GENDER, ETHNICITY, AND OBSERVER RATINGS OF PAIN

THESIS

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CHAPTER 1

INTRODUCTION

Pain is a problem that many people face every day of their life. It is a perplexing phenomenon that transcends age, gender, and ethnicity. The International Association for the Study of Pain (IASP) defines pain as, "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage" (International Association for the Study of Pain (IASP), 1986). This definition captures the complexity surrounding the issue of pain. The words " ...sensory and emotional experience..." reflect the subjectivity of the pain experience and begin to paint a picture of how complex the issue of pain and measuring the pain experience can be.

Everyone has experienced pain many times during his or her life. However, there are a significant number of people who live with pain every day of their lives. According to the American Chronic Pain Association (ACPA) chronic pain affects approximately 86 million Americans (ACPA, 2001). Others estimate the number of people in the United States who suffer from chronic pain at 50 million, or about one in five adults (Joranson & Leitman, 1994, as cited in Turk & Melzack, 2001). Yet, of these, only 4.9 million people seek treatment for their suffering each year (Marketdata Enterprises, 1999, as cited in Turk & Melzack, 2001).

A study by Gureje (1998) found that 17% of patients seen in the U.S. by primary care physicians suffered from persistent pain. Furthermore pain symptoms account for over 35 million new office visits each year (Knapp & Koch, 1984). Indeed, pain accounts for 80% of all physician office visits every year (Koch 1986). In the United States alone approximately 20 million people suffer from arthritis, 7 million suffer from low back pain, 3% of the population suffer from daily headaches, while 10% suffer headaches on a weekly basis (Morris, 1998).

Pain as a Social Issue

Pain accounted for 25% of all sick days (approximately 50 million lost workdays) in 1995, and cost around 3 billion dollars in lost wages alone (Louis Harris & Associates, 1996). Untreated chronic pain costs approximately $34,000/person/year (Simmons, Avant, Demski, & Parisher, 1988). Louis Harris and Associates (1996) found that in 1995, 17 million employees averaged three sick days due to pain, although it is believed to be as high as nine to ten days.

It is estimated that over 250,000 lumbar surgeries are performed each year, at a total cost of $8.75 billion per year (J.D. Loeser, personal communication, February 07, 2000, as cited in Turk & Melzack, 2001). The cost of low back pain alone is estimated to be around $50 billion a year (Injury Resources, 2002). In 1995 over 176,000 chronic pain patients were treated in treatment centers at a total cost of $1.4 billion (Marketdata Enterprises, 1995, as cited in Turk & Melzack, 2001). Turk, Okifuji, and Kaluaokalani (1999) estimated that the direct and indirect costs of pain may exceed $125 billion per year.

As a result of the social and economic consequences of pain, in January of 2001 the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) implemented the new standards developed in 1999 to "improve the quality and consistency of pain management across the country" (JCAHO, 1999). The key concepts of these new standards are:

> (1) Patients have the right to appropriate assessment, (2) patients will be treated for pain or referred for treatment, (3) pain is to be assessed and regularly reassessed, (4) patients will be taught the importance of effective pain management, (5) patients will be taught that pain management is a part of treatment, (6) patients will be involved in making care decisions, (7) routine and p.r.n. analgesics are to be administered as needed, and (8) discharge planning and teaching will include continuing care based on the patient's needs at the time of discharge, including the need for pain management (JCAHO, 1999).

These changes are important because they force the medical profession to more actively involve the patient in the treatment and rehabilitation process. They also force professionals dealing with chronic pain patients to assess and reassess the pain of the patient regularly. These standards do not, however, prescribe the specific method the professional must use to assess pain.

Given the new JCAHO standards (1999), and clinicians' tendency to want easily administered and scored measures of the pain experience, it may be time to examine which factors influence professionals' estimates of how much pain a patient is experiencing.

Types of Pain

It is important to recognize that there are different types of pain. Some of the most common types include organic, psychogenic, acute and chronic. Organic pain stems from physiological causes, and can be explained in terms of such causes. Psychogenic pain is thought to emanate from psychological sources because no organic cause(s) can be found (Baum, Gatchel, & Krantz, 1997). It is important to underscore here that, while psychogenic pain used to be explained as "all in the patient's head", researchers now know this to be false. Both organic and psychogenic pain are experienced in the same way by the patient. Perceptually they both hurt the same (Baum, Gatchel & Krantz, 1997).

Acute pain is the result of specific, readily identifiable tissue damage (such as a cut, broken bone, etc.). With this type of pain, a specific treatment is usually available, the pain usually only lasts a few weeks to a few months, and the pain subsides as the wound heals (Baum et al., 1997).

Chronic pain, in contrast, is "pain that continues a month or more beyond the usual recovery period for an illness or injury or pain that goes over months or years as a result of a chronic condition" (ACPA, 2001). With chronic pain, prescribed treatments do not provide a significant reduction in pain, and the pain lasts for long periods of time. Chronic pain usually stems from acute pain that has become intractable, or not responsive to treatment.

Theories of Pain

Over the years many theories have attempted to explain the pain experience. Each major model attempts to explain the physiological bases of pain. However, none has completely captured the complexity of the pain experience, which is influenced by psychological, social, and cultural variables.

Specificity theory.

In 1894 Von Frey offered a model of pain in which he proposed that the body houses specific sensory receptors that are responsible for sensation transmission. These sensory receptors were thought to have different structures, making them sensitive to different types of stimulation (Baum et al., 1997). Partial support for this theory was offered by Bonica (1953) when he identified two sets of stimulus-specific sensory fibers which were directly involved in pain transmission (Baum et al., 1997).

Despite this support, the specificity theory has numerous inadequacies. First, psychological factors (such as depression or anxiety) can have a significant effect on pain intensity and experience, moderating the responsiveness of stimulus-specific pain receptors. These factors are not adequately accounted for by the stimulus-response chain explanation of the specificity theory (Baum et al., 1997). Other research calls into question the idea of direct transmission. When the nerves between peripheral nerve sites and central pain mechanisms are severed, pain is not always alleviated, suggesting that other factors are also important in the perceptual experience of pain (Baum et al., 1997).

Pattern theory.

Around the same time Von Frey was developing the specificity theory, Goldschneider put forth an alternative theory to explain the mechanisms underlying pain.

This theory states that pain is a product of the "patterning, intensity, and quality of stimulation from peripheral nerve endings" (Goldschneider, 1886, as cited in DiMatteo & Martin, 2002). The differences in the patterning and quantity in the peripheral nerve-fiber discharges are seen as causing sensation quality. A minimal stimulus might be perceived as touch whereas a stronger stimulus might be experienced as pain (Baum et al., 1997). The pattern theory also asserts that sensations may accumulate and that the brain only receives the nerve impulses once a particular threshold has been reached. This accounts for the interval between the onset of tissue damage and the experience of pain (DiMatteo & Martin, 2002).

Partial support for the pattern theory of pain came from Melzack and Wall (1965), who found that skin receptors hold special properties that can transmit patterns of impulses which vary in the type and range of stimulation. However, a weakness of this theory is that it does not account for Bonica's (1953) research identifying evidence for nerve-fiber specialization. And neither of these models adequately incorporates neurotransmitter mechanisms into their explanations of the pain experience (Baum et al., 1997).

Gate control theory.

Melzack and Wall first proposed the gate control theory of pain in 1965. According to this theory, pain may be attributed to a number of structures within the Central Nervous System. Pain impulses do not flow directly to the brain. Rather, they flow from the peripheral nervous system to the central nervous system by way of the dorsal horns of the spinal cord where the impulses are modulated by a neural "gating" mechanism (DiMatteo & Martin, 2002).

The "gate" mechanism is the substantia gelitinosa of the spinal cord. This structure acts like a gate, increasing or decreasing the flow of nerve transmissions from peripheral fibers to the central nervous system (Baum et al., 1997). The opening and closing of the gate is dependent upon activity within the large-diameter A-beta and small diameter A-delta and C fibers. Large fiber (A-beta) activity inhibits the activity of T-cells (transmission cells) which close the gate. Small fiber activity (A-delta and C-fiber) opens the gate increasing the transmission of T-cells (Baum et al., 1997).

The gate control theory states that nerve fibers send pain sensations to various parts of the brain. The brain then provides feedback to the dorsal horn of the spinal cord. The spinal cord then facilitates some pain messages while inhibiting others. Pain is experienced when the ratio of activity in the A-delta and C-fibers is greater than that of A-beta fibers (DiMatteo & Martin, 2002).

This theory has provided considerable insight into the mechanisms surrounding nocioception. However, the neuroanatomy and neurochemical processes involved in pain perception have proven to be much more complex that originally believed (Coderre, Katz, Viccarino, & Melzack 1993; Humphries, Johnson, & Long, 1996). As a result, specific aspects of the mechanisms put forth in the theory have been revised (Nathan, 1976; Wall, 1989).

Neuromatrix theory.

Melzack has proposed the most recent theory of pain perception, the neuromatrix theory (1989, 1995, 1999). This theory holds that:

- The areas of the brain that correspond to particular body parts are active whether or not they are receiving inputs from the body.

- Neural patterns that underlie "experience" originate in neural networks in the brain.
- The experience of the "self" as distinct from the environment is due to central neural processes, not Peripheral Nervous System (PNS) or spinal cord inputs.
- These neural processes, although modified by experience, are innate (DiMatteo & Martin, 2002, p.284).

According to the neuromatrix theory of pain, each individual has a "neuromatrix" that defines the pain experience. This matrix is an innate, genetically prescribed neural network consisting of feedback loops between the thalamus and cortex and between the cortex and the limbic system. The feedback loops within the matrix alter the pain experience. When sensory inputs are received in the brain, the signals proceed through the matrix where they are synthesized into a unique pattern called a "neurosignature". These neurosignatures are then sent to specific parts of the brain where they enter into consciousness. Once this occurs, the neurosignature may trigger an action neuromatrix that produces movement of the body (Melzack, 1995, 1999).

The evidence supporting this new theory is relatively strong. In 1969, White & Sweet found that removing somatosensory areas of the cortex and/or thalamus did not relieve phantom limb pain. This offers some support for the theory because the neuromatrix seems to be selectively distributed throughout the entire brain. Destroying specific areas would, as a result, fail to destroy the entire neuromatrix (Melzack, 1995). Further support for this theory comes from Tasker, Choiniere, Libman, and Melzack (1987) who found that anesthetizing areas of the brain shown to be important to

neuromatrix functioning decreases the amount of experienced pain while leaving the pain reflexes which are mediated in the spinal cord unaffected.

Methods Used in Pain Assessment

In order to study something effectively, a researcher must be able to find a way to appropriately measure the phenomenon. Over the years, pain researchers have attempted to find a way to effectively and appropriately evaluate the pain experience, and, in the process, have created many different instruments and ways to measure pain. Some of the instruments measure acute pain, some chronic, some measure the effects associated with the pain experience, and others measure pain intensity. While no single instrument captures the complete pain experience, a few of them do reflect specific aspects of the pain experience.

Verbal rating scale.

The Verbal Rating Scale (VRS) consists of a list of adjectives that describe differing levels of pain intensity (e.g. "no pain," "mild," "moderate," "severe"). The scale presents the extremes of the pain dimension (i.e., "no pain" to "most severe pain"). It also contains numerous adjectives to depict gradations of pain. The patient selects the word that most appropriately describes his or her pain (Melzack & Katz, 2001).

Some of the advantages of the VRS include ease of administration and scoring. In addition, the VRS consistently demonstrates sensitivity to treatments that are known to affect pain intensity. Furthermore, the VRS is easy for patients to comprehend, thereby increasing compliance (Jensen, Karoly, & Braver, 1986; Jensen, Karoly, O'Riordan, Bland, & Burns, 1989).

One of the major disadvantages of the VRS is that the patient must read and understand the adjectives on the list, which can take time (Jensen & Karoly, 2001). Also, patients may be unable to find a word on the list that adequately expresses their pain (Joyce, Zutshi, Hrubes, & Mason, 1975). Furthermore, according to Ferraz and colleagues (1990), the VRS seems to be less reliable than other measures of pain intensity. Finally, choosing a scoring method and scoring a VRS can be an incredibly difficult task, due to the fact that the VRS uses a rank-scoring method which assumes equal intervals between rankings. It assumes that the magnitude of difference between "no pain" and "mild" is the same as the interval between "moderate pain" and "severe pain", when in fact, the differences may not be equal due to the words being used to describe each level. Certain words may reflect a 10% difference in pain, while others may reflect a much higher percentage (Jensen & Karoly, 2001).

Due to these factors, researchers do not typically use the VRS as the sole measure of pain. More typically, a pain assessment protocol will have a VRS as one part of its overall makeup. An example of one such protocol is the Pain Inventory (Arathuzik, 1994) which contains a VRS as one of its measures of chronic pain. The Pain Inventory also measures the cognitive factors that seem to have the most influence on the pain experience.

Another pain assessment protocol that incorporates VRS methodology, the Headache Scale (Hunter, 1983), was designed to assess the intensity and quality of headache pain. Hunter (1983) created the scale by asking forty headache sufferers to choose adjectives from the McGill Pain Questionnaire (Melzack, 1975) that described

their headache pain. The process resulted in twenty-seven pain descriptors and three subsequent adjectives that describe the overall experience of headache pain.

Visual analogue scale.

The Visual Analog Scale (VAS) was originally designed to use raters for evaluating individuals suffering from pain. Over the years, however, it has become a way for individuals to describe the subjective pain phenomena that they are experiencing (Wewers & Lowe, 1990). Studies of the VAS began to appear in the literature during the 1960's. Since then the VAS has been used to measure many different types of subjective pain phenomena including mood, anxiety, alertness, cigarette cravings, quality of sleep functional abilities, and the severity of clinical pain symptoms (Aitken, 1969; Aitken & Gedye, 1968; Folstein & Luria, 1973; Luria, 1979; Glassman, Jackson, Walsh, & Roose, 1984; Lader & Wing, 1966; Luria 1975, 1979). The VAS has been used to measure both acute pain (Gaston-Johansson, Fridh, & Turner-Norvell, 1988) and chronic pain (Joyce et al., 1975).

The original Visual Analogue Scale was validated by Scott and Huskisson (1976). Their psychometric analysis revealed the measure to be a reliable and valid measure of pain (Wewers & Lowe, 1990). The VAS consists of a line (usually 10cm long) with labels denoting extremes of pain intensity at each end. One end of the VAS reads "no pain" while the other reads "as bad as it gets". The patient is asked to indicate the intensity of his or her pain by marking a vertical line at the point on the line that best illustrates their pain. The distance from the "no pain" end to where the patient marks their pain is then taken as the index of pain intensity (Choiniere & Amsel, 1996). Variations of the VAS format include the Graphic Rating Scale (GRS), which is similar

to the VAS but usually includes adjectives and the Numerical GRS which places numbers along the axis.

One of the advantages of using the VAS format is that the VAS is highly sensitive to treatment effects (Joyce et al., 1975). Another advantage is that the VAS is positively related to other self-reported measures of pain intensity (Jensen, Karoly, & Braver, 1986). The VAS also shows positive relations to observed pain behavior (Grambling & Elliot, 1992). VAS scores obtained from groups of people seem to hold the quality of ratio data (Price, Harkins, & Baker, 1987). This means that differences in pain levels for groups of people represent differences in magnitude—a score of 40, then 20 would mean that pain intensity has been reduced by half (Jensen & Karoly, 2001). Also, since the VAS is measured in millimeters, a 10 cm line would have 101 potential response levels, giving it the potential to be more sensitive to pain intensity changes (Jensen & Karoly, 2001).

In spite of these advantages to using the VAS to measure pain intensity, there are a number of disadvantages. The scoring of the VAS involves many steps and can be quite time consuming (Jensen & Karoly, 2001). The VAS also requires the patient to have a minimum of motor ability. A patient who suffers from a sever motor disability would not be able to use the VAS (Hadjistavropoulus, von Baeyer, & Craig, 2001). Finally, research has found that the VAS can be difficult for people with cognitive difficulties. These include the elderly and people taking high doses of opioid-based analgesics (Jensen et al., 1986; Paice & Cohen, 1997).

Numerical rating scale.

The Numerical Rating Scale (NRS) asks patients to rate their pain on an 11-point scale (0-10), a 21-point scale (0-20), or a 101-point scale (0-100), where 0 equals no pain

at all and 10, 20, or 100 equals the opposite extreme. Like the VAS, the NRS has significant positive correlations with other pain measures (Jensen et al., 1986; Jensen, Karoly, O'Riordan, Bland, & Burns, 1989). Also like the VAS, the NRS is sensitive to treatment effects (Paice & Cohen, 1997). The NRS is very easy and quick to administer, simple to score, can possess a high number of response categories, and has a high rate of patient compliance. Elderly patients do not seem to have as much difficulty with the NRS as they often do with the VAS (Jensen et al.,1986).

A 1994 study by Jensen, Turner, and Romano on chronic pain patients found that 11 and 21-point scales provided enough discrimination for a chronic pain patient to describe their pain intensity. According to the study, patients were asked to rate their least, most, current, and average pain on a 101-point NRS. Many of the 124 patients in the study provided responses that were in multiples of 5 or 10, and most responded with a multiple of ten only. These results support the idea that little information is lost if the researcher converts a 101-point scale to an 11- or 21-point scale (Jensen et al., 1994).

A version of the NRS can be found in Cleeland & Ryan's Brief Pain Inventory (1994). The Brief Pain Inventory contains pain intensity scales that present numbers in ascending order. Each endpoint (0 and whatever the highest number is) contains a descriptor. The patient is asked to circle the number that best represents their pain intensity (Cleeland & Ryan, 1994). Downie et al. (1978) proposed the NRS box scale. This scale is an 11-point NRS where the numbers are presented in ascending order. Each number is surrounded by a box. The patient is then asked to put an "X" through the box that best represents their pain level.

Perhaps the most common form of the NRS is the verbal NRS, where the patient is simply asked to rate their pain on a numerical scale. While all of the NRS methods are easy to score (the number given by the patient is the score), this method seems to be the quickest and the easiest to administer, and can even be administered over the telephone (Jensen & Karoly, 2001).

Jensen, Turner, Romano and Fisher (1999) conducted a longitudinal study using a telephone administration of the verbal NRS with chronic pain patients. The purpose of the study was to compare the validity and reliability of four measures of pain intensity (0-10 measures of worst least and average). The researchers recorded the first measurement immediately before beginning a multidisciplinary treatment program. They took the second (n=108) measurement two weeks after treatment ended. The third (n=106) was taken one month after treatment ended. The researchers took the last record (n=105) two months after completion of the treatment. These individual intensity ratings provided psychometrically sound indices of pain (Jensen, Turner, Romano, & Fisher, 1999).

Despite the widespread appeal of the NRS, it does have one major drawback. Unlike the VAS, the NRS does not possess ratio qualities (Price, Bush, Long, & Harkins, 1994). Nonetheless, most researchers who find themselves working with a variety of chronic pain patients tend to prefer the 0-10 NRS over other types of measurement (Jensen & Karoly, 2001).

Instruments Used in Pain Assessment

Over the years many types of instruments have been developed to provide a picture of the pain experience. Some measures attempt to capture a unique aspect of the pain experience while others attempt a more thorough assessment of the total pain

experience. Today, most instruments used to measure pain incorporate one of the methods of pain assessment mentioned in the previous section.

The pain and impairment relationship scale.

Riley, Ahern, & Follick (1988) created the Pain and Impairment Relationship Scale (PAIRS) to examine how specific beliefs affect the manner by which chronic pain interferes with patient functioning. Participants in the initial study included 56 chronic pain patients (37 men and 19 women) who were part of a multidisciplinary outpatient treatment program.

Participants completed the Sickness Impact Profile (Bergner, Bobbit, Carter, & Gilson, 1981) designed to measure overall impairment, including disabilities that impaired their psychosocial and physical functioning (Follick, Smith, & Ahern, 1985). Participants also completed the Cognitive Errors Questionnaire (Lefebvre, 1981), which measures pain-related cognitive distortion, and a set of daily pain diaries (Follick, Ahern, & Laser-Walston, 1984) providing their average pain level on a scale of 0-10.

Participants then completed the experimental PAIRS. The PAIRS contains 15 statements, with each statement followed by a 7-point Likert scale expressing degrees of agreement to disagreement. The statements either explicitly or implicitly attribute the participant's amount of impairment to his or her pain (Riley et al., 1988).

Participants were videotaped completing a structured sequence of movements (such as sitting, bending, exercising, etc.) and then completing a brief interview. Partial movement (an incomplete movement to a pre-determined set of criteria) and limitation statements defined as "a frequency count of statements relating to disability or impairment, expressions of inability, verbalizations of hesitation, and questioned capacity

to perform tasks" were the principal measures of impairment in the study (Riley et al., 1988, p.580). The study examined the link between a patient's functional impairment and subjective pain experience. The extent to which these concepts are seen as linked by the patient determines how much disability the patient reports, regardless of the actual effect the pain has on the patient's functional ability (Riley et al., 1988).

Slater, Hall, Atkinson, and Garvin (1991) further validated the PAIRS on a sample of chronic benign low back pain patients. The study was conducted to test the discriminant validity, convergent validity, divergent validity, reliability over time, and vulnerability to response bias of the PAIRS. The participants involved in this study included 31 male chronic benign low back pain patients from a general orthopedic clinic and a volunteer control group consisting of 19 healthy males who reported having no pain. Patients with chronic low back pain were significantly more likely to equate pain with impairment and restriction in functioning than their healthy counterparts. This finding supports the discriminant validity of the PAIRS, showing that the PAIRS is able to distinguish the pain impairment and beliefs of a particular pain population from a control group.

In 1999, Guck, Fleisher, Willcockson, Criscuolo, & Leibrock tested the predictive validity of the PAIRS on a chronic benign pain population. The specific purpose of this research was to test the predictive and incremental validity of the instrument and to examine whether or not the PAIRS possessed the ability to adequately measure changes in pain belief from pre- to post- interdisciplinary treatment. The study involved 135 participants who participated in a cognitive-behavioral day program. The program lasted all day, five days a week for four weeks, and included a six-month follow up.

Like the previous studies, this study found that the PAIRS possesses excellent predictive validity. Furthermore, on the individual level, it provides valuable information as to which beliefs concerning pain and impairment are in need of being modified. On the program (group) level, the PAIRS pretreatment scores of patients provided a good baseline measure for the evaluation and treatment of chronic pain (Guck et al., 1999).

The McGill pain questionnaire.

First introduced by Melzack in 1975, the McGill Pain Questionnaire (MPQ) is the most widely used pain assessment tool. The MPQ has been used in over 350 studies. It has been translated into several languages and been used to study laboratory-produced, acute, and chronic pain. It has also inspired the development of many similar questionnaires (Melzack & Katz, 2001).

The MPQ was designed to provide quantitative measures of clinical pain which can be evaluated statistically. The instrument consists of three categories of word descriptors (sensory, affective, and evaluative), and 20 subclasses of words (Melzack, 1975). The MPQ provides researchers with different types of descriptor data including:

- The Pain Rating Index (PRI), which is based on ranking the value of each word in each particular subclass (e.g. the word implying the least amount of pain is given a value of "1", the next word "2", and so forth).
- The number of words chosen (NWC).
- The Present Pain Intensity (PPI), which is the number-word combination chosen which indicates the overall pain intensity being experienced by the patient at the time of administration (Melzack & Katz, 2001).

Reading, Everitt, and Sledmere (1982) investigated the reliability of the MPQ's adjective groupings. They found that even when employing participants with different cultural backgrounds, the MPQ is a reliable index of the pain experience. Another study by Gaston-Johansson, Albert, Fagan, and Zimmerman (1990) reported that individuals with different ethnic, cultural, and educational backgrounds use adjectives similar to those found on the MPQ to describe words such as "pain", "hurt", and "ache".

The validity of the three-factor structure (sensory, affective and evaluative) of the MPQ has been demonstrated repeatedly over the years (Turk, Rudy, & Salovey, 1985; Lowe, Walker, & McCallum, 1991). Studies have also found the MPQ to be extremely sensitive to the effects of treatments that are designed to reduce pain (Briggs, 1996).

The MPQ has also been shown to discriminate differential diagnoses. The first study of this kind was done by Dubuisson and Melzack (1976). The researchers administered the MPQ to 95 participants suffering from one of eight pain syndromes. Each type of pain was characterized by a specific set of verbal descriptors. This study also found that when the set of the verbal descriptors was placed into one of the eight pain categories, the correct diagnosis was made 77% of the time.

Leavitt and Garron (1980) found that the MPQ is able to provide a descriptive pattern of words that can help distinguish between two major types of low back pain. In their study the MPQ was able to distinguish between psychogenic and organic low back pain. In an earlier study using a modified MPQ, Leavitt and Garron (1980) discovered that 87% of the time the word choice classifications of the patients matched the established medical diagnosis.

Melzack created the short form of the MPQ (SF-MPQ) in 1987. This modified version of the original form consisted of 15 adjectives describing pain which are rated on an intensity scale (VRS). Adjectives 1-11 describe the sensory component of pain. Adjectives 12-15 describe the affective dimension of the pain experience. It also retains the PPI of the original scale and a VAS (Melzack, 1987). This scale was developed for situations when researchers want more information that just a PPI or a VAS can give, or when time with the patient is limited (Melzack & Katz, 2001).

The SF-MPQ has been found to correlate highly with the sensory, affective, and total indices of the full-length MPQ (Melzack, 1987; Dudgeon, Ranbertas, & Rosenthal, 1993). Furthermore, a study in 1993 by Dudgeon et al. demonstrated the concurrent validity of the SF-MPQ with patients who were suffering from cancer-related chronic pain. On three occasions over the course of nine weeks, the patient's scores on the MPQ were highly correlated to those found on the PRI scores of the SF-MPQ.

Estimation

Magnitude estimation, a concept developed by Stevens (1957), is where a person assigns a number to a stimulus that is proportional to the subjective magnitude of the stimulus. This idea provided researchers with a quick and easy way to have a person relate the subjective intensity of a particular stimulus, therefore making the results easier to interpret (Allard, 2001).

Estimation is a very complex task. One factor thought to influence how individuals make estimations and judgments is a person's level of knowledge or experience (Chapman and Elstein, 2000). A study by Dawson et al. (1993, as cited in Chapman and Elstein, 2000) found that experienced physicians were no more accurate

with diagnoses than younger inexperienced physicians. Rather, experienced physicians merely displayed more confidence in their diagnoses. This supports the idea that being given more information about a particular situation does not make an individual more accurate, just more confident.

Another difficulty of estimation is that of misinterpretation between the patient and the healthcare provider. Misinterpretation can come from differences in cultural or psychological attitudes surrounding pain (Bondestam et al., 1987). Research also shows that healthcare providers have a tendency to underestimate the pain level of the patient in comparison to reports of the patient's own experience (Pilowsky & Bond, 1969, as cited in Bondestam et al., 1987; McCaffery, 1979, as cited in Bondestam et al., 1987).

The complex nature of estimation, specifically pain estimation, can be seen not only in the definition of pain itself, but also through the endless attempts to quantify the pain experience as reviewed in earlier sections.

Gender and Pain

Men and women experience and react to pain in different ways. While some studies conducted to determine whether or not a person's gender affects pain threshold and tolerance have failed to identify any difference (Alon, Kantor & Smith, 1999; Turk and Okifuji, 1997), others have documented gender differences in pain (Berkley, 1997; Armitage, Scheiderman, & Bass, 1979; Greer, Dickerson, Schneiderman, Atkins, & Bass, 1986). The Berkley study (1997) reported that gender differences in pain tend to appear when examining specific somatic stimuli. According to this study, women reported slightly lower pain thresholds, a lower pain tolerance, and a better ability to discriminate among painful stimuli than men.

According to a study by Liddell & Locker (1997), males and females possess different attitudes toward pain. When examining levels of anxiety towards a perceived painful procedure, both males and females reported that fear of pain was the most important predictor of anxiety levels. However, females tend to report more anxiety than males (Liddell & Locker, 1997). Furthermore, a 1995 study by Raftery, Smith-Coggins, and Chen found that female patients were perceived by healthcare providers to experience greater pain. In this study, 84 health professionals examined 190 headache, neck, and back pain patients. The authors reported that women experienced more pain and received more medication and more potent analgesics than men. Men were significantly more likely than women to receive no medication whatsoever.

Another study in 1996 (Johnson et al.) examined the management of acute chest pain. The study involved 1411 patients who visited the emergency department of a hospital. Men were more likely than women to be admitted to the hospital. Men were also more likely than women to have taken an exercise stress test within a month of their visit. However, despite the fact that percentages of men and women who took the stress test were equal, the likelihood of receiving cardiac catheterization was significantly greater for men than women.

A 1979 study by Armitage et al., found that in a study of male physicians, the medical conditions of men were taken more seriously than those of women. This study seems to support the idea that males are viewed as more stoic than females, and therefore when seeking treatment, are taken more seriously.

There also seems to be gender differences in the physiological experience of pain. In 1995, Ellermeir and Westphaul conducted an experiment where differing levels of

pressure were applied to the fingers of university students. With each level of pressure, the participant was asked to rate his or her pain level on a verbal category scale. Also with each level of pressure, the participant's pupil size was measured to determine the amount of pain experienced. It was found that when exposed to higher levels of pain, females not only reported experiencing greater pain than males, but also demonstrated a greater increase in pupil size than males.

Another study applied various levels of heat to the forearms of both male and female participants. The researchers used a PET scan to measure the amount of cerebral blood flow in the brain, and simultaneously asked the participants to rate each level of pain experienced on a scale from 0-10. Again, it was found that women not only reported higher ratings of pain intensity, but also experienced greater cerebral blood flow, further demonstrating that the level of physiological manifestations of pain differ between males and females (Paulson, Minoshima, Morrow, & Casey, 1998).

Ethnicity

Ethnicity is another important factor in the study of pain. Ethnicity is defined as "pertaining to or having common racial, cultural, religious, or linguistic characteristics, especially designating a racial or other group within a larger system" (Oxford English Dictionary, 2002). Ethnicity affects both how the patient views the pain experience and how medical professionals perceive the patient's pain experience. A study by Davitz and colleagues (1976) examined cross-cultural beliefs about patient suffering among nurses. The study involved a 60-item questionnaire which was distributed to 554 female nurses in the United States, Japan, Taiwan, Korea, and Puerto Rico. Items consisted of

hypothetical patient case descriptions, and the nurses were asked to evaluate both the physical pain and the related psychological distress of patients from their own culture.

The results demonstrated that Korean and Japanese nurses rated overall suffering highest, whereas American and Puerto Rican nurses rated it the lowest. There was a fairly high congruence between pain experience and pain expression for U. S. patients, and there was less congruence with the Japanese patients, which might have accounted for the responses of the Japanese nurses. The Puerto Rican nurses seemed to emphasize the psychological distress of the patient while minimizing the sensory aspects of the patient's pain. However, all nurses rated psychological distress greater than physical pain, and agreed that males and females tended to suffer the same amount of psychological distress. All nurses also maintained that levels of physical pain were greater for female patients than for male patients.

In 1993, Calvillo and Flaskerud (as cited in Moore & Brødsgaard, 1999) examined the relationship between ethnicity and clinical pain behavior. This study involved 60 women who suffered from cholecystectomy pain. The subjects were split into two ethnic groups, Mexican-American and Anglo-American. The researchers assessed whether Mexican American women differ from Anglo-American women in their responses to cholecystectomy pain, whether the nurses' attribution of pain to each of the ethnic groups was comparable, and whether the patients' evaluations of their pain experience compared favorably to the nurses' evaluations of their pain.

Analyses found no significant differences between the two groups on any of the pain measures. However, the nurses did judge pain responses differently, assigning more pain to the Anglo-American patients. Furthermore, the nurses' and patients' evaluations

of pain were also significantly different. The nurses judged the patients' pain as less severe than did the patients. The nurses' higher judgments of the patients' pain experience were significantly correlated with increased patient education level, blue collar employment, birth within the U.S., fluency in English, and Protestant religion.

Oligoanalgesia is the inadequate prescribing of analgesics for patients in pain (Todd, Deaton, D'Adamo, & Goe 2000), and is common among emergency departments (Wilson & Pendleton, 1989; Selbst & Clark, 1990; Ducharme & Barber, 1995). A 1996 study by Ng, Dimsdale, Rollnik, and Shapiro, examined oligoanalgesia by investigating whether ethnicity influenced patient controlled analgesia (PCA) for the treatment of postoperative pain. The researchers conducted a retrospective record review of 454 subjects who had been treated using PCA as treatment for postoperative pain within a six-month observation period.

There were no differences in the amount of self-administered narcotics, also known as patient-controlled analgesia (PCA) among the patients. However, significant differences were found in the amount of narcotics physicians prescribed to Asian Americans, African Americans, Hispanics, and Caucasians. Specifically, physicians prescribed the most to Caucasians, and then African Americans, followed by Asians, and lastly Hispanics. This led the researchers to conclude that patient ethnicity had a greater effect on physician prescribed narcotic amounts than on levels of PCA.

A study by Todd (2000) also found that African-American patients received analgesics less frequency than Anglo patients. This finding was consistent with previous research conducted by Todd, Samaroo, and Hoffmann (1993), which found that Hispanic patents often received less analgesia than Anglo patients. The findings of this study are

also consistent with other findings demonstrating the disparities between the analgesic use of majority and minority ethnic groups (Cleeland et al., 1997); Bernabei, Gambassi, & Lapane, 1998).

Hypotheses

Investigations of the interactions between gender and pain have produced mixed results. However, it seems clear that men and women experience pain in different ways. Furthermore, it is also increasingly clear that ethnicity also plays a role in physicians' determinations of how much and what kind of medication to give to a patient who is in pain.

Based on these assumptions, I predict that in my study:

1. The gender of the rater will affect how he or she perceives the patient's current pain intensity level (including the NRS, VAS, and PPI) as well as both the sensory and affective totals for the adjectives found on the SF-MPQ.
2. The ethnicity of the rater will affect how he or she perceives the patient's current pain intensity level (including the NRS, VAS, and PPI) as well as both the sensory and affective totals for the adjectives found on the SF-MPQ.

CHAPTER 2

METHODS

Participants

The participants for this study were 30 men and 95 women (n= 125) who were students in the department of psychology at Southwest Texas State University. Of the 125 students who participated in the study, 100 of the participants identified themselves as Anglo-American, while the other 25 identified themselves as Hispanic. The students were solicited by the principal investigator and research assistants. The students were offered extra credit for participation in the study.

The anonymity of the participants was insured by issuing randomly generated numbers to each participant upon consenting to the study. The randomly generated numbers given to each participant were used only to record and check the accuracy of the data.

Patient Demographic Information

Four patients were interviewed and filmed for the study. The four patients consisted of an Anglo-male, Anglo-female, Hispanic male, and Hispanic female. The patients were obtained with assistance from a licensed psychologist employed in a private practice located in San Antonio, Texas. To qualify for filming, each patient had to be diagnosed as suffering from chronic pain, as well as give their consent to be interviewed and filmed for the purposes of research.

Measures

The first measure used to obtain data was a numerical ratings scale (NRS). The NRS ranged from zero (0) - "no pain" to (10) - "worst possible pain", and was used to measure the current pain level of each patient. NRS ratings were obtained from both the patients and the participants

The second measure used to obtain data was the short form of the McGill Pain Questionnaire (SF-MPQ) (Melzack, 1987). Adjectives 1-11 on the MPQ-SF represent the sensory experience of pain, whereas adjectives 12-15 represent the affective component of the pain experience. The SF-MPQ also contains a 10cm VAS which has the descriptors "no pain" on one end, and "worst possible pain" on the other end of the VAS. The last piece of information on the SF-MPQ is a Present Pain Intensity (PPI) index, which is designed to assess the patient's present pain intensity level using a list of descriptors describing levels of the pain experience (0= no pain, 1= mild, 2= discomforting, 3= distressing, 4= horrible, 5= excruciating). Scores from each of these scales were obtained from both the patients and the participants.

Procedure

Four patients (Anglo Male, Anglo Female, Hispanic male, and Hispanic female), all of whom were suffering from chronic pain, were interviewed and videotaped while giving their responses to the statements found on the Pain and Impairment Relationship Scale (PAIRS) (Riley, Ahern, & Follick, 1988). Off camera, each patient was asked to rate their current pain level on a scale from zero (0) to ten (10), and were also asked to complete the SF-MPQ.

I then transferred the videotapes to a computer where they could be viewed by the participants in the study. I randomly assigned participants to a computer where they entered demographic information (gender, ethnicity, classification in school, and age) into the computer. The participants watched a randomized presentation of all four interviews. After each video, the participants then indicated at what level they would rate on a scale from zero (0) to ten (10), the current pain level of the patient during the interview they had just seen. After entering the value, the participants then filled out the short form MPQ, based on how they would rate the pain of each patient.

I analyzed the gender and ethnicity of the participants using a frequency distribution. Descriptive statistics, consisting of means and standard deviations, were run on gender, ethnicity, current pain level ratings, and each scale measured by the SF-MPQ.

I ran Univariate Analysis of Variance (ANOVA) tests to examine how the ethnicity and gender of the participants affect current pain level ratings for each patient, as well as each set of SF-MPQ scales (sensory adjective total, affective adjective total, VAS score, and PPI score).

Finally, I ran Multivariate Analysis of Variance (MANOVA) tests examining the effect of participant gender and ethnicity on the overall CPL, sensory total, affective total, VAS, and PPI scores.

CHAPTER 3

RESULTS

I calculated descriptive statistics, consisting of means and standard deviations, for current pain level ratings, including all of the scales measured by the SF-MPQ. The results of the descriptive statistics were broken down by both the ethnicity and gender of the participants (see tables 1 and 2).

Table 1
Means and Standard Deviations for participants' current pain intensity ratings, as well as sensory and affective totals for adjective descriptors by ethnicity.

Participant Ethnicity	Patient-Scale	Mean	SD
Anglo	AM-CPL	6.54	1.99
	AM-Sensory	21.94	5.61
	AM-Affective	7.75	2.75
	AM-VAS	6.47	2.19
	AM-PPI	3.20	.88
	AF-CPL	5.61	1.67
	AF-Sensory	19.35	5.22
	AF-Affective	7.05	2.76
	AM-VAS	5.54	2.03
	AM-PPI	2.66	.86
	HM-CPL	7.60	2.02
	HM-Sensory	23.91	5.34
	HM-Affective	8.54	2.51
	HM-VAS	7.75	2.06
	HM-PPI	3.76	1.04

Table 1 (continued)
Means and Standard Deviations for participants' current pain intensity ratings, as well as sensory and affective totals for adjective descriptors by ethnicity.

Participant Ethnicity	Patient-Scale	Mean	SD
	HF-CPL	6.23	1.97
	HF-Sensory	21.96	5.63
	HF-Affective	8.09	2.84
	HF-VAS	6.38	2.15
	HF-PPI	3.07	1.00
Hispanic	AM-CPL	7.32	2.10
	AM-Sensory	21.52	4.93
	AM-Affective	6.64	2.63
	AM-VAS	7.28	2.48
	AM-PPI	3.24	1.33
	AF-CPL	6.08	1.75
	AF-Sensory	19.64	4.56
	AF-Affective	6.84	2.32
	AM-VAS	5.72	2.23
	AM-PPI	2.48	1.09
	HM-CPL	7.76	1.76
	HM-Sensory	22.76	4.77
	HM-Affective	7.48	2.26
	HM-VAS	8.04	2.13
	HM-PPI	3.64	.95
	HF-CPL	6.16	2.30
	HF-Sensory	20.40	6.19
	HF-Affective	7.20	3.07
	HF-VAS	6.52	2.38
	HF-PPI	2.64	1.19

*$p < .05$

Table 2

Means and Standard Deviations for participants' current pain intensity ratings, as well as sensory and affective totals for adjective descriptors by gender.

Participant Gender	Patient-Scale	Mean	SD
Male	AM-CPL	6.30	2.41
	AM-Sensory	21.23	6.00
	AM-Affective	6.67	3.08
	AM-VAS	6.20	2.51
	AM-PPI	2.93	1.20
	AF-CPL	5.50	1.87
	AF-Sensory	18.73	4.93
	AF-Affective	6.40	2.62
	AM-VAS	5.17	2.23
	AM-PPI	2.47	.90
	HM-CPL	7.13	2.29
	HM-Sensory	22.63	4.41
	HM-Affective	7.33	2.70
	HM-VAS	7.40	2.46
	HM-PPI	3.27	1.17
	HF-CPL	5.80	2.19
	HF-Sensory	20.90	5.70
	HF-Affective	7.00	2.49
	HF-VAS	6.03	2.44
	HF-PPI	2.67	.92
Female	AM-CPL	6.82	1.89
	AM-Sensory	22.05	5.30
	AM-Affective	7.80	2.60
	AM-VAS	6.77	2.17
	AM-PPI	3.29	.81

Table 2 (continued)

Means and Standard Deviations for participants' current pain intensity ratings, as well as sensory and affective totals for adjective descriptors by gender.

Participant Gender	Patient-Scale	Mean	SD
	AF-CPL	5.77	1.63
	AF-Sensory	19.62	5.13
	AF-Affective	7.20	2.67
	AM-VAS	5.71	2.00
	AM-PPI	2.67	.90
	HM-CPL	7.79	1.83
	HM-Sensory	24.01	5.45
	HM-Affective	8.64	2.35
	HM-VAS	7.94	1.93
	HM-PPI	3.88	.92
	HF-CPL	6.35	1.98
	HF-Sensory	21.88	5.78
	HF-Affective	8.20	2.97
	HF-VAS	6.53	2.10
	HF-PPI	3.08	1.07

*$p < .05$

In order to test the hypothesis that the gender and ethnicity of the participants would affect their perception of patients' pain, I conducted Oneway Analyses of Variance (ANOVAs) examining how the gender and ethnicity of the participants affected current pain level ratings for each patient. I also conducted Oneway ANOVAs for each set of SF-MPQ scales (sensory adjective total, affective adjective total, VAS score, and PPI score). An alpha level of .05 was used for all statistical tests.

Results for gender revealed that female participants rated the Anglo Male patient's affective response to pain as greater than did the male participants ($F(1, 123) = 3.950$, $p = .049$). There were no significant gender effects for the Anglo Female patient. For the Hispanic Male patient, gender affected both the affective score, $F(1, 123) = 6.594$, $p = .011$, and the score on the VAS, $F(1, 123) = 8.943$, $p = .003$, with females rating the patient's suffering as greater than did the male participants. For the Hispanic Female patients, gender again affected the affective score, with females rating the patient's suffering as greater than the males $F(1,123) = 4.009$, $p = .047$ (see table 3).

Table 3
One-Way Analysis of Variance by Gender

Patient	Scale		*SS*	*df*	*F*	*p*
AM	CPL	Between Groups	6.190	1	1.510	.221
		Within Groups	504.258	123		
		Total	510.448	124		
	Sensory	Between Groups	15.304	1	.511	.476
		Within Groups	3686.104	123		
		Total	3701.408	124		
	Affective	Between Groups	29.285	1	3.950*	.049
		Within Groups	911.867	123		
		Total	941.152	124		
	VAS	Between Groups	7.367	1	1.448	.231
		Within Groups	625.705	123		
		Total	633.072	124		
	PPI	Between Groups	2.978	1	3.535	.062
		Within Groups	103.614	123		
		Total	106.592	124		

Table 3 (continued)
One-Way Analysis of Variance by Gender

Patient	Scale		*SS*	*df*	*F*	*p*
AF	CPL	Between Groups	1.643	1	.573	.450
		Within Groups	352.405	123		
		Total	354.048	124		
	Sensory	Between Groups	17.967	1	.695	.406
		Within Groups	3178.225	123		
		Total	3196.192	124		
	Affective	Between Groups	14.592	1	2.067	.153
		Within Groups	868.400	123		
		Total	882.992	124		
	VAS	Between Groups	6.614	1	1.565	.213
		Within Groups	519.914	123		
		Total	526.528	124		
	PPI	Between Groups	.977	1	1.198	.276
		Within Groups	100.351	123		
		Total	101.328	124		
HM	CPL	Between Groups	9.816	1	2.584	.111
		Within Groups	467.256	123		
		Total	477.072	124		
	Sensory	Between Groups	43.244	1	1.588	.210
		Within Groups	3349.956	123		
		Total	3393.200	124		
	Affective	Between Groups	39.054	1	6.594*	.011
		Within Groups	728.498	123		
		Total	767.552	124		
	VAS	Between Groups	6.571	1	1.540	.217
		Within Groups	524.821	123		
		Total	531.392	124		

Table 3 (continued)
One-Way Analysis of Variance by Gender

Patient	Scale		*SS*	*df*	*F*	*p*
	PPI	Between Groups	8.695	1	8.943*	.003
		Within Groups	119.593	123		
		Total	128.288	124		
HF	CPL	Between Groups	6.831	1	1.659	.200
		Within Groups	506.337	123		
		Total	513.168	124		
	Sensory	Between Groups	22.086	1	.666	.416
		Within Groups	4080.426	123		
		Total	4102.512	124		
	Affective	Between Groups	32.832	1	4.009*	.047
		Within Groups	1007.200	123		
		Total	1040.032	124		
	VAS	Between Groups	5.541	1	1.158	.284
		Within Groups	588.651	123		
		Total	594.192	124		
	PPI	Between Groups	3.975	1	3.704	.057
		Within Groups	131.993	123		
		Total	135.968	124		

*$p < .05$

Oneway Analyses of Variance examining the effect of the participants' ethnicity on perceptions of patients' pain produced no significant results (see table 4).

Table 4
One-Way Analysis of Variance by Ethnicity

Patient	Scale	*SS*		*df*	*F*	*p*
AM	CPL	Between Groups	1	12.168	3.004	.086
		Within Groups	123	4.051		
		Total	124			
	Sensory	Between Groups	1	3.528	.117	.733
		Within Groups	123	30.064		
		Total	124			
	Affective	Between Groups	1	24.642	3.307	.071
		Within Groups	123	7.451		
		Total	124			
	VAS	Between Groups	1	13.122	2.603	.109
		Within Groups	123	5.040		
		Total	124			
	PPI	Between Groups	1	.032	.037	.848
		Within Groups	123	.866		
		Total	124			
AF	CPL	Between Groups	1	4.418	1.554	.215
		Within Groups	123	2.843		
		Total	124			
	Sensory	Between Groups	1	1.682	.065	.800
		Within Groups	123	25.972		
		Total	124			
	Affective	Between Groups	1	.882	.123	.726
		Within Groups	123	7.172		
		Total	124			
	VAS	Between Groups	1	.648	.152	.698
		Within Groups	123	4.275		
		Total	124			
	PPI	Between Groups	1	.648	.792	.375
		Within Groups	123	.819		
		Total	124			

Table 4 (continued)
One-Way Analysis of Variance by Ethnicity

Patient	Scale	*SS*		*df*	*F*	*p*
HM	CPL	Between Groups	1	.512	.132	.717
		Within Groups	123	3.874		
		Total	124			
	Sensory	Between Groups	1	26.450	.966	.328
		Within Groups	123	27.372		
		Total	124			
	Affective	Between Groups	1	22.472	3.710	.056
		Within Groups	123	6.058		
		Total	124			
	VAS	Between Groups	1	1.682	.391	.533
		Within Groups	123	4.307		
		Total	124			
	PPI	Between Groups	1	.288	.277	.600
		Within Groups	123	1.041		
		Total	124			
HF	CPL	Between Groups	1	.098	.023	.878
		Within Groups	123	4.171		
		Total	124			
	Sensory	Between Groups	1	48.672	1.477	.227
		Within Groups	123	32.958		
		Total	124			
	Affective	Between Groups	1	15.842	1.903	.170
		Within Groups	123	8.327		
		Total	124			
	VAS	Between Groups	1	.392	.081	.776
		Within Groups	123	4.828		
		Total	124			

Table 4 (continued)
One-Way Analysis of Variance by Ethnicity

Patient	Scale	*SS*	*df*	*F*	*p*
	PPI	Between Groups	1	3.698	3.439	.066
		Within Groups	123	1.075		
		Total	124			

*p < .05

To examine the simultaneous influences of both gender and ethnicity, as well as potential interaction effects, on participant ratings, I performed a series of 2 x 2 Analyses of Variance. For the Anglo Male patient, both the CPL rating, F(1, 121)= 6.132, p= .015, and the VAS rating, F(1, 121)= 4.957, p= .028, were significantly affected by participants' ethnicity. For the Hispanic Male patient, the CPL (F(1, 121)= 5.149, p=.025), affective total (F(1, 121)= 5.494, p=.021), VAS, (F(1, 121)= 8.068, p=.005), and PPI, (F(1, 121)= 15.874, p= .000), all produced significant interaction effects between gender and ethnicity. No significant main or interaction effects were found for either of the female patients (see Table 5).

Table 5

2 X 2 Analysis of Variance for participants' current pain intensity ratings, as well as sensory and affective totals for adjective descriptors.

Patient	Scale	Source	*df*	*F*	*p*	η
AM	CPL	Ethnicity	1	6.132*	.015	.048
		Gender	1	1.695	.195	.014
		Ethnicity x Gender	1	1.558	.214	.013
		Error	121	(3.945)		
	Sensory	Ethnicity	1	.038	.846	.000
		Gender	1	.009	.925	.000
		Ethnicity x Gender	1	3.134	.079	.025
		Error	121	(29.691)		
	Affective	Ethnicity	1	.840	.361	.007
		Gender	1	.444	.506	.004
		Ethnicity x Gender	1	3.334	.070	.027
		Error	121	(7.242)		
	VAS	Ethnicity	1	4.957*	.028	.039
		Gender	1	2.111	.149	.017
		Ethnicity x Gender	1	.440	.509	.004
		Error	121	(4.965)		
	PPI	Ethnicity	1	1.381	.242	.011
		Gender	1	1.441	.232	.012
		Ethnicity x Gender	1	3.405	.067	.027
		Error	121	(.828)		
AF	CPL	Ethnicity	1	8.222	.091	.023
		Gender	1	1.945	.409	.006
		Ethnicity x Gender	1	1.871	.418	.005
		Error	121	(2.838)		
	Sensory	Ethnicity	1	.451	.503	.004
		Gender	1	.382	.538	.003
		Ethnicity x Gender	1	.499	.481	.004
		Error	121	(26.092)		

Table 5 (continued)

2 X 2 Analysis of Variance for participants' current pain intensity ratings, as well as sensory and affective totals for adjective descriptors.

Patient	Scale	Source	*df*	*F*	*p*	η
	Affective	Ethnicity	1	.123	.726	.001
		Gender	1	.615	.435	.005
		Ethnicity x Gender	1	1.704	.194	.014
		Error	121	(7.076)		
	VAS	Ethnicity	1	.997	.325	.008
		Gender	1	1.003	.319	.008
		Ethnicity x Gender	1	.783	.378	.006
		Error	121	(4.244)		
	PPI	Ethnicity	1	.086	.770	.001
		Gender	1	.041	.840	.000
		Ethnicity x Gender	1	2.265	.135	.018
		Error	121	(.812)		
HM	CPL	Ethnicity	1	1.805	.182	.015
		Gender	1	.700	.404	.006
		Ethnicity x Gender	1	5.149*	.025	.041
		Error	121	(3.677)		
	Sensory	Ethnicity	1	.135	.714	.001
		Gender	1	.165	.685	.001
		Ethnicity x Gender	1	1.732	.191	.014
		Error	121	(27.213)		
	Affective	Ethnicity	1	.587	.445	.005
		Gender	1	1.028	.313	.008
		Ethnicity x Gender	1	5.494*	.021	.043
		Error	121	(5.695)		
	VAS	Ethnicity	1	2.580	.111	.021
		Gender	1	.126	.723	.001
		Ethnicity x Gender	1	8.068*	.005	.063
		Error	121	(4.027)		
	PPI	Ethnicity	1	1.382	.242	.011
		Gender	1	1.842	.177	.015

Table 5 (continued)

2 X 2 Analysis of Variance for participants' current pain intensity ratings, as well as sensory and affective totals for adjective descriptors.

Patient	Scale	Source	*df*	*F*	*p*	η
		Ethnicity x Gender	1	15.874*	.000	.116
		Error	121	(.872)		
HF	CPL	Ethnicity	1	.219	.641	.002
		Gender	1	.615	.434	.005
		Ethnicity x Gender	1	1.179	.280	.010
		Error	121	(4.142)		
	Sensory	Ethnicity	1	.895	.346	.007
		Gender	1	.110	.740	.001
		Ethnicity x Gender	1	.038	.847	.000
		Error	121	(33.439)		
	Affective	Ethnicity	1	.318	.574	.003
		Gender	1	1.128	.290	.009
		Ethnicity x Gender	1	1.335	.250	.011
		Error	121	(8.193)		
	VAS	Ethnicity	1	.803	.372	.007
		Gender	1	.401	.528	.003
		Ethnicity x Gender	1	1.734	.190	.014
		Error	121	(4.778)		
	PPI	Ethnicity	1	1.306	.255	.011
		Gender	1	.970	.327	.008
		Ethnicity x Gender	1	.607	.438	.005
		Error	121	(1.071)		

Note. Values enclosed in parentheses represent mean square errors.

*$p < .05$

Given the interaction effects found in two of the 2x2 ANOVAs, I ran a Multivariate Analysis of Variance (MANOVA) to examine the effects of participants'

gender and ethnicity on their pattern of responses across all patients. Multivariate Analysis of Variance (MANOVA) tests were run on the overall CPL, sensory total, affective total, VAS, and PPI scores. The MANOVA revealed a significant interaction effect (gender x ethnicity) on the PPI. Across all patients, female Anglo participants and male Hispanic participants rated the Present Pain Intensity Index as greater than did the Anglo men or Hispanic women (Wilks' Lambda, .003, $F(1, 121)= 4.256$, $p= .05$.) Although the VAS scale did not reach a $p<.05$ level of significance, a strong trend was revealed ($F(1, 121)= 2.431$, $p= .051$). No other scales showed significance.

Discussion

After examining the statistical analyses, it seems that the gender of the participant does, in fact, have an effect on how participants rate a patient's pain level, therefore supporting the first hypothesis. Female participants consistently rated the Anglo Male, Hispanic Male, and Hispanic Female as experiencing greater pain than their male counterparts when rating on the affective scale. Female participants also rated the Hispanic Male higher than the other patients on the VAS scale. For a possible explanation, I refer back to the Berkley (1997) study, which reports that women tend to better discriminate among painful stimuli. While this study, along with the Ellermeir and Westphaul (1995), and Paulson, et al. (1998) studies, are not a direct explanation for these results, an argument could be made that if there are, in fact, physiological differences in the way men and women experience pain, it could have an effect on how they perceive pain in other individuals.

Regarding the second hypothesis, ethnicity did affect how participants rated the Anglo Male on both the CPL and VAS scales. The reason for this is unclear. Within the

literature, there are very few studies which examine the ethnicity of the healthcare provider as a factor for estimating pain. This is, in part, due to the small numbers of healthcare providers used in studies. More research needs to be conducted in this area, especially since healthcare providers have the power over who to medicate, as well as amount of medication prescribed.

Furthermore, the results show that the interaction of gender with ethnicity had a significant effect when participants rated the Hispanic Male on the CPL, affective, VAS, and PPI scales. While it is unclear why the only significant result appeared with the Hispanic Male, this seems to show that while participant ethnicity alone may not have been a factor in the rating, it seems to work in concert with gender to affect ratings.

Overall, it appears that the Anglo Female participants and the Hispanic Male participants rated the patients' pain higher than Anglo Males and Hispanic Females on the PPI across all patients. This interaction of gender and ethnicity, and the strong trend towards a significant interaction of gender and ethnicity on the VAS's of all of the patients, further support the hypotheses put forth in this research that both the gender and ethnicity of the rater have an affect on how they perceive a patient's pain level.

The fact that Anglo Females rate a patient's pain higher is important because the majority of nurses are Anglo females. Within the medical community, the individuals who have the most contact with the patients are the nurses. Even though physicians have the final say regarding treatment, their decisions are influenced by the reports of the nurses, making the nurses' perceptions of a patient's pain experience invaluable to the treatment process.

Several factors need to be addressed when interpreting the results of this study. First, as a pilot study, it was conducted using university students. In the future it will be important to use individuals more closely associated with the medical field, such as physical therapists or nurses.

Second, it would also be beneficial to have more than just one patient for each gender/ethnic group. This would help to address the important issues of patient ethnicity and gender, which could not be addressed properly in this study due to the limited number of patient interviews.

Lastly, this study needs to be replicated with equal number of Hispanic and Anglo participants, as well as a better ratio of males to females. Given the unequal numbers in the breakdown of the participants of this study, it is difficult to say with any certainty what effect the gender and ethnicity of the rater has on the estimation of a patient's pain level.

Further research needs to be conducted in order to attempt to clarify, if possible, exactly how much of a role each of these factors play in making a determination concerning the level of pain a patient may be experiencing. However, it must be said that there are many other factors, psychological, physical, and otherwise that will always play a role in determining how decisions are made concerning pain estimation.

Although the study of the pain experience is daunting, it is a necessity. As evidenced in the ever-growing number of people who are suffering from pain, the problem is not going to go away. Due to the largely subjective nature of pain, the issue will never be fully understood. The attempt to study and understand chronic pain should

not be viewed as a hopeless pursuit; rather, it should be seen as a challenge to help understand one of the world's most perplexing conditions.

APPENDIX A

Patient Consent Form

PERMIT FOR INTERVIEW/PHOTOGRAPH/VIDEOTAPING

This is to certify that I, _____, do hereby consent to an (interview/photograph/videotape) by Jason Boothe for the purpose of education/research. Christus Santa Rosa Outpatient Center is only providing the space used for filming. Therefore, this consent is expressly intended to release from liability all personnel of Christus Santa Rosa Outpatient Rehabilitation Center and Santa Rosa Healthcare Corporation.

_____ _____

Patient Date

_____ _____

Witness Date

APPENDIX B

Participant Consent Form

Student I. D. Number _____

AN AGREEMENT TO BE IN A RESEARCH STUDY
at
SOUTHWEST TEXAS STATE UNIVERSITY

STUDY NUMBER/TITLE: Gender, Ethnicity, and Observer Ratings of Pain

INTRODUCTION:

You are being asked to volunteer for a psychological research study. Before you decide to volunteer, you should read this form. This form, called a consent form, explains the study. Please ask as many questions as needed so that you can decide whether you want to be in the study.

We anticipate that a minimum of 80 participants from Southwest Texas State University will take part in this study.

PURPOSE OF STUDY

We want to examine estimations given by participants after viewing videotapes of chronic pain patients.

WHAT WILL HAPPEN DURING THE STUDY

Participants will be asked to view a series of videotapes and then will be asked a number of questions pertaining to the videos.

WHAT WILL HAPPEN DURING FOLLOW-UP

There will be no follow-up for the study participants.

LENGTH OF STUDY

The interview process will take approximately 30 minutes/participant.

SIDE EFFECTS AND OTHER RISKS

None

POSSIBLE BENEFITS OF THE STUDY

There will be no direct benefits to the participants of this study, unless the student has arranged for extra-credit for participation in this study.

OTHER TREATMENTS

Not Applicable

IN CASE OF AN INJURY RELATED TO THIS RESEARCH STUDY

In the event that you feel a need to speak with someone as a result of your participation in this study, you will be referred to the Counseling Center at Southwest Texas State University.

PAYMENT FOR PARTICIPATION

We cannot pay you to take part in this study. You will be responsible for all costs caused by this study.

COSTS OF THE STUDY

There will be no costs associated with the interview process for the participant(s). You have the right to ask what it will cost you to take part in this study.

WHOM TO CONTACT

You may contact the principal investigator for answers to questions about this research study, to report related injury or for information about the study procedures at the following e-mail address:

Mr. Jason Boothe, Principal Investigator
jhboothe@hotmail.com

This consent form and study have been approved by Southwest Texas State University Institutional Review Board (SWT IRB). SWT IRB is a group of scientific and non-scientific people who watch over research involving humans. Questions about your rights

as a study volunteer may be addressed to the principal investigator or the SWT Office of Research and Sponsored Programs at: 512-245-2314.

LEAVING THE STUDY

Your decision to be in this study is up to you. You have the right to stop the study and withdraw at any time. The principal investigator will tell you about any important new findings which develop during the course of this research which may affect your willingness to continue or take part. If you do not want to be in the study, or if you leave this study, it will not affect your participation in future studies.

If you wish to leave this study, please tell the principal investigator.

Upon completion of this study, you may be given the option of participating in additional research studies that may be appropriate for you, if such studies exist.
In order to ensure the safety of the participants the following retain the authority to terminate the study should information be found that indicates that this would be in the interest of the participants:

- the principal investigator
- the Southwest Texas State University IRB

If you do not follow the study procedures you may be taken out of the study.

NEW FINDINGS

Significant new findings may develop during the course of this study that could affect your decision to continue in the study. If these new findings should occur, we will provide you with this information in the form of a revised informed consent or addendum to the informed consent. At this time you will be given the opportunity to decide whether you would still wish to continue this study.

RELEASE OF RECORDS AND PRIVACY

We will keep everything we learn in the study confidential and disclose it only with your permission. If we publish the results of the study in a scientific journal or book, you will not be identified in any way. A record of your progress on the study will be kept in a confidential file at Southwest Texas State University. The study results may be made available to:

- the Southwest Texas State University Institutional Review board
- the Principal investigator

AGREEMENT TO BE IN THE STUDY

This consent form contains information to help you decide if you want to be in the study. If you have questions that are not answered in this consent form, please ask one of the investigators. Please ask yourself the following questions. If you cannot answer 'yes' to each question then speak to the investigators.

a. Have you understood the consent form?
b. Have you had an opportunity to ask questions and discuss this study?
c. Have you received satisfactory answers to all your questions?
d. Have you received enough information about the study in order to make a decision?
e. Do you understand that you are free to leave the study at any time without having to give a reason?

By signing this form you agree that:

- You have had a chance to ask questions.
- You volunteer to be in the study.

BY AGREEING TO THIS CONSENT YOU HAVE NOT SIGNED AWAY ANY OF YOUR RIGHTS.

If you wish to have a copy of this form, we will give you a copy to keep for your records.

_____ _____

Signature of Volunteer/Participant Date

_____

Print Name Here

_____

Signature of Person Explaining Consent

_____

Signature of Investigator

_____

Signature of Witness

Detach the bottom portion of this sheet and take it with you to your computer. This is your "Student I. D. Number" that you will be asked to enter.

Student I. D. Number _____

APPENDIX C

PAIRS

PAIN AND IMPAIRMENT RELATIONSHIP SCALE (PAIRS)

Name: _____ *Date:* _____/_____/_____

The following questionnaire includes a number of statements that reflect thoughts, beliefs, and opinions which you may have as a consequence of your pain.

We would appreciate your studying these and determining, for each statement, whether it is one which you agree, disagree, or simply feel neutral. Your responses will enable us to more fully understand your pain condition. Please respond by placing a checkmark over the point on the line below each statement corresponding to the extent to which you agree or disagree. Do not place a checkmark between the points.

1) I can still be expected to fulfill my work and family responsibilities despite my pain.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

2) An increase in pain is an indication that I should stop what I'm doing until the pain decreases.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

3) I can't go about my normal life activities when I am in pain.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

4) If my pain would go away, I could be every bit as active as I used to be.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

5) I should have the same benefits as the handicapped because of my chronic pain problem.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

6) I owe it to myself and those around me to perform my usual activities even when my pain is bad.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

7) Most people expect too much of me, given my chronic pain.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

8) I have to be careful not to do anything that might make my pain worse.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

9) As long as I am in pain, I'll never be able to live as well as I did before.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

10) When pain gets worse, I find it very hard to concentrate on anything else.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

11) I have come to accept that I am a disabled person, due to my chronic pain.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

12) There is no way that I can return to doing things I used to do unless I first find a cure for my pain.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

13) I find myself frequently thinking about my pain and what it has done to my life.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

14) Even though my pain is always there, I often don't notice it at all when I 'm keeping myself busy.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

15) All of my problems would be solved if my pain would go away.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

APPENDIX D

PAIN AND IMPAIRMENT RELATIONSHIP SCALE (PAIRS)
(Modified Version)

Name: _____ *Date:* _____/_____/_____

The following questionnaire includes a number of statements that reflect thoughts, beliefs, and opinions which you may have as a consequence of your pain.

I would appreciate your listening to these and determining, for each statement, whether it is one which you agree, disagree, or simply feel neutral. Your responses will enable us to more fully understand your pain condition. I will read you a statement and then after each statement, ask you whether you completely disagree, disagree, disagree somewhat, are neutral, agree somewhat, agree, or completely agree with the statement. Please respond by indicating the extent to which you agree or disagree.

1) I can still be expected to fulfill my work and family responsibilities despite my. pain.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

2) An increase in pain is an indication that I should stop what I'm doing until the pain decreases.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

3) I can't go about my normal life activities when I am in pain.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

4) If my pain would go away, I could be every bit as active as I used to be.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

5) I should have the same benefits as the handicapped because of my chronic pain problem.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

6) I owe it to myself and those around me to perform my usual activities even when my pain is bad.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

7) Most people expect too much of me, given my chronic pain.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

8) I have to be careful not to do anything that might make my pain worse.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

9) As long as I am in pain, I'll never be able to live as well as I did before.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

10) When pain gets worse, I find it very hard to concentrate on anything else.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

11) I have come to accept that I am a disabled person, due to my chronic pain.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

12) There is no way that I can return to doing things I used to do unless I first find a cure for my pain.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

13) I find myself frequently thinking about my pain and what it has done to my life.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

14) Even though my pain is always there, I often don't notice it at all when I 'm keeping myself busy.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

15) All of my problems would be solved if my pain would go away.

Completely disagree	Disagree	Disagree somewhat	Neutral	Agree somewhat	Agree	Completely agree

APPENDIX E

SF-MPQ

SHORT-FORM McGILL PAIN QUESTIONNAIRE

RONALD MELZACK

PATIENT'S NAME: _____ DATE: _____

	NONE	MILD	MODERATE	SEVERE
THROBBING	0) _____	1) _____	2) _____	3) _____
SHOOTING	0) _____	1) _____	2) _____	3) _____
STABBING	0) _____	1) _____	2) _____	3) _____
SHARP	0) _____	1) _____	2) _____	3) _____
CRAMPING	0) _____	1) _____	2) _____	3) _____
GNAWING	0) _____	1) _____	2) _____	3) _____
HOT-BURNING	0) _____	1) _____	2) _____	3) _____
ACHING	0) _____	1) _____	2) _____	3) _____
HEAVY	0) _____	1) _____	2) _____	3) _____
TENDER	0) _____	1) _____	2) _____	3) _____
SPLITTING	0) _____	1) _____	2) _____	3) _____
TIRING-EXHAUSTING	0) _____	1) _____	2) _____	3) _____
SICKENING	0) _____	1) _____	2) _____	3) _____
FEARFUL	0) _____	1) _____	2) _____	3) _____
PUNISHING-CRUEL	0) _____	1) _____	2) _____	3) _____

PPI

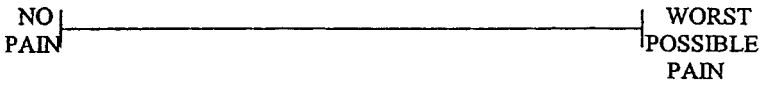
0	NO PAIN	_____
1	MILD	_____
2	DISCOMFORTING	_____
3	DISTRESSING	_____
4	HORRIBLE	_____
5	EXCRUCIATING	_____

APPENDIX F

VAS

Student I.D. Number _____ Computer Number _____

Please indicate (using a vertical line) at which point on the line <u>you</u> would rate this patient's pain level.



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VITA

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