer carefully and then **circle a number** on the scale under that question to indicate how that specific question applies to you. An example may help you to better understand how you should answer these questions.

EXAMPLE:

How nervous are you when you ride in a car when the traffic is heavy?

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

If you are not at all nervous when riding in a car in heavy traffic, you would want to **circle** the number 0. If you are very nervous when riding in a car in heavy traffic, you would then **circle** the number 6. Lower numbers would be used for less nervousness, and higher numbers for more nervousness.

Please continue on the next page

Please answer the following questions:

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 interfere with your day-to-day activities?

0	1	2	3	4	5	6
No Interference						Extreme Interference

3. Since the time your pain began, how much has your pain changed your ability to work?
(_____ Check here if you are not working for reasons other than your pain.)

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 taking part in social and recreational activities?

0	1	2	3	4	5	6
No Change						Extreme Change

5. How supportive or helpful is your significant other (this refers to the person you indicated above) to you in relation to your pain?

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

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

0	1	2	3	4	5	6
Extremely Low						Extremely High

7. How much has your pain interfered with your ability to get enough sleep?

0	1	2	3	4	5	6
No Interference						Extreme Interference

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

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

9. How able are you to predict when your pain will start, get better, or get worse?

0	1	2	3	4	5	6
Not at all able to predict						Very able to predict

10. How much has your pain changed your ability to take part in recreational and other social activities?

0	1	2	3	4	5	6
No Change						Extreme Change

Please continue on the next page.

11. How much do you limit your activities in order to keep your pain from getting worse?

0	1	2	3	4	5	6
Not at all						Very Much

12. How much has your pain changed the amount of satisfaction or enjoyment you get from family related activities?

0	1	2	3	4	5	6
No Change						Extreme Change

13. How worried is your spouse (significant other) about you because of your pain?

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

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

0	1	2	3	4	5	6
No Control						Extreme Control

15. On an average day, how much does your pain vary (increase or decrease)?

0	1	2	3	4	5	6
Remains the same						Changes a lot

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

0	1	2	3	4	5	6
No Suffering						Extreme Suffering

17. How often are you able to do something that helps to reduce your pain?

0	1	2	3	4	5	6
Never						Very Often

18. How much has your pain changed your relationship with your spouse, family, or significant other?

0	1	2	3	4	5	6
No Change						Extreme Change

19. How much has your pain changed the amount of satisfaction or enjoyment you get from work?
(_____ Check here if you are not presently working.)

0	1	2	3	4	5	6
No Change						Extreme Change

20. How attentive is your spouse (significant other) to you because of your pain?

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

21. During the **past week**, how well do you feel you have been able to deal with your problems?

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

Please continue on the next page.

22. How much control do you feel you have over your pain?

0	1	2	3	4	5	6
No control at all						A great deal of control

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

0	1	2	3	4	5	6
No Change						Extreme Change

24. During the **past week**, how successful were you in coping with stressful situations in your life?

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

25. How much has your pain interfered with your ability to plan activities?

0	1	2	3	4	5	6
No Change						Extreme Change

26. During the **past week**, how irritable have you been?

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

27. 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

28. During the **past week**, how tense or anxious have you been?

0	1	2	3	4	5	6
Not at all tense or anxious						Extremely tense & 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 you are in pain. On the scale listed below each question, **circle a number** to indicate how often your spouse (or significant other) responds to you in that particular way when you are in pain.

1. Ignores me.

0	1	2	3	4	5	6
Never						Very Often

2. Asks me what he or 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. Gets irritated with me.

0	1	2	3	4	5	6
Never						Very Often

Please continue on the next page.

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. Gets frustrated with 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. Gets angry with me.

0	1	2	3	4	5	6
Never						Very Often

11. Gets me pain medication.

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

Please continue on the next page

SECTION 3

Listed below are 18 daily activities. Please indicate how often you do each of these 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. (_____ Check here if you do not have a lawn to mow.)

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. (_____ Check here if you do not have a garden.)

0	1	2	3	4	5	6
Never						Very Often

7. Go to a movie.

0	1	2	3	4	5	6
Never						Very Often

8. Visit friends.

0	1	2	3	4	5	6
Never						Very Often

9. Help with the house cleaning.

0	1	2	3	4	5	6
Never						Very Often

10. Work on the car. (_____ Check here if you do not have a car.)

0	1	2	3	4	5	6
Never						Very Often

11. Take a ride in a car or bus.

0	1	2	3	4	5	6
Never						Very Often

Please continue on the next page

12. Visit relatives. (_____ Check here if you do not have relatives within 100 miles.)

0	1	2	3	4	5	6
Never						Very Often

13. Prepare a meal.

0	1	2	3	4	5	6
Never						Very Often

14. Wash the car. (_____ Check here if you do not have a car.)

0	1	2	3	4	5	6
Never						Very Often

15. Take a trip.

0	1	2	3	4	5	6
Never						Very Often

16. Go to a park or beach.

0	1	2	3	4	5	6
Never						Very Often

17. Do the laundry.

0	1	2	3	4	5	6
Never						Very Often

18. Work on a needed household repair.

0	1	2	3	4	5	6
Never						Very Often

Name: _____ Date: _____

WOC

The following is a list of possible ways of dealing with a stressful situation. Each of the thoughts or behaviors listed may be like the ways in which people feel or behave when they experience stress. Please think about a major stressful event that has occurred in your life *DURING THE PAST YEAR.* Please list it here:

We are interested in the degree to which you have felt or used each of the thoughts or behaviors described in these items to deal with this situation. Please circle the appropriate number to indicate whether the thought or behavior was one that you: never used or felt, rarely used or felt, sometimes used or felt, or regularly used or felt.

Thoughts/Behaviors	Never Used	Rarely Used	Sometimes Used	Regularly Used
1. Bargained or compromised to get something positive from the situation.	*1*	*2*	*3*	*4*
2. Talked to someone to find out about the situation	*1*	*2*	*3*	*4*
3. Blamed yourself	*1*	*2*	*3*	*4*
4. Concentrated on something good that could come out of the whole thing.	*1*	*2*	*3*	*4*
5. Criticized or lectured yourself.	*1*	*2*	*3*	*4*
6. Tried not to burn bridges behind me, but left things open somewhat.	*1*	*2*	*3*	*4*
7. Hoped a miracle would happen.	*1*	*2*	*3*	*4*
8. Asked someone I respected for advice and followed it.	*1*	*2*	*3*	*4*
9. Kept others from knowing how bad things were.	*1*	*2*	*3*	*4*
10. Talked to someone about how I was feeling.	*1*	*2*	*3*	*4*
11. Stood my ground and fought for what I wanted.	*1*	*2*	*3*	*4*
12. Just took things one step at a time.	*1*	*2*	*3*	*4*

13. I knew what had to be done, so I doubled my efforts and tried harder to make things work.	*1*	*2*	*3*	*4*
14. Refused to believe that it had happened.	*1*	*2*	*3*	*4*
15. Came up with a couple of solutions to the problem.	*1*	*2*	*3*	*4*
16. Wished I were a stronger person; more optimistic and forceful.	*1*	*2*	*3*	*4*
17. Accepted my strong feelings, but didn't let them interfere with other things too much.	*1*	*2*	*3*	*4*
18. Wished that I could change what had happened.	*1*	*2*	*3*	*4*
19. Wished that I could change the way I felt.	*1*	*2*	*3*	*4*
20. Changed something about myself so that I could deal with the situation better.	*1*	*2*	*3*	*4*
21. Daydreamed or imagined a better time or place than the one I was in.	*1*	*2*	*3*	*4*
22. Had fantasies or wishes about how things might turn out.	*1*	*2*	*3*	*4*
23. Thought about fantastic or unreal things (like the perfect revenge or finding a million dollars) that made me feel better.	*1*	*2*	*3*	*4*
24. Wished that the situation would go away or somehow be finished.	*1*	*2*	*3*	*4*
25. Went on as if nothing had happened.	*1*	*2*	*3*	*4*
26. Felt bad that I couldn't avoid the problem.	*1*	*2*	*3*	*4*
27. Kept my feelings to myself.	*1*	*2*	*3*	*4*
28. Slept more than usual.	*1*	*2*	*3*	*4*
29. Got mad at the people or things that caused the problem.	*1*	*2*	*3*	*4*
30. Accepted sympathy and understanding from someone.	*1*	*2*	*3*	*4*

31. Tried to forget the whole thing.	*1*	*2*	*3*	*4*
32. Got professional help and did what they recommended.	*1*	*2*	*3*	*4*
33. Changed or grew as a person in a good way.	*1*	*2*	*3*	*4*
34. Made a plan of action and followed it.	*1*	*2*	*3*	*4*
35. Accepted the next best thing that I wanted.	*1*	*2*	*3*	*4*
36. Realized that I brought the problem on myself.	*1*	*2*	*3*	*4*
37. Came out of the experience better than when I went in.	*1*	*2*	*3*	*4*
38. Talked to someone who could do something concrete about the problem.	*1*	*2*	*3*	*4*
39. Tried to make myself feel better by eating, drinking, smoking, etc.	*1*	*2*	*3*	*4*
40. Tried not to act too hastily or follow my own hunch.	*1*	*2*	*3*	*4*
41. Changed something so things would turn out all right.	*1*	*2*	*3*	*4*
42. Avoided being with people in general.	*1*	*2*	*3*	*4*

APPENDIX B
Tables

Table 1. Demographic characteristics of JAW and LB (n=206)

Variables	JAW (n=135)	LB (n=71)	p
Gender (%)			0.001*
Male	28 (20.7)	39 (54.9)	
Female	107 (79.3)	32 (45.1)	
Ethnicity (%)			0.001*
Caucasian	108 (80.0)	24 (59.2)	
Non-Caucasian	27 (20.0)	29 (40.8)	
Latino	8 (5.9)	6 (8.5)	
African American	8 (5.9)	18 (25.4)	
Asian	8 (5.9)	3 (4.2)	
Other	3 (2.2)	2 (2.8)	
Marital Status (%)			0.484
Single	35 (25.9)	24 (33.8)	
Married / Living Together as Married	85 (63.0)	38 (53.5)	
Divorced or separated	14 (10.4)	9 (12.7)	
Widowed	1 (0.7)	0 (0.0)	
Employment Status (%)			0.686
Working	97 (71.0)	47 (74.6)	
Working	90 (66.7)	43 (60.6)	
Self Employed	7 (5.2)	4 (5.6)	
Not Working (NW)	38 (28.1)	16 (25.4)	
NW b/c of JAW	1 (0.7)	0 (0.0)	
NW b/c LB	0 (0.0)	8 (11.3)	
NW b/c of injury	2 (1.5)	0 (0.0)	
Training: school, vocational training	0 (0.0)	3 (4.2)	
NW income producing activities	0 (0.0)	1 (1.4)	
NW non-income producing activities	23 (17.0)	2 (2.8)	
NW before injury and still not working	12 (8.9)	4 (5.6)	
Denies work b/c employment factors	0 (0.0)	6 (8.5)	

Table 1. Continued.

Variable	Group	Mean	SD	t-score** (df), p-value
Years of Education	JAW=135 LB = 71	15.52 14.49	2.13 2.92	t(204) = 2.878, 0.004*
Age at Intake	JAW=135 LB = 68	37.36 41.39	11.98 11.13	t(201) = -2.314, 0.022*
Pain (days)	JAW=135 LB = 70	96.50 104.90	47.34 492.85	t(203) = -0.197, 0.844
Monthly Income before Taxes (dollars)	JAW=132 LB = 54	$7,087 $2,140	$2,960 $11,528	t(184) = 3.107, 0.002*
Number of Adults Over 18 Living in Home	JAW=135 LB = 71	1.99 1.17	0.748 0.878	t(204) = -0.457, 0.000*

* This variable was found to be significant at $p.< 0.05$

** Two-tailed t-test

Table 2. Physical and psychosocial measures examining JAW and LB groups as analyzed by t-tests.

Measure	Group	Mean	SD	t-score** (df), p-value
CPI				t(192) = -4.655, p = 0.000*
(Pain measure)	JAW (n=135)	51.38	16.502	
	LB (n=59)	63.66	17.778	
BDI				t(202) = -2.410, p = 0.016*
(Mood	JAW (n=135)	8.56	8.296	
measure)	LB (n=69)	11.64	9.196	
GAF				t(201) = 9.286, p = 0.000*
(Mood	JAW (n=133)	76.21	6.734	
Measure)	LB (n=70)	66.04	8.445	
WOC				
(Coping	JAW (n=135)			
Measure)	LB (n=71)			
Problem-	JAW	41.38	8.190	t(204) = -3.330, p = 0.001*
Solving	LB	45.21	7.161	
Problem-	JAW	17.08	3.883	t(204) = 1.069, p = 0.286
Seeking	LB	16.46	4.031	
Self-Blame	JAW	6.34	2.531	t(204) = -1.940, p = 0.054
	LB	7.06	2.489	
Wishful	JAW	18.48	5.469	t(204) = -2.519, p = 0.013*
Thinking	LB	20.54	5.732	
Avoidance	JAW	19.61	5.429	t(204) = -3.263, p = 0.001*
	LB	22.31	6.006	

* Significant at $p < 0.05$

** Two-tailed t-test

Table 3. Comparison of primary MPI coping styles (AC, D, ID) to all other styles (AC, D, ID, AN, UA, and HY) combined by group (JAW vs. LB): 3 (2x2) Chi-squares, e.g. AC/non-AC x JAW/LB.

Variable (%)	**JAW (n = 134)**	**LB (n = 71)**	**X^2 df p-value**	**OR 95% C.I.**
Adaptive vs. Others*	42.5	45.1	X^2= 0.121 df = 1 p = 0.728	OR= 1.108 CI = 0.621-1.979
Dysfunctional vs. Others*	18.7	14.1	X^2= 0.685 df = 1 p = 0.408	OR= 0.715 CI = 0.322-1.587
Interpersonally Distressed vs. Others*	19.4	15.5	X^2= 0.480 df = 1 p = 0.489	OR= 0.762 CI = 0.352-1.649

* Others refers to Adaptive, Dysfunctional, Interpersonally Distressed, Anomalous, Hybrid, and Unanalyzable coping styles

Table 4. Comparison of primary MPI coping styles (AC, D, ID) to all other primary styles (AC, D, ID) combined by group (JAW vs. LB): 3 (2x2) Chi-squares, e.g. AC/non-AC x JAW/LB

Variable (%)	**JAW (n = 108)**	**LB (n = 53)**	**X^2 df p-value**	**OR 95% C.I.**
Adaptive vs. Others*	52.8	60.4	X^2= 0.831, df = 1 p = 0.362	OR= 1.363 CI = 0.699-2.658
Dysfunctional vs. Others*	23.1	18.9	X^2= 0.383, df = 1 p = 0.536	OR= 0.772 CI = 0.340-1.754
Interpersonally Distressed vs. Others*	22.2	16.2	X^2= 0.982, df = 1 p = 0.322	OR= 0.675 CI = 0.310-1.472
(JAW n = 117) (LB n = 68)				

* Others refers to Adaptive, Dysfunctional, and Interpersonally Distressed coping styles

Table 5. JAW and LB Current (current, sub-current, and current & lifetime) DSM-IV Axis I Disorders† using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variable	**JAW (n = 135) ♦**		**LB (n = 71) ♦**		**X^2 df p-value**	**OR 95% C.I.**
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
MDD	16.5	10.8	25.7	8.9	X^2= 2.439 df = 1 p = 0.118	OR= 1.747 CI = 0.863-3.533
Bipolar	1.5	1.0	4.3	1.5	X^2= 1.477 df = 1 p = 0.224	OR= 2.933 CI = 0.478-17.979
Dysthymia	1.5	1.0	8.6	3.0	X^2= 6.052 df = 1 p = 0.014*	OR= 6.141 CI = 1.206-1.278
Mood Disorder due to GMC	0.8	0.5	0.0	0.0	X^2= 0.529 df = 1 p = 0.467	**
Other Depressive Disorder	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**
Panic Disorder	2.3	1.5	4.3	1.5	X^2= 0.659 df = 1 p = 0.417	OR= 1.940 CI = 0.381-9.876
Agoraphobia	0.8	0.5	1.4	0.5	X^2= 0.215 df = 1 p = 0.643	OR= 1.913 CI = 0.118-31.055
Specific Phobia	4.5	3.0	8.7	3.0	X^2= 1.424 df = 1 p = 0.233	OR= 2.016 CI = 0.625-6.503

Table 5 Continued.

Variable	JAW (n = 135) ♦		LB (n = 71) ♦		X^2 df p-value	OR 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Social Phobia	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**
OCD	1.5	1.0	1.4	0.5	X^2= 0.002 df = 1 p = 0.966	OR= 0.949 CI = 0.085 - 10.655
GAD	23.3	15.3	10.1	3.5	X^2= 5.154 df = 1 p = 0.023*	OR= 0.371 CI = 0.154- 0.895
PTSD	1.5	1.0	4.3	1.5	X^2= 1.477 df = 1 p = 0.224	OR= 2.933 CI = 0.478- 7.979
Adjustment Disorder	0.8	0.5	11.4	3.9	X^2= 12.339 df = 1 p = 0.000*	OR= 17.032 CI = 2.084- 139.178
Somatization	0.8	0.5	4.3	1.5	X^2= 12.965 df = 1 p = 0.085	OR= 5.910 CI = 0.603- 57.911
Somatoform Pain Disorder	65.4	42.9	50.0	17.2	X^2= 4.544 df = 1 p = 0.033*	OR= 0.529 CI = 0.293- 0.953
Alcohol Abuse	7.5	4.9	5.7	2.0	X^2= 0.233 df = 1 p = 0.630	OR= 0.745 CI = 0.225- 2.469
Cannabis Abuse	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**

Table 5 Continued.

Variable	JAW (n = 135) ♦		LB (n = 71) ♦		X^2 df p-value	OR 95% C.I
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Stimulant Abuse	0.8	0.5	0.0	0.0	X^2= 0.529 df = 1 p = 0.467	**
Polysubstance Abuse	0.8	0.5	1.4	0.5	X^2= 0.215 df = 1 p = 0.643	OR= 1.913 CI = 0.118-31.055

† The following disorders were screened using the SCID in both JAW and LB groups but were found to have no prevalence in either sample: Cyclothymia; Substance Induced Mood Disorder; Organic Mood Disorder; Organic Anxiety; Hypochondria; Anorexia; Bulimia; Binge Eating Disorder; Other Anxiety Disorder; Other Axis I Disorders; Schizophrenia; Delusional Disorder; Psychosis NOS; R/O Organic Psychosis; Somatiform Disorder; Undifferentiated Somatoform Disorder; Opioid, Cocaine, Hallucinogen, and Other Drug Abuse.

♦ All values are based on the presence or absence of SCID Axis I diagnosis

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined JAW and LB groups)

* This variable was found to be significant at $p < 0.05$

** Either JAW or LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

Table 6. JAW and LB Past (lifetime and sub-past) DSM-IV Axis I Disorders† using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variable	**JAW (n = 135) ♦**		**LB (n = 71) ♦**		**X^2 df p-value**	**OR, 95% C.I.**
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
MDD	29.3	19.2	24.3	8.4	X^2= 0.583 df = 1 p = 0.445	OR= 0.773 CI = 0.399-1.498
Bipolar	0.8	0.5	0.0	0.0	X^2= 0.529 df = 1 p = 0.467	**
Substance Induced Mood Disorder	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**
Mood Disorder due to GMC	0.8	0.5	0.0	0.0	X^2= 0.529 df = 1 p = 0.467	**
Organic Mood Disorder	0.8	0.5	0.0	0.0	X^2= 0.521 df = 1 p = 0.460	**
Panic Disorder	3.0	2.0	4.3	1.5	X^2= 0.255 df = 1 p = 0.635	OR= 1.444 CI = 0.314-6.641
Specific Phobia	0.0	0.0	2.9	1.0	X^2= 3.894 df = 1 p = 0.048*	**
Social Phobia	0.0	0.0	4.3	1.5	X^2= 5.785 df = 1 p = 0.016*	**

Table 6 Continued.

Variable	JAW (n = 135) ♦		LB (n = 71) ♦		X^2 df p-value	OR, 95% C.I.
	%Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
OCD	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**
PTSD	0.0	0.0	12.9	4.4	X^2= 17.893 df = 1 p = 0.000*	**
Anorexia	2.3	1.5	5.7	2.0	X^2= 1.648 df = 1 p = 0.199	OR= 2.626 CI = 0.571-12.080
Bulimia	0.8	0.5	0.0	0.0	X^2= 0.529 df = 1 p = 0.467	**
Binge Eating Disorder	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**
Adjustment Disorder	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**
Other Axis I Disorder	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**
Somatization	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**
Alcohol Abuse	14.3	9.4	28.6	9.9	X^2= 6.030 df = 1 p = 0.167	OR= 2.400 CI = 1.179-4.884

Table 6 Continued.

Variable	JAW (n = 135) ♦		LB (n = 71) ♦		X^2 df p-value	OR, 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Sedative/ Anxiolytic Disorder	0.8	0.5	0.0	0.0	X^2= 0.529 df = 1 p = 0.467	**
Cannabis Abuse	3.8	2.5	5.7	2.0	X^2= 0.414 df = 1 p = 0.520	OR= 1.552 CI = 0.403-5.972
Stimulant Abuse	0.0	0.0	2.9	1.0	X^2= 3.838 df = 1 p = 0.050*	**
Cocaine Abuse	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**
Polysubstance Abuse	2.3	1.5	2.9	1.0	X^2= 0.069 df = 1 p = 0.749	OR= 1.275 CI = 0.208-7.812

† The following disorders were screened using the SCID in both JAW and LB groups but were found to have no prevalence in either sample: Cyclothymia; Dysthymia, Agoraphobia, GAD, Organic Anxiety, Hypochondria, Other Depressive Disorder, Other Anxiety Disorder, Schizophrenia, Delusional Disorder, Psychosis NOS, R/O Organic Psychosis, Somatoform Pain Disorder, Undifferentiated Somatoform Disorder, Opioid, Hallucinogen, and Other Drug Abuse

♦ All values are based on the presence or absence of SCID Axis I diagnosis

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined JAW and LB groups)

* This variable was found to be significant at $p.< 0.05$

** Either JAW or LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

Table 7. JAW and LB Lifetime (current, sub-current, current & lifetime, lifetime, sub-past) DSM-IV Axis I and II Disorders† using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variable	**JAW (n = 135) ♦**		**LB (n = 71) ♦**		**X^2 df p-value**	**OR 95% C.I.**
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
MDD	45.9	30.0	50.0	17.2	X^2= 0.315 df = 1 p = 0.575	OR= 1.180 CI = 0.661-2.107
Bipolar	2.3	1.5	4.3	1.5	X^2= 0.659 df = 1 p = 0.417	OR= 1.940 CI = 0.381-9.876
Dysthymia	1.5	1.0	8.6	3.0	X^2= 6.052 df = 1 p = 0.014*	OR= 6.141 CI = 1.206-31.278
Substance Induced Mood Disorder	0.0	0.0	1.4	0.5	X^2= 1.909 df = 1 p = 0.167	**
Mood Disorder due to GMC	1.5	1.0	0.0	0.0	X^2= 1.063 df = 1 p = 0.303	**
Organic Mood Disorder	0.8	0.5	0.0	0.0	X^2= 0.521 df = 1 p = 0.470	**
Other Depressive Disorders	0.0	0.0	1.4	0.5	X^2 = 1.909 df = 1 p = 0.167	**
Panic Disorder	5.3	3.4	8.6	3.0	X^2= 0.837 df = 1 p = 0.360	OR= 1.688 CI = 0.544-5.230

Table 7 Continued.

Variable	JAW (n = 135) ♦		LB (n = 71) ♦		X^2 df p-value	OR 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Agoraphobia	0.8	0.5	1.4	0.5	X^2= 0.215 df = 1 p = 0.643	OR= 1.913 CI = 0.118-31.055
Specific Phobia	4.5	3.0	11.6	4.0	X^2 = 3.533 df = 1 p = 0.060	OR= 2.776 CI = 0.923-8.353
Social Phobia	0.0	0.0	5.7	2.0	X^2= 7.753 df = 1 p = 0.005*	**
OCD	1.5	1.0	2.9	1.0	X^2= 0.435 df = 1 p = 0.510	OR= 1.926 CI = 0.266-13.977
GAD	23.3	15.3	10.1	3.5	X^2= 5.154 df = 1 p = 0.023*	OR= 0.371 CI = 0.154-0.895
PTSD	1.5	1.0	17.1	5.9	X^2= 17.469 df = 1 p = 0.000*	OR=13.552 CI = 2.478-17.979
Anorexia	2.3	1.5	5.7	2.0	X^2 = 1.648 df = 1 p = 0.199	OR= 2.626 CI = 0.571-12.080
Bulimia	0.8	0.5	0.0	0.0	X^2 = 0.529 df = 1 p = 0.467	**
Binge Eating Disorder	0.0	0.0	1.4	0.5	X^2 = 1.909 df = 1 p = 0.167	**

Table 7 Continued.

Variable	JAW (n = 135) ♦		LB (n = 71) ♦		X^2 df p-value	OR 95% C.I.
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
Adjustment Disorder	0.8	0.5	12.9	4.4	$X^2 = 14.350$ df = 1 p = 0.000*	OR=19.475 CI = 2.413-157.166
Somatization	0.8	0.5	5.7	2.0	$X^2 = 4.701$ df = 1 p = 0.030*	OR = 8.000 CI = 0.877-73.009
Somatoform Pain Disorder	65.4	42.9	50.0	17.2	$X^2 = 4.544$ df = 1 p = 0.000*	OR = 0.529 CI = 0.293-0.953
Alcohol Abuse	21.8	14.3	34.3	11.8	$X^2 = 3.703$ df = 1 p = 0.054	OR = 1.871 CI = 0.984-3.558
Sedative/ Anxiolytic Abuse	1.5	1.0	0.0	0.0	$X^2 = 1.063$ df = 1 p = 0.303	**
Cannabis Abuse	0.0	0.0	1.4	0.5	$X^2 = 1.909$ df = 1 p = 0.167	**
Stimulant Abuse	0.8	0.5	0.0	0.0	$X^2 = 0.529$ df = 1 p = 0.467	**
Cocaine Abuse	0.0	0.0	1.4	0.5	$X^2 = 1.909$ df = 1 p = 0.167	**
Polysubstance Abuse	3.0	2.0	4.3	1.5	$X^2 = 0.225$ df = 1 p = 0.635	OR = 1.444 CI = 0.314-6.641

Table 7 Continued.

Variable	JAW (n = 135) ♦		LB (n = 71) ♦		X^2 df p-value	OR 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Other Axis I Disorders	0.0	0.0	1.4	0.5	$X^2 = 1.909$ df = 1 p = 0.167	**
Axis I Disorder	73.7	48.0	59.2	20.6	$X^2 = 4.539$ df = 1 p = 0.033*	OR = 0.517 CI = 0.281 - 0.953
Affective Disorders	48.1	31.4	49.3	17.2	$X^2 = 0.026$ df = 1 p = 0.873	OR = 1.048 CI = 0.589 - 1.865
Anxiety Disorders	31.6	20.6	29.6	10.3	$X^2 = 0.087$ df = 1 p = 0.768	OR = 0.910 CI = 0.486 - 1.704
Somatoform Disorders	65.4	42.6	31.0	10.8	$X^2 = 22.050$ df = 1 p = 0.000*	OR = 0.237 CI = 0.128 - 0.440
Substance Abuse Disorders	27.1	17.6	28.2	9.8	$X^2 = 0.028$ df = 1 p = 0.867	OR = 1.057 CI = 0.555 - 2.010
Antisocial PD	0.0	0.0	5.7	2.0	$X^2 = 7.753$ df = 1 p = 0.005*	**
Avoidant PD	21.1	13.8	1.4	0.5	$X^2 = 14.424$ df = 1 p = 0.000*	OR = 0.054 CI = 0.007 - 0.409
Borderline PD	4.5	3.0	11.4	3.9	$X^2 = 3.418$ df = 1 p = 0.065	OR = 2.731 CI = 0.908 - 8.215

Table 7 Continued.

Variable	JAW (n = 135) ♦		LB (n = 71) ♦		X^2 df p-value	OR 95% C.I.
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
Dependent PD	3.0	2.0	1.4	0.5	$X^2 = 0.476$ df = 1 p = 0.490	OR = 0.467 CI = 0.051-4.264
Histrionic PD	8.3	5.4	5.7	2.0	$X^2 = 0.438$ df = 1 p = 0.508	OR = 0.672 CI = 0.206-2.194
Narcissistic PD	5.3	3.4	12.9	4.4	$X^2 = 3.643$ df = 1 p = 0.056	OR = 2.656 CI = 0.944-7.468
OCPD	60.9	39.9	27.1	9.4	$X^2 = 20.912$ df = 1 p = 0.000*	OR = 0.239 CI = 0.127-0.450
Paranoid PD	9.0	5.9	8.6	3.0	$X^2 = 0.012$ df = 1 p = 0.914	OR = 0.945 CI = 0.339-2.637
Schizoid PD	0.0	0.0	4.3	1.5	$X^2 = 5.785$ df = 1 p = 0.016*	**
Schizotypal PD	0.8	0.5	0.0	0.0	$X^2 = 0.529$ df = 1 p = 0.467	**
Axis II Disorders	56.4	36.8	23.9	8.3	$X^2 = 19.683$ df = 1 p = 0.000*	OR = 0.243 CI = 0.128 - 0.463
Cluster A	5.3	3.4	2.8	1.0	$X^2 = 0.657$ df = 1 p = 0.418	OR = 0.522 CI = 0.105 - 2.581

Table 7 Continued

Variable	JAW (n = 135) ♦		LB (n = 71) ♦		X^2 df p-value	OR 95% C.I.
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
Cluster B	10.5	6.9	9.9	3.4	$X^2 = 0.022$ df = 1 p = 0.881	OR = 0.930 CI = 0.357 - 2.420
Cluster C	55.6	36.3	16.9	5.9	$X^2 = 28.486$ df = 1 p = 0.000*	OR = 0.162 CI = 0.080 - 0.329

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† The following disorders were screened using the SCID in both JAW and LB groups but were found to have no prevalence in either sample: Cyclothymia, Organic Anxiety, Hypochondria, Other Anxiety Disorders, Schizoid, Delusional Disorder, R/O Organic Anxiety, Opioid Abuse, Hallucinogen Abuse, Other Drug Use, and PD NOS

♦ All values are based on the presence or absence of SCID Axis I and II diagnoses

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined JAW and LB groups)

* This variable was found to be significant at $p.< 0.05$

** Data was not available for either the JAW or LB population for an OR and 95% CI to be computed

Table 8. JAW and LB Medication† Usage using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variables	**JAW (n=135)**		**LB (n=71)**		**X^2 df p-value**	**OR 95% C.I**
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
NSAIDs	20.0	13.1	29.6	10.2	X^2= 2.388 df = 1 p = 0.122	OR= 1.680 CI = 0.867-3.255
Schedule III Narcotics	3.7	2.4	5.6	1.9	X^2= 0.415 df = 1 p = 0.520	OR= 1.552 CI = 0.403-5.972
Schedule II Narcotics	0.0	0.0	9.9	3.4	X^2= 13.778 df = 1 p = 0.000*	**
Muscle Relaxants	11.9	7.8	8.5	2.9	X^2= 0.564 df = 1 p = 0.453	OR= 0.687 CI = 0.256-1.840
Tricyclics	0.7	0.5	0.0	0.0	X^2= 0.528 df = 1 p = 0.467	**
SSRIs	13.3	8.7	8.5	2.9	X^2= 1.078 df = 1 p = 0.299	OR= 0.600 CI = 0.227-1.587
Multireceptor	7.4	4.9	1.4	0.5	X^2= 3.313 df = 1 p = 0.069	OR= 0.179 CI = 0.227-1.587
Lithium	0.7	0.5	1.4	0.5	X^2= 0.216 df = 1 p = 0.642	OR= 1.914 CI = 0.118-31.068

Table 8 Continued.

Variables	JAW (n=135)		LB (n=71)		X^2 df p-value	OR, 95% C.I
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Anti-convulsants	2.2	1.5	1.4	0.5	X^2= 0.162 df = 1 p = 0.687	OR= 0.629 CI = 0.064-6.155
Benzo-diazapine	7.4	4.9	0.0	0.0	X^2= 5.528 df = 1 p = 0.019*	**
Non-Benzo Sedative	4.4	2.9	2.8	1.0	X^2= 0.330 df = 1 p = 0.566	OR= 0.623 CI = 0.122-3.170
Beta Blocker	3.0	1.9	1.4	0.5	X^2= 0.475 df = 1 p = 0.491	OR= 0.468 CI = 0.051-4.267
Calcium Channel Blocker	0.7	0.5	0.0	0.0	X^2= 0.528 df = 1 p = 0.467	**
Tramadol	0.0	0.0	1.4	0.5	X^2= 1.911 df = 1 p = 0.167	**

† The following medications had no prevalence in either sample: NERI Antidepressants, Neuroleptics, 5HT Antagonists, Topical Cream, Non-Benzodiazapine Anxioltyics, and Alpha Adremergic Agonists..

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined JAW and LB groups)

* This variable was found to be significant at $p.< 0.05$

** Either JAW or LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

Table 9. Summary of Logistic Regression Analysis Predicting JAW and LB

Variables*	**B**	**SE**	**Wald Statistic**	**Odds Ratio (OR)**	**95% Confidence Interval (C.I.)**
CPI	0.079	0.023	11.551	1.082	1.034-1.133
MPI-Anomalous	3.132	1.481	4.470	22.927	1.257-418.215
WOC Problem-Solving	0.094	0.045	4.335	1.099	1.006-1.201
GAF	-0.238	0.053	30.457	0.788	0.711-0.874
Anxiety Disorder	-0.056	0.726	0.006	5.465	1.016-29.400
Cluster C Diagnosis	3.240	0.946	11.737	25.534	4.000-162.979

*Only significant ($p<0.05$) variables were eligible for the factor-solution

Table 10. Physical and psychosocial measures examining LR JAW and LR LB groups as analyzed by t-tests.

Measure	Group	Mean	SD	t-score** (df), p-value
CPI				t(77) = -9.177, p = 0.000*
(Pain measure)	LR JAW$^{(n = 46)}$	32.54	8.137	
	LR LB$^{(n = 33)}$	57.17	15.487	
BDI				t(80) = -1.173, p = 0.244
(Mood	LR JAW$^{(n = 46)}$	6.87	6.306	
measure)	LR LB$^{(n = 36)}$	8.64	7.345	
GAF				t(80) = 6.275, p = 0.000*
(Mood	LR JAW$^{(n = 45)}$	78.40	6.103	
measure)	LR LB$^{(n = 37)}$	68.54	8.116	
WOC				
(Coping	LR JAW$^{(n = 46)}$			
Measure)	LR LB$^{(n = 38)}$			
Problem-	LR JAW	39.59	7.544	t(82) = -3.382, p = 0.001*
Solving	LR LB	44.95	6.830	
Problem-	LR JAW	16.61	3.739	t(82) = 0.100, p = 0.920
Seeking	LR LB	16.53	3.754	
Self-Blame	LR JAW	5.85	2.521	t(82) = -2.441, p = 0.017*
	LR LB	7.18	2.470	
Wishful	LR JAW	17.02	5.079	t(82) = -2.472, p = 0.016*
Thinking	LR LB	19.82	5.250	
Avoidance	LR JAW	18.11	4.753	t(82) = -3.539, p = 0.001*
	LR LB	22.47	6.534	

* Significant at $p < 0.05$
** Two-tailed t-test

Table 11. Comparison of primary MPI coping styles (AC, D, ID) to all other styles (AC, D, ID, AN, UA, and HY) combined by group (LR JAW vs. LR LB): 3 (2x2) Chi-squares, e.g. AC/non-AC x LR JAW/LR LB.

Variable (%)	**LR JAW (n = 46)**	**LR LB (n = 38)**	**X^2 df p-value**	**OR, 95% C.I.**
Adaptive vs. Others*	60.9	52.6	X^2= 0.577 df = 1 p = 0.448	OR= 0.714 CI = 0.299-1.704
Dysfunctional vs. Others*	8.7	10.5	X^2= 0.081 df = 1 p = 0.776	OR= 1.235 CI = 0.288-5.307
Interpersonally Distressed vs. Others*	15.2	0.0	X^2= 6.308 df = 1 p = 0.012†	**

* Others refers to Adaptive, Dysfunctional, Interpersonally Distressed, Anomalous, Hybrid, and Unanalyzable coping styles

** Either LR JAW or LR LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

† Significant at $p < 0.05$

Table 12. Comparison of primary MPI coping styles (AC, D, ID) to all other primary styles (AC, D, ID) combined by group (LR JAW vs. LR LB): 3 (2x2) Chi-squares, e.g. AC/non-AC x LR JAW/LR LB

Variable (%)	**LR JAW (n = 39)**	**LR LB (n = 24)**	**X^2 df p-value**	**OR 95% C.I.**
Adaptive vs. Others*	71.8	83.3	X^2= 1.090 df = 1 p = 0.296	OR= 1.964 CI = 0.546-7.066
Dysfunctional vs. Others*	10.3	16.7	X^2= 0.551 df = 1 p = 0.458	OR= 1.750 CI = 0.394-7.771
Interpersonally Distressed vs. Others*	16.3	0.0	X^2= 6.430 df = 1 p = 0.011†	**
(JAW n = 43) (LB n = 36)				

* Others refers to Adaptive, Dysfunctional, and Interpersonally Distressed coping styles

** Either LR JAW or LR LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

† Significant at $p < 0.05$

Table 13. LR JAW and LR LB Current (current, sub-current, and current & lifetime) DSM-IV Axis I Disorders† using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variable	**LR JAW (n = 46) ♦**		**LR LB (n = 38) ♦**		**X^2 df p-value**	**OR 95% C.I.**
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
MDD	6.7	3.7	13.5	6.1	X^2= 1.081 df = 1 p = 0.298	OR= 2.188 CI = 0.486-9.837
Bipolar	0.0	0.0	5.4	2.4	X^2= 2.493 df = 1 p = 0.114	**
Dysthymia	2.2	1.2	8.1	3.7	X^2= 1.516 df = 1 p = 0.218	OR= 3.882 CI = 0.387-38.995
Other Depressive Disorder	0.0	0.0	2.7	1.2	X^2= 1.231 df = 1 p = 0.267	**
Panic Disorder	2.3	1.2	5.4	2.4	X^2= 0.584 df = 1 p = 0.445	OR= 2.514 CI = 0.219-28.880
Agoraphobia	0.0	0.0	2.7	1.2	X^2= 1.231 df = 1 p = 0.267	**
Specific Phobia	0.0	0.0	5.4	2.4	X^2= 2.493 df = 1 p = 0.114	**
Social Phobia	0.0	0.0	2.7	1.2	X^2= 1.231 df = 1 p = 0.267	**

Table 13 Continued.

Variable	LR JAW (n = 46) ♦		LR LB (n = 38) ♦		X^2 df p-value	OR, 95% C.I.
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
OCD	2.2	1.2	2.7	1.2	X^2= 0.020 df = 1 p = 0.888	OR= 1.222 CI = 0.074-20.232
GAD	15.6	8.6	8.3	3.7	X^2= 0.964 df = 1 p = 0.326	OR= 0.494 CI = 0.118-2.064
PTSD	0.0	0.0	8.1	3.7	X^2= 3.787 df = 1 p = 0.052	**
Adjustment Disorder	0.0	0.0	13.5	6.1	X^2= 6.476 df = 1 p = 0.011*	**
Somatization	0.0	0.0	2.7	1.2	X^2= 1.231 df = 1 p = 0.267	**
Somatoform Pain Disorder	51.1	28.0	43.2	19.5	X^2= 0.504 df = 1 p = 0.478	OR= 0.729 CI = 0.304-1.747
Alcohol Abuse	11.1	6.1	8.1	3.7	X^2= 0.208 df = 1 p = 0.648	OR= 0.706 CI = 0.157-3.172
Cannabis Abuse	0.0	0.0	2.7	1.2	X^2= 1.231 df = 1 p = 0.267	**
Poly-substance Abuse	2.2	1.2	2.7	1.2	X^2= 0.020 df = 1 p = 0.888	OR= 1.222 CI = 0.074-20.232

Table 13 Continued.

† The following disorders were screened using the SCID in both LR JAW and LR LB groups but were found to have no prevalence in either sample: Cyclothymia; Substance Induced Mood Disorder; Mood Disorder Due to GMC; Organic Mood Disorder; Organic Anxiety; Hypochondria; Anorexia; Bulimia; Binge Eating Disorder; Other Anxiety Disorder; Other Axis I Disorders; Schizophrenia; Delusional Disorder; Psychosis NOS; R/O Organic Psychosis; Somatiform Disorder; Undifferentiated Somatoform Disorder; Sedative/Anxiolytic, Stimulant, Opioid, Cocaine, Hallucinogen, and Other Drug Abuse.

♦ All values are based on the presence or absence of SCID Axis I diagnosis

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined JAW and LB groups)

* This variable was found to be significant at $p.< 0.05$

** Either JAW or LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

Table 14. LR JAW and LR LB Past (lifetime and sub-past) DSM-IV Axis I Disorders† using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variable	**LR JAW (n = 46) ♦**		**LR LB (n = 38) ♦**		**X^2 df p-value**	**OR 95% C.I.**
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
MDD	33.3	18.3	16.2	7.3	X^2= 3.123 df = 1 p = 0.077	OR= 0.387 CI = 0.133-1.130
Substance Induced Mood Disorder	0.0	0.0	2.7	1.2	X^2= 1.231 df = 1 p = 0.267	**
Organic Mood Disorder	2.2	1.2	0.0	0.0	X^2= 0.810 df = 1 p = 0.368	**
Social Phobia	0.0	0.0	5.4	2.4	X^2= 2.493 df = 1 p = 0.114	**
PTSD	0.0	0.0	13.5	6.1	X^2= 6.476 df = 1 p = 0.011*	**
Anorexia	4.4	2.4	10.8	4.9	X^2= 1.214 df = 1 p = 0.271	OR= 2.606 CI = 0.450-15.101
Adjustment Disorder	0.0	0.0	2.7	1.2	X^2= 1.231 df = 1 p = 0.267	**
Alcohol Abuse	8.9	4.9	18.9	8.5	X^2= 1.759 df = 1 p = 0.185	OR= 2.392 CI = 0.642-8.914

Table 14 Continued.

Variable	LR JAW (n = 46) ♦		LR LB (n = 38) ♦		X^2, df, p-value	OR, 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Cannabis Abuse	4.4	2.4	5.4	2.4	X^2= 0.040 df = 1 p = 0.841	OR= 1.229 CI = 0.165 9.170
Stimulant Abuse	0.0	0.0	2.7	1.2	X^2= 1.231 df = 1 p = 0.267	**
Polysubstance Abuse	0.0	0.0	2.7	1.2	X^2= 1.231 df = 1 p = 0.267	**

† The following disorders were screened using the SCID in both LR JAW and LR LB groups but were found to have no prevalence in either sample: Bipolar Disorder, Cyclothymia; Dysthymia, Mood Disorder due to GMC, Other Depressive Disorder, Panic Disorder, Agoraphobia, Specific Phobia, OCD, GAD, Organic Anxiety, Hypochondria, Other Anxiety Disorder, Bulimia, Binge Eating Disorder, Schizophrenia, Delusional Disorder, Psychosis NOS, R/O Organic Psychosis, Somatiziation, Somatoform Pain Disorder, Undifferentiated Somatoform Disorder, Sedative/Anxiolytic, Opioid, Cocaine, Hallucinogen, and Other Drug Abuse

♦ All values are based on the presence or absence of SCID Axis I diagnosis

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined JAW and LB groups)

* This variable was found to be significant at $p.< 0.05$

** Either JAW or LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

Table 15. LR JAW and LR LB Lifetime (current, sub-current, current & lifetime, lifetime, sub-past) DSM-IV Axis I and II Disorders† using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variable	**LR JAW (n = 46) ♦**		**LR LB (n = 38) ♦**		**X^2 df p-value**	**OR 95% C.I.**
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
MDD	40.0	22.0	29.7	13.4	X^2= 0.937 df = 1 p = 0.333	OR= 0.635 CI = 0.252-1.598
Bipolar	0.0	0.0	5.4	2.4	X^2= 2.493 df = 1 p = 0.114	**
Dysthymia	2.2	1.2	8.1	3.7	X^2= 1.516 df = 1 p = 0.218	OR=3.882 CI = 0.387-38.995
Substance Induced Mood Disorder	0.0	0.0	2.7	1.2	X^2= 1.231 df = 1 p = 0.267	**
Organic Mood Disorder	2.2	1.2	0.0	0.0	X^2= 0.810 df = 1 p = 0.368	**
Other Depressive Disorders	0.0	0.0	2.7	1.2	X^2 = 1.231 df = 1 p = 0.267	**
Panic Disorder	2.2	1.2	5.4	2.4	X^2= 0.584 df = 1 p = 0.445	OR= 2.514 CI = 0.219-28.880
Agoraphobia	0.0	0.0	2.7	1.2	X^2= 1.213 df = 1 p = 0.367	**

Table 15 Continued.

Variable	LR JAW (n = 46) ♦		LR LB (n = 38) ♦		X^2 df p-value	OR 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Specific Phobia	0.0	0.0	5.4	2.4	$X^2 = 2.493$ df = 1 p = 0.114	**
Social Phobia	0.0	0.0	8.1	3.70	$X^2 = 3.787$ df = 1 p = 0.052	**
OCD	2.2	1.2	2.7	1.2	$X^2 = 0.020$ df = 1 p = 0.888	OR= 1.222 CI = 0.074-20.232
GAD	15.6	8.6	8.3	3.7	$X^2 = 0.964$ df = 1 p = 0.326	OR= 0.494 CI = 0.118-2.064
PTSD	0.0	0.0	21.6	9.8	$X^2 = 10.782$ df = 1 p = 0.001*	**
Anorexia	4.4	2.4	10.8	4.9	$X^2 = 1.214$ df = 1 p = 0.271	OR= 2.606 CI = 0.450-15.101
Adjustment Disorder	0.0	0.0	16.2	7.3	$X^2 = 7.873$ df = 1 p = 0.005*	**
Somatization	0.0	0.0	2.7	1.2	$X^2 = 1.231$ df = 1 p = 0.267	**
Somatoform Pain Disorder	51.1	28.0	43.2	19.5	$X^2 = 0.504$ df = 1 p = 0.478	OR = 0.729 CI = 0.304-1.747

Table 15 Continued.

Variable	LR JAW (n = 46) ♦		LR LB (n = 38) ♦		X^2 df p-value	OR 95% C.I.
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
Alcohol Abuse	20.0	11.0	27.0	12.2	$X^2 = 0.563$ df = 1 p = 0.453	OR = 1.481 CI = 0.529-4.148
Cannabis Abuse	4.4	2.4	8.1	3.7	$X^2 = 0.476$ df = 1 p = 0.490	OR = 1.897 CI = 0.300-12.003
Stimulant Abuse	0.0	0.0	2.7	1.2	$X^2 = 1.231$ df = 1 p = 0.267	**
Polysubstance Abuse	2.2	1.2	5.4	2.4	$X^2 = 0.584$ df = 1 p = 0.445	OR = 2.514 CI = 0.219-28.880
Other Axis I Disorders	0.0	0.0	1.4	0.5	$X^2 = 1.909$ df = 1 p = 0.167	**
Axis I Disorder	55.6	30.1	44.7	20.5	$X^2 = 9.956$ df = 1 p = 0.326	OR = 0.517 CI = 0.281-0.953
Affective Disorders	42.2	22.9	34.2	15.7	$X^2 = 0.558$ df = 1 p = 0.455	OR = 0.648 CI = 0.272 1.544
Anxiety Disorders	17.8	9.6	23.7	10.8	$X^2 = 0.441$ df = 1 p = 0.506	OR = 1.435 CI = 0.493-4.181
Somatoform Disorders	51.1	27.7	13.2	6.0	$X^2 = 13.275$ df = 1 p = 0.000*	OR = 0.145 CI = 0.048 0.439

Table 15 Continued.

Variable	LR JAW (n = 46) ♦		LR LB (n = 38) ♦		X^2 df p-value	OR 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Substance Abuse Disorders	22.2	12.0	23.7	10.8	$X^2 = 0.025$ df = 1 p = 0.874	OR = 1.086 CI = 0.389 - 3.031
Antisocial PD	0.0	0.0	5.4	2.4	$X^2 = 2.493$ df = 1 p = 0.114	**
Avoidant PD	17.8	9.8	0.0	0.0	$X^2 = 7.289$ df = 1 p = 0.007*	**
Borderline PD	2.2	1.2	10.8	4.9	$X^2 = 2.616$ df = 1 p = 0.106	OR = 5.333 CI = 0.569 - 49.963
Histrionic PD	11.1	6.1	5.4	2.4	$X^2 = 0.847$ df = 1 p = 0.358	OR = 0.457 CI = 0.083- 2.506
Narcissistic PD	6.7	3.7	8.1	3.7	$X^2 = 0.062$ df = 1 p = 0.803	OR = 1.235 CI = 0.234- 6.516
OCPD	44.4	24.4	18.9	8.5	$X^2 = 5.990$ df = 1 p = 0.014*	OR = 0.292 CI = 0.106- 0.802
Paranoid PD	2.2	1.2	5.4	2.4	$X^2 = 0.584$ df = 1 p = 0.445	OR = 2.541 CI = 0.219- 28.880
Axis II Disorders	33.3	18.1	15.8	7.2	$X^2 = 3.355$ df = 1 p = 0.067	OR = 0.375 CI = 0.129 - 1.093

Table 15 Continued.

Variable	LR JAW (n = 46) ♦		LR LB (n = 38) ♦		X^2 df p-value	OR 95% C.I.
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
Cluster B	8.9	4.8	7.9	3.6	$X^2 = 0.026$ df = 1 p = 0.871	OR = 0.879 CI = 0.184 - 4.195
Cluster C	33.3	18.1	10.5	4.8	$X^2 = 6.071$ df = 1 p = 0.014*	OR = 0.235 CI = 0.070 - 0.787

† The following disorders were screened using the SCID in both LR JAW and LR LB groups but were found to have no prevalence in either sample: Cyclothymia, Mood Disorder due to GMC, Organic Anxiety, Hypochondria, Other Anxiety Disorders, Bulimia, Binger Eating Disorder, Schizoid, Delusional Disorder, R/O Organic Anxiety, Sedative/Anxiolytic Abuse, Cocaine Abuse, Opioid Abuse, Hallucinogen Abuse, Other Drug Use, Dependent PD, Schizoid PD, Schizotypal PD, PD NOS, and Cluster A Personality Disorders.

♦ All values are based on the presence or absence of SCID Axis I and Axis II diagnosis

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined LR JAW and LR LB groups)

* This variable was found to be significant at $p < 0.05$

** Data was not available for either the LR JAW or LR LB population for an OR and 95% CI to be computed

Table 16. LR JAW and LR LB Medication† Usage using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variables	**LR JAW (n=46)**		**LR LB (n=38)**		**X^2 df p-value**	**OR 95% C.I.**
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
NSAIDs	15.2	8.3	26.3	11.9	X^2= 1.588 df = 1 p = 0.208	OR= 1.990 CI = 0.675-5.865
Schedule III Narcotics	2.2	1.2	0.0	0.0	X^2= 0.836 df = 1 p = 0.361	**
Schedule II Narcotics	0.0	0.0	5.3	2.4	X^2= 2.480 df = 1 p = 0.115	**
Muscle Relaxants	6.5	3.6	2.6	1.2	X^2= 0.694 df = 1 p = 0.405	OR= 0.387 CI = 0.039-3.885
SSRIs	6.5	3.6	7.9	3.6	X^2= 0.059 df = 1 p = 0.808	OR= 1.229 CI = 0.233-6.470
Multireceptor	6.5	3.6	0.0	0.0	X^2= 2.570 df = 1 p = 0.109	**
Anti-convulsants	0.0	0.0	2.6	1.2	X^2= 1.225 df = 1 p = 0.268	**
Benzo-diazapine	2.2	1.2	0.0	0.0	X^2= 0.836 df = 1 p = 0.361	**

Table 16 Continued.

Variables	LR JAW (n=46)		LR LB (n=38)		X^2 df p-value	OR, 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Non-Benzo Sedative	4.3	2.4	0.0	0.0	X^2= 1.692 df = 1 p = 0.193	**
Beta Blocker	6.5	3.6	2.6	1.2	X^2= 0.694 df = 1 p = 0.405	OR= 0.387 CI = 0.039-3.885

† The following medications had no prevalence in either sample: Tricyclic Antidepressants, NERIs Antidperessants, Lithium, Neuroleptics, 5HT Antagonists, Topical Cream, Non-Benzodiazapine Anxioltyics, Alpha Adrenergic Agonists, Calcium Channel Blocker, and Tramadol.

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined LR JAW and LR LB groups)

* This variable was found to be significant at $p.< 0.05$

** Either JAW or LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

Table 17. Physical and psychosocial measures examining HR JAW and HR LB groups as analyzed by t-tests.

Measure	Group	Mean	SD	t-score** (df), p-value
CPI				t(113) = -4.026, p = 0.000*
(Pain measure)	HR JAW$^{(n = 89)}$	61.11	9.978	
	HR LB$^{(n = 26)}$	71.89	17.351	
BDI				t(120) = -2.886, p = 0.005*
(Depression	HR JAW$^{(n = 89)}$	9.43	9.068	
measure)	HR LB$^{(n = 33)}$	14.91	9.976	
GAF				t(119) = 8.024, p = 0.000*
(Mood	HR JAW$^{(n = 88)}$	75.09	6.734	
measure)	HR LB$^{(n = 33)}$	63.24	8.445	
WOC				
(Coping	HR JAW$^{(n = 89)}$			
Measure)	HR LB$^{(n = 33)}$			
Problem-	HR JAW	42.30	8.396	t(120) = -1.923, p = 0.057
Solving	HR LB	45.52	7.620	
Problem-	HR JAW	17.33	3.954	t(120) = 1.122, p = 0.264
Seeking	HR LB	16.39	4.387	
Self-Blame	HR JAW	6.60	2.512	t(120) = -0.611, p = 0.543
	HR LB	6.91	2.542	
Wishful	HR JAW	19.24	5.537	t(120) = -1.823, p = 0.071
Thinking	HR LB	21.36	6.219	
Avoidance	HR JAW	20.39	5.616	t(120) = -1.523, p = 0.130
	HR LB	22.12	5.430	

* Significant at $p < 0.05$
** Two-tailed t-test

Table 18. Comparison of primary MPI coping styles (AC, D, ID) to all other styles (AC, D, ID, AN, UA, and HY) combined by group (HR JAW vs. HR LB): 3 (2x2) Chi-squares, e.g. AC/non-AC x HR JAW/HR LB.

Variable (%)	**HR JAW (n = 88)**	**HR LB (n = 33)**	**X^2 df p-value**	**OR 95% C.I.**
Adaptive vs. Others*	33.0	36.4	X^2= 0.125 df = 1 p = 0.724	OR= 1.163 CI = 0.503-2.685
Dysfunctional vs. Others*	23.9	18.2	X^2= 0.447 df = 1 p = 0.504	OR= 0.709 CI = 0.258-1.949
Interpersonally Distressed vs. Others*	21.6	33.3	X^2= 1.775 df = 1 p = 0.183	OR= 1.816 CI = 0.750-4.396

* Others refers to Adaptive, Dysfunctional, Interpersonally Distressed, Anomalous, Hybrid, and Unanalyzable coping styles

Table 19. Comparison of primary MPI coping styles (AC, D, ID) to all other primary styles (AC, D, ID) combined by group (HR JAW vs. HR LB): 3 (2x2) Chi-squares, e.g. AC/non-AC x HR JAW/HR LB

Variable (%)	**HR JAW (n = 69)**	**HR LB (n = 29)**	**X^2 df p-value**	**OR 95% C.I.**
Adaptive vs. Others*	42.0	58.6	X^2= 0.004 df = 1 p = 0.953	OR= 0.974 CI = 0.404-2.348
Dysfunctional vs. Others	30.4	20.7	X^2= 0.971 df = 1 p = 0.324	OR= 0.596 CI = 0.212-1.678
Interpersonally Distressed vs. Others*	25.7	34.4	X^2= 0.833 df = 1 p = 0.361	OR= 1.516 CI = 0.618-3.717
(JAW n = 74) (LB n = 32)				

* Others refers to Adaptive, Dysfunctional, and Interpersonally Distressed coping styles

Table 20. HR JAW and HR LB Current (current, sub-current, and current & lifetime) DSM-IV Axis I Disorders† using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variable	**HR JAW (n = 89) ♦**		**HR LB (n = 33) ♦**		**X^2 df p-value**	**OR 95% C.I.**
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
MDD	21.6	15.7	39.4	10.7	X^2= 3.910 df = 1 p = 0.048*	OR= 2.361 CI = 0.996-5.597
Bipolar	2.3	1.7	3.0	0.8	X^2= 0.057 df = 1 p = 0.811	OR= 1.344 CI = 0.118-15.333
Dysthymia	1.1	0.8	9.1	2.5	X^2= 4.751 df = 1 p = 0.029*	OR= 8.700 CI = 0.871-86.854
Mood Disorder due to GMC	1.1	0.8	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	**
Panic Disorder	2.3	1.7	3.0	0.8	X^2= 0.057 df = 1 p = 0.811	OR= 1.344 CI = 0.118-15.333
Agoraphobia	1.1	0.8	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	**
Specific Phobia	6.8	5.0	12.5	3.3	X^2= 0.992 df = 1 p = 0.319	OR= 1.952 CI = 0.513-7.426
OCD	1.1	0.8	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	**

Table 20 Continued.

Variable	HR JAW (n = 89) ♦		HR LB (n = 33) ♦		X^2 df p-value	OR, 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
GAD	27.3	19.8	12.1	3.3	X^2= 3.098 df = 1 p = 0.078	OR= 0.368 CI = 0.117-1.157
PTSD	2.3	1.7	0.0	0.0	X^2= 0.763 df = 1 p = 0.383	**
Adjustment Disorder	1.1	0.8	9.1	2.5	X^2= 4.751 df = 1 p =0.029*	OR=8.700 CI =0.817-86.854
Somatization	1.1	0.8	6.1	1.7	X^2= 2.407 df = 1 p = 0.121	OR=5.613 CI =0.492-64.090
Somatoform Pain Disorder	72.7	52.9	57.6	15.7	X^2= 2.558 df = 1 p = 0.110	OR= 0.509 CI = 0.221-1.173
Alcohol Abuse	5.7	4.1	3.0	0.8	X^2= 0.358 df = 1 p = 0.550	OR= 0.519 CI = 0.058-4.614
Sedative/ Anxiolytic Abuse	1.1	0.8	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	**
Stimulant Abuse	1.1	0.8	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	**

Table 20 Continued.

† The following disorders were screened using the SCID in both HR JAW and HR LB groups but were found to have no prevalence in either sample: Cyclothymia; Substance Induced Mood Disorder; Organic Mood Disorder; Other Depressive Disorder; Phobia; Organic Anxiety; Hypochondria; Anorexia; Bulimia; Binge Eating Disorder; Other Anxiety Disorder; Other Axis I Disorders; Schizophrenia; Delusional Disorder; Psychosis NOS; R/O Organic Psychosis; Somatiform Disorder; Undifferentiated Somatoform Disorder; Cannabis, Opioid, Cocaine, Hallucinogen, Polysubstance, and Other Drug Abuse.

♦ All values are based on the presence or absence of SCID Axis I diagnosis

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined JAW and LB groups)

* This variable was found to be significant at $p.< 0.05$

** Either JAW or LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

Table 21. HR JAW and HR LB Past (lifetime and sub-past) DSM-IV Axis I Disorders† using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variable	**HR JAW (n = 89) ♦**		**HR LB (n = 33) ♦**		**X^2 df p-value**	**OR, 95% C.I.**
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
MDD	27.3	19.8	33.3	9.1	X^2= 0.429 df = 1 p = 0.513	OR= 1.333 CI = 0.563-3.159
Bipolar	0.8	0.5	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	**
Mood Disorder due to GMC	1.1	0.8	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	**
Panic Disorder	4.5	3.3	9.1	2.5	X^2= 0.910 df = 1 p = 0.340	OR= 2.100 CI = 0.444-9.933
Specific Phobia	0.0	0.0	6.3	1.7	X^2= 5.593 df = 1 p = 0.018*	**
Social Phobia	0.0	0.0	3.0	0.8	X^2= 2.689 df = 1 p = 0.101	**
OCD	0.0	0.0	3.0	0.8	X^2= 2.689 df = 1 p = 0.101	**
PTSD	0.0	0.0	12.1	3.3	X^2= 11.031 df = 1 p = 0.001*	**

Table 21 Continued.

Variable	HR JAW (n = 89) ♦		HR LB (n = 33) ♦		X^2 df p-value	OR, 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Anorexia	1.1	0.8	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	**
Bulimia	1.1	0.8	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	**
Binge Eating Disorder	0.0	0.0	3.0	0.8	X^2= 2.689 df = 1 p = 0.101	**
Alcohol Abuse	17.0	12.4	39.4	10.7	X^2= 6.740 df = 1 p = 0.009*	OR= 3.163 CI = 1.296-7.721
Sedative/ Anxiolytic Disorder	1.1	0.8	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	**
Cannabis Abuse	3.4	2.5	6.1	1.7	X^2= 0.426 df = 1 p = 0.514	OR= 1.828 CI = 0.292-11.462
Stimulant Abuse	0.0	0.0	3.0	0.8	X^2= 2.689 df = 1 p = 0.101	**
Cocaine Abuse	0.0	0.0	3.0	0.8	X^2= 2.689 df = 1 p = 0.101	**
Polysubstance Abuse	3.4	2.5	3.0	0.8	X^2= 0.011 df = 1 p = 0.917	OR= 0.885 CI = 0.089-8.826

Table 21 Continued.

Variable	HR JAW (n = 89) ♦		HR LB (n = 33) ♦		X^2 df p-value	OR 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Somatization	0.0	0.0	3.0	0.8	X^2= 2.689 df = 1 p = 0.101	**
Other Axis I Disorder	0.0	0.0	3.0	0.8	X^2= 2.689 df = 1 p = 0.101	**

† The following disorders were screened using the SCID in both HR JAW and HR LB groups but were found to have no prevalence in either sample: Cyclothymia; Dysthymia; Substance Induced Mood Disorder; Organic Mood Disorder; Agoraphobia, GAD, Organic Anxiety, Hypochondria, Other Depressive Disorder, Other Anxiety Disorder, Adjustment Disorder, Schizophrenia, Delusional Disorder, Psychosis NOS, R/O Organic Psychosis, Somatoform Pain Disorder, Undifferentiated Somatoform Disorder, Opioid, Hallucinogen, and Other Drug Abuse

♦ All values are based on the presence or absence of SCID Axis I diagnosis

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined HR JAW and HR LB groups)

* This variable was found to be significant at $p.< 0.05$

** Either JAW or LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

Table 22. HR JAW and HR LB Lifetime (current, sub-current, current & lifetime, lifetime, sub-past) DSM-IV Axis I and II Disorders† using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variable	**HR JAW (n = 89) ♦**		**HR LB (n = 33) ♦**		**X^2 df p-value**	**OR 95% C.I.**
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
MDD	48.9	35.5	72.7	19.8	X^2= 5.531 df = 1 p = 0.019*	OR= 2.791 CI = 1.166-6.679
Bipolar	3.4	2.5	3.0	0.8	X^2= 0.011 df = 1 p = 0.917	OR= 0.885 CI = 0.089-8.826
Dysthymia	1.1	0.8	9.1	2.5	X^2= 4.751 df = 1 p = 0.029*	OR= 8.700 CI = 0.871-86.854
Mood Disorder due to GMC	2.3	1.7	0.0	0.0	X^2= 0.763 df = 1 p = 0.383	**
Panic Disorder	6.8	5.0	12.1	3.3	X^2= 0.890 df = 1 p = 0.345	OR= 1.885 CI = 0.496-7.157
Agoraphobia	1.1	0.8	0.0	0.0	X^2= 0.378 df = 1 p = 0.539	OR= 0.725 CI = 0.649-0.809
Specific Phobia	6.8	5.0	18.8	5.0	X^2 = 3.712 df = 1 p = 0.054	OR= 3.154 CI = 0.936-10.624
Social Phobia	0.0	0.0	3.0	0.8	X^2= 2.689 df = 1 p = 0.101	**

Table 22 Continued.

Variable	HR JAW (n = 89) ♦		HR LB (n = 33) ♦		X^2 df p-value	OR 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
OCD	1.1	0.8	3.0	0.8	X^2= 0.520 df = 1 p = 0.467	OR= 2.719 CI = 0.165-55.766
GAD	27.3	19.8	12.1	3.3	X^2= 3.098 df = 1 p = 0.078	OR= 0.368 CI = 0.117-1.157
PTSD	2.3	1.7	12.1	3.3	X^2= 4.939 df = 1 p = 0.026*	OR= 5.931 CI = 1.032-34.089
Anorexia	1.1	0.8	0.0	0.0	X^2 = 0.378 df = 1 p = 0.539	**
Bulimia	1.1	0.8	0.0	0.0	X^2 = 0.378 df = 1 p = 0.539	**
Binge Eating Disorder	0.0	0.0	3.0	0.8	X^2 = 2.689 df = 1 p = 0.101	**
Adjustment Disorder	1.1	0.8	9.1	2.5	X^2 = 4.751 df = 1 p = 0.029*	OR= 8.700 CI = 0.871-86.854
Somatization	1.1	0.8	9.1	2.5	X^2 = 4.751 df = 1 p = 0.029*	OR = 8.700 CI = 0.871-86.854
Somatoform Pain Disorder	72.7	52.9	57.6	15.7	X^2 = 2.558 df = 1 p = 0.110	OR = 0.509 CI = 0.221-1.173

Table 22 Continued.

Variable	HR JAW (n = 89) ♦		HR LB (n = 33) ♦		X^2 df p-value	OR 95% C.I.
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
Alcohol Abuse	22.7	16.5	42.4	11.6	$X^2 = 4.609$ df = 1 p = 0.032*	OR = 2.505 CI = 1.069-5.871
Sedative/ Anxiolytic Abuse	2.3	1.7	0.0	0.0	$X^2 = 0.763$ df = 1 p = 0.383	**
Cannabis Abuse	3.4	2.5	6.1	1.7	$X^2 = 0.426$ df = 1 p = 0.514	OR = 1.828 CI = 0.292-11.462
Stimulant Abuse	1.1	0.8	3.0	0.8	$X^2 = 0.530$ df = 1 p = 0.467	OR =2.719 CI = 0.165-44.766
Cocaine Abuse	0.0	0.0	3.0	0.8	$X^2 = 2.689$ df = 1 p = 0.101	**
Polysubstance Abuse	3.4	2.5	3.0	0.8	$X^2 = 0.011$ df = 1 p = 0.917	OR = 0.885 CI = 0.089-8.826
Other Axis I Disorders	0.0	0.0	3.0	0.8	$X^2 = 2.689$ df = 1 p = 0.101	**
Axis I Disorder	83.0	60.3	75.8	20.7	$X^2 = 0.807$ df = 1 p = 0.369	OR = 0.642 CI = 0.243-1.695
Affective Disorders	51.1	37.2	66.7	18.2	$X^2 = 2.342$ df = 1 p = 0.126	OR = 1.911 CI = 0.829-4.408

Table 22 Continued.

Variable	HR JAW (n = 89) ♦		HR LB (n = 33) ♦		X^2 df p-value	OR 95% C.I.
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Anxiety Disorders	38.6	28.1	36.4	9.9	$X^2 = 0.053$ df = 1 p = 0.819	OR = 0.908 CI = 0.396 - 2.079
Somatoform Disorders	72.7	52.9	51.5	14.0	$X^2 = 4.880$ df = 1 p = 0.027*	OR = 0.398 CI = 0.174 - 0.912
Substance Abuse Disorders	29.5	21.5	33.3	9.1	$X^2 = 0.162$ df = 1 p = 0.687	OR = 1.192 CI = 0.506 - 2.808
Antisocial PD	0.0	0.0	6.1	1.7	$X^2 = 5.423$ df = 1 p = 0.020*	**
Avoidant PD	22.7	16.5	3.0	0.8	$X^2 = 6.492$ df = 1 p = 0.011*	OR = 0.106 CI = 0.014 - 0.827
Borderline PD	5.7	4.1	12.1	3.3	$X^2 = 1.445$ df = 1 p = 0.229	OR = 2.290 CI = 0.575 - 9.111
Dependent PD	4.5	3.3	3.0	0.8	$X^2 = 0.139$ df = 1 p = 0.709	OR = 0.656 CI = 0.071- 6.096
Histrionic PD	6.8	5.0	6.1	1.7	$X^2 = 0.022$ df = 1 p = 0.881	OR = 0.882 CI = 0.169- 4.604
Narcissistic PD	4.5	3.3	18.2	5.0	$X^2 = 5.886$ df = 1 p = 0.015*	OR = 4.667 CI = 1.225- 17.776

Table 22 Continued.

Variable	HR JAW (n = 89) ♦		HR LB (n = 33) ♦		X^2 df p-value	OR 95% C.I.
	%Jaw[1]	%Total[2]	%LB[1]	%Total[2]		
OCPD	69.3	50.4	36.4	9.9	X^2 = 10.891 df = 1 p = 0.001*	OR = 0.253 CI = 0.109-0.587
Paranoid PD	12.5	9.1	12.1	3.3	X^2 = 0.003 df = 1 p = 0.955	OR = 0.966 CI = 0.285-3.275
Schizoid PD	0.0	0.0	9.1	2.5	X^2 = 8.203 df = 1 p = 0.004*	**
Schizotypal PD	1.1	0.8	0.0	0.0	X^2 = 0.378 df = 1 p = 0.539	**
Axis II Disorders	56.4	36.8	23.9	8.3	X^2 = 19.683 df = 1 p = 0.000*	OR = 0.243 CI = 0.128 - 0.463
Cluster A	8.0	5.8	6.1	1.7	X^2 = 0.125 df = 1 p = 0.724	OR = 0.747 CI = 0.147 - 3.792
Cluster B	11.4	8.3	12.1	3.3	X^2 = 0.013 df = 1 p = 0.908	OR = 1.076 CI = 0.313 - 3.701
Cluster C	67.0	48.8	24.2	6.6	X^2 = 17.794 df = 1 p = 0.000*	OR = 0.157 CI = 0.063 - 0.391

† The following disorders were screened using the SCID in both HR JAW and HR LB groups but were found to have no prevalence in either sample: Cyclothymia, Substance Induced Mood Disorder, Organic Mood Disorder, Other Depressive Disorder, Organic Anxiety, Hypochondria, Other Anxiety

Table 22 Continued.

Disorders, Schizoid, Delusional Disorder, R/O Organic Anxiety, Opioid Abuse, Hallucinogen Abuse, Other Drug Use, and PD NOS

♦ All values are based on the presence or absence of SCID Axis I and Axis II diagnosis

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined HR JAW and HR LB groups)

* This variable was found to be significant at $p.< 0.05$

** Data was not available for either the HR JAW or HR LB population for an OR and 95% CI to be computed

Table 23. HR JAW and HR LB Medication† Usage using Chi Square Statistic (X^2), degrees of freedom (df), p-value, Odds Ratio (OR), and 95% Confidence Interval (C.I.)

Variables	**HR JAW (n=89)**		**HR LB (n=33)**		**X^2 df p-value**	**OR 95% C.I.**
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
NSAIDs	22.5	16.4	33.3	9.0	X^2= 1.498 df = 1 p = 0.221	OR= 1.725 CI = 0.717-4.152
Schedule III Narcotics	4.5	3.3	12.1	3.3	X^2= 2.285 df = 1 p = 0.131	OR= 2.931 CI = 0.717-4.152
Schedule II Narcotics	0.0	0.0	15.2	4.1	X^2= 14.061 df = 1 p = 0.000*	**
Muscle Relaxants	14.6	10.7	15.2	4.1	X^2= 0.006 df = 1 p = 0.940	OR= 1.044 CI = 0.341-3.195
SSRIs	16.9	12.3	9.1	2.5	X^2= 1.154 df = 1 p = 0.283	OR= 0.493 CI = 0.133 1.829
Multireceptor	7.9	5.7	3.0	0.8	X^2= 0.918 df = 1 p = 0.338	OR= 0.366 CI = 0.043-3.095
Lithium	1.1	0.8	3.0	0.8	X^2= 0.543 df = 1 p = 0.461	OR= 2.750 CI = 0.167-45.276
Anti-convulsants	3.4	2.5	0.0	0.0	X^2= 1.140 df = 1 p = 0.286	**

Table 23 Continued.

Variables	HR JAW (n=89)		HR LB (n=33)		X^2 df p-value	OR 95% C.I
	% Jaw[1]	%Total[2]	% LB[1]	%Total[2]		
Benzo-diazapine	10.1	7.4	0.0	0.0	X^2= 3.603 df = 1 p = 0.058	**
Non-Benzo Sedative	4.5	3.3	6.1	1.6	X^2= 0.126 df = 1 p = 0.722	OR= 1.371 CI = 0.239-7.862
Beta Blocker	1.1	0.8	0.0	0.0	X^2= 0.374 df = 1 p = 0.541	**
Calcium Channel Blocker	1.1	0.8	0.0	0.0	X^2= 0.374 df = 1 p = 0.541	**
Tramadol	0.0	0.0	3.0	0.8	X^2= 2.719 df = 1 p = 0.099	**

† The following medications had no prevalence in either sample: NERI Antidepressants, Neuroleptics, 5HT Antagonists, Topical Cream, Non-Benzodiazapine Anxioltyics, and Alpha Adrenergic Agonists

[1] Percent of subjects in only the group listed

[2] Percent of the total population (combined JAW and LB groups)

* This variable was found to be significant at $p.< 0.05$

** Either JAW or LB did not meet criteria for the category and therefore there was insignificant data to calculate an OR

Table 24. Prevalence Rates of Lifetime DSM-IV Axis I and II Mental Disorders: A Comparison of the Acute Jaw Pain Group and General Population Estimates

Variables	**JAW (n=135) +**			**General Population Estimates**	**Odds Ratio (OR)**
	% JAW	95% CI	Standard Error		
Axis I				** n = 9,282	
MDD*	45.9	37.49 -54.31	0.043	6.70	0.085
Bipolar	2.3	-0.23 - 4.83	0.013	2.60	1.134
Dysthymia	1.5	-0.55 - 3.55	0.010	1.50	1.000
Panic Disorder	5.3	1.52 - 9.08	0.019	2.70	0.496
Agoraphobia	0.8	-0.70 - 2.30	0.008	0.80	1.000
Specific Phobia	4.5	1.00 - 8.00	0.018	8.70	2.022
Social Phobia	0.0			6.80	
OCD	1.5	-0.55 - 3.55	0.010	1.00	0.663
GAD*	23.3	16.17-30.43	0.036	3.10	0.105
PTSD	1.5	-0.55 - 3.55	0.010	3.50	2.382
Axis I* – Current or Lifetime Disorder	73.7	66.27-81.13	0.038	26.20	0.127
Axis II				*** n = 43,093	
Antisocial PD	0.0			3.63	

Table 24 Continued.

Variables	JAW (n=135) +			General Population Estimates	Odds Ratio (OR)
	% JAW	95% CI	Standard Error		
Axis II				*** n = 43,093	
Avoidant PD*	21.1	14.22-27.98	0.035	2.36	0.090
Dependent PD	3.0	0.12 - 5.88	0.015	0.49	0.159
Histrionic PD*	8.3	3.65-12.95	0.024	1.84	0.207
OCPD*	60.9	52.67-69.13	0.042	7.88	0.055
Paranoid PD	9.0	4.17-13.83	0.025	4.41	0.466
Schizoid PD	0.0			3.13	
Axis II* – Current or Lifetime Disorder	56.4	48.03-64.77	0.043	14.79	0.134

+ All values are based on the presence or absence of a current, sub-current, current & lifetime, lifetime, and sub-past Structured Clinical Interview, or SCID, Axis I or Axis II diagnosis.

* Significant because General Population Estimate falls outside the 95% CI

** (Kessler, et al., 2005)

***(Grant, et al., 2004)

Table 25. Prevalence Rates of Lifetime DSM-IV Axis I and II Mental Disorders: A Comparison of the Acute Low Back Pain Group and General Population Estimates

Variables	**LB (n=71) +**			**General Population Estimates**	**Odds Ratio (OR)**
	% LB	95% CI	Standard Error		
Axis I				** n = 9,282	
MDD*	50.0	38.37-61.63	0.059	6.70	0.072
Bipolar	4.3	-0.42-9.02	0.024	2.60	0.594
Dysthymia*	8.6	2.08-15.12	0.033	1.50	0.162
Panic Disorder	8.6	2.08-15.12	0.033	2.70	0.295
Agoraphobia	1.4	-1.33-4.13	0.014	0.80	0.568
Specific Phobia	11.6	4.15-19.05	0.038	8.70	0.726
Social Phobia	5.7	0.31-11.09	0.028	6.80	1.207
OCD	2.9	-1.00-6.80	0.019	1.00	0.338
GAD	10.1	3.09-17.11	0.036	3.10	0.285
PTSD*	17.1	8.34-25.86	0.045	3.50	0.176
Axis I* – Current or Lifetime Disorder	59.2	47.77-70.63	0.058	26.20	0.245
Axis II				*** n = 43,093	
Antisocial PD	5.7	0.31-11.09	0.028	3.63	0.623
Avoidant PD	1.4	-1.33 - 4.13	0.014	2.36	1.702

Table 25 Continued.

Variables	LB (n=71) +			General Population Estimates	Odds Ratio (OR)
	% LB	95% CI	Standard Error		
Axis II				*** n = 43,093	
Dependent PD	1.4	-1.33 - 4.13	0.014	0.49	0.347
Histrionic PD	5.7	0.31-11.09	0.028	1.84	0.310
OCPD*	27.1	16.76-37.44	0.053	7.88	0.230
Paranoid PD	8.6	2.08-15.12	0.033	4.41	0.490
Schizoid PD	4.3	-0.42 - 9.02	0.024	3.13	0.719
Axis II – Current or Lifetime Disorder	23.9	13.98-33.82	0.051	14.79	0.553

+ All values are based on the presence or absence of a current, sub-current, current & lifetime, lifetime, and sub-past Structured Clinical Interview, or SCID, Axis I or Axis II diagnosis.

* Significant because General Population Estimate falls outside the 95% CI

** (Kessler, et al., 2005)

***(Grant, et al., 2004)

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VITAE

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